



Investing in Energy Transition Projects

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Developing and investing in infrastructure and energy transition projects

Global investment in infrastructure and energy transition projects was pressing before COVID-19, particularly in developing economies. In the wake of COVID-19 the larger economies are relying on infrastructure to lead their post COVID-19 economic recovery and this is clearly being reflected in government strategic planning, opportunities and incentives. Planning and many private initiatives are now being complicated by increasing inflation, supply chain blockages and political uncertainty.

The extent of change and disruption affecting the delivery of an infrastructure project and its long-term operation makes it vital for Principals and Investors to be educated and informed about risk. They will also need options as to how that risk is best allocated and managed in order to achieve the investment outcomes they seek.

A good place to start is this Best Practice Guide.

It is particularly focussed on the energy transition to a decarbonised economy and the corresponding greenfield and brownfield developments and expansions occurring in this space.

Infrastructure developers and Investors have become an eclectic group. They include governments, large institutional Investors such as banks, insurance companies, sovereign wealth funds, Investor funds, infrastructure investment trusts, large industry super funds and pension funds, and they extend to the investment fund managers which partner with them. They also include private equity funds, Principals and high net-worth individuals and, in time, they may come to include smaller retail super funds and SMSF owners as well.

It is clear that the infrastructure investment decisions being made by Principals and Investors, including the preferred infrastructure asset types, are in flux as a result of pandemic-related issues and the need for a reliable return on investment, climate change and the use of ESG as a tool for investment decision-making.

In such a state of disruption and change, the aim of this Best Practice Guide is to help Principals and Investors identify early during the project life cycle the key risks likely to arise during the project delivery phase, and to find ways to manage them – from a legal and commercial perspective. It contains papers on key legal and commercial issues including time and delay, payment, security, defects, force majeure, and remedies. It also provides a guide to different contract delivery models, with a focus on collaborative contracting models, to enable a more informed assessment of the delivery model that suits the scale and complexity of the project, the infrastructure asset type, timelines and risk appetite.

Together, the papers in this Best Practice Guide will enable Principals and Investors to better understand the risk exposures. This has become even more critical in a world hit hard by COVID-19 and the pressing need to transition to low-carbon, climate resilient infrastructure assets.

Current outlook on infrastructure investment

A 2021 *State of the World* report by the International Federation of Consulting Engineers titled 'Time to \$Tn-vest' identified that global infrastructure needs are increasing and could require at least US\$7 trillion in spending every year to address the growing climate emergency and recover from the effects of COVID-19.

Government plays a very significant role not only in funding infrastructure itself but in strategically addressing infrastructure needs. The UK Government is doing this through its National Infrastructure Strategy, China through its Belt and Road Initiative, the United States through its US\$2 trillion Bipartisan Infrastructure Deal and India through its US\$1.5 trillion six year National Infrastructure Pipeline (to 2025). Central and local government funding accounts for a large portion of the infrastructure funding, but these plans are also predicated on private sector investment, as supported and encouraged by government initiatives that reduce Investor risk and uncertainty.

In its 2022-2023 Federal Budget, the Australian government committed to a AUD\$120 billion rolling ten-year infrastructure investment, predominantly for transport infrastructure projects. Its independent infrastructure advisory arm, Infrastructure Australia, has developed an investment roadmap titled 'Delivering Outcomes: A roadmap to improve infrastructure industry productivity and innovation' that estimates investment in major public infrastructure over the next five years across Australia will exceed AUD\$218 billion.

The critical role that private sector infrastructure funding plays globally is reflected in the extent of investment. According to the Global Investor 50 2021, the top 50 global institutional Investors are responsible for approximately AUD\$464.5 billion in infrastructure investment, and they include 37 pension funds, as well as sovereign wealth funds, insurers and banks. There is a heavy weighting of Australian based Investors in this list, with AustralianSuper jumping from a ranking of 15 to eight in 12 months, and eight other Australian based super funds ranking in the top 50. Their ongoing investment in unlisted infrastructure is likely to increase given the stability those assets offer in terms of valuation, returns and patronage.

Given the growing infrastructure gap, the pool of private infrastructure Investors is likely to expand from traditional institutional Investors such as super funds, pension funds, banks and sovereign wealth funds. As part of the 'democratisation' of infrastructure investment, there is also a push for smaller funds to participate in infrastructure investment, for example the local government pension scheme pools in the UK, and Australian Super and Infrastructure Investment Vehicles in Australia.



Factors affecting infrastructure investment

PwC has identified a range of factors that are impacting global infrastructure investment:



Geo-political issues: Recent geopolitical issues, including Russia's invasion of Ukraine and ongoing tensions in the Northern Pacific, have caused difficulties such as global supply chain disruptions and continue to impact all projects, as relations with two of the world's major suppliers continue to be affected.¹



Technology: Affecting asset preference (renewable power, battery storage systems, waste to energy), contract management and delivery tools (3D printing, digital twin technology, BIM) and giving rise to cyber security and data privacy risks.



COVID-19: Influencing asset preference, operational (supply chain) resilience and technology adoption, and driving investment as a means of economic recovery.



Urbanisation and climate change: Driving the need for energy efficient and environmentally sustainable assets and achieving carbon emissions targets.



Funding: Investors are increasingly assessing investment risk and opportunities through the broader ESG lens, and will be drawn into the range of post COP26 initiatives aimed at mobilising finance to achieve climate change goals.

The Report also noted the increasing importance of ESG as a mainstream investment assessment tool, to identify and assess the material risks and growth opportunities of the asset in order to determine long-term value. ESG and principles of responsible investment and sustainable investment have been in play globally for well over a decade, but are now front and centre to investment decisions. Despite the fact that the elements of ESG can differ between sectors, Investors and asset classes, in terms of policy and commitment to members, ESG is deeply entrenched in most of the large global institutional infrastructure Investors including super funds and pension funds. In its 2021 Report on Sustainable Investing, the Canadian pension fund, CPP Investments, sets out the ESG expectations that it has of its portfolio companies and investment partners, which include a strategy to navigate climate change, an effective and independent board and a culture that identifies risks and opportunities with solutions to capture their potential.

Consistent with an ESG focus there is also increasing scrutiny as to how companies are managing the potential financial impacts of climate-related risks. In 2017, the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) published best practice standards for climate-related financial disclosures. In its '2021 Status Report', TCFD reported that 12 governments and numerous banks and regulators have formally expressed support for these standards. Key climate-related risks include financial impairment due to global climate-related policies, the physical and knock-on risks of assets becoming stranded due to climate change impacts, supply chain disruptions and reputational risk.

Asset preference in the wake of COVID-19 and other market disruptions is addressed in the 2021 Australian Infrastructure Investment Report prepared by Infrastructure Partners Australia (**Report**). The Report was commissioned to provide 'a comprehensive view of Investor appetite and sentiment', and identifies the top five infrastructure asset investment preferences in Australia as social infrastructure, telecommunications, renewable energy generation, energy from waste, and data centres. There has been a sharp increase in the popularity of telecoms and data centres, which is attributed to the accelerating growth in digitalisation of the economy, and the post COVID-19 desire for stable returns. The record level of interest in social infrastructure is attributable to pandemic-related factors and renewed government commitment to the healthcare sector. And there is a steady growth in renewable energy assets, especially emerging energy types of energy assets such as grid-scale battery storage and energy from waste facilities.

The Report noted that interest in transport infrastructure assets dipped compared to 2019, for reasons attributed to COVID-19 and consequential patronage and declining revenues. However, this is considered to be temporary, as illustrated by the AUD\$23.6 billion acquisition of Sydney Airport by super funds' backed IFM Investors.

¹ For further details, see PwC Australia's publication 'The War in Ukraine and its implications for Australian business', available online at www.pwc.com.au/about-us/insights/non-executive-directors/the-war-in-ukraine-and-its-implications-for-australian-business.html, PwC Australia's publication 'The coronavirus disrupts supply chains, ratcheting up the pressure on global businesses as the US-China trade tension cools', available online at www.pwc.com.au/trade/coronavirus-disrupts-supply-chains.html, and PwC US's publication 'Implications of the Russian government's invasion of Ukraine', available online at viewpoint.pwc.com/dt/us/en/pwc/in_depths/2022/2022/2201_accimpolrussinvasukr.html.

Current concerns

In addition to the macro factors affecting infrastructure investment decisions identified above, there is a range of micro and local factors as well. They include:

- **Global political and economic uncertainty:** The current global political and economic uncertainty is impacting infrastructure projects by making pricing, timing and the availability of equipment and materials volatile. Critically, these matters are beyond the actual control of most project participants.
- **Understanding the risk profile:** Traditionally the risk profile of an infrastructure asset is derived from the revenue streams. Schedule, quality and output issues during the delivery phase of the infrastructure project materially impact commencement, quantum and reliability of the revenue stream, and the successful long-term operation and maintenance of the asset. It is critical therefore to understand how to structure the time and quality regimes and where to allocate liability risk in order to protect returns. Increasingly, though it is the non-revenue ESG risks and opportunities which will inform the sustainability of the business, Investors now also need to consider the management of human capital, supply chain transparency and resilience, governance structures, and the importance of a culture of collaboration and compliance.
- **Low risk appetite:** Many institutional Investors owe their primary duties and obligations to their members, who are generally seeking steady positive returns from their fund. As such, funds will naturally prefer to limit their downside risks. This sits uncomfortably with equity investment in infrastructure, particularly in greenfields projects, where there may be a substantial delay in earning returns and the burden of infrastructure risks.
- **Lack of infrastructure expertise:** Not all Investors are well placed to assess an infrastructure asset as an investment opportunity. While large institutional Investors have developed the policy framework and technical expertise to assess and manage infrastructure investments, emerging and smaller infrastructure Investors may not have this, and in particular may not have the resources and experience required to assess the delivery phase risks and their relationship to the operational phases and investment outcomes.
- **Limited pipeline of opportunities:** Availability of stock and competition for infrastructure assets are still being identified as key barriers to investment in Australia. The 2021 Australian Infrastructure Investment Report also reported that the lack of small to medium sized projects is an issue. One way to address this is by a disaggregated approach to delivery of mega-projects, based on a sophisticated works package breakdown structure and using appropriate contract delivery models for each package. This approach assists with constructor capacity constraints as well.
- **Cost and complexity of bidding:** This remains a very significant challenge for Investors, particularly where government plays a part in the procurement of the infrastructure asset or contributes funding. Tendering requirements are becoming more extensive and complex as broader social, community and environmental platforms are built into tendering regimes, and an understanding by Investors of the legal issues that arise during the tendering phase has become more important. The UK government is currently reviewing procurement rules through Project Speed, and the Australian government through its 'Inquiry into procurement practices for government-funding infrastructure'.
- **Supply chain and workforce:** COVID-19 and the associated government health directives and border closures have placed significant pressure on global supply chains and on the labour market, which in turn risk disruption to the delivery of infrastructure projects and the long-term operation and maintenance of the underlying infrastructure asset. The need to hedge against these risks will, for some time to come, influence procurement planning, approach to market and contract delivery models, as well as the allocation of risk in respect of force majeure, supply chain disruption, spare parts management and human capital resourcing during both delivery and operational phases.

Delivery phase risk

Given the significant challenges in making infrastructure investment decisions, it is essential that Investors are equipped with the tools and expertise to appropriately identify and manage risks and opportunities throughout the delivery phase of planning and design, construction and commissioning – whether the investment is greenfield or brownfield. This understanding will also help inform selection of the most appropriate contract delivery model. The Best Practice Guide can be utilised to understand delivery phase risk and how different contract delivery models address risk in order to better assess whether the infrastructure investment target is suitable.

In addition, a tailored contractual approach is desirable to manage risk and ensure a project is 'bankable'. In assessing bankability, Investors will look at a range of factors and assess the suite of project contracts as a whole, with particular attention on the construction arrangements during the delivery phase. It is difficult to state whether one contracting approach is or is not bankable. Generally speaking however, Investors seeking to manage delivery phase risk will look for the following:

- a contract delivery model that fits with the scale and complexity of the project, risk appetite, time-frames, and capacity constraints
- a clear and workable governance structure
- clear enterprise objectives and commitment to them
- a fixed completion or milestone date(s)
- a fixed completion price
- no or limited technology risk
- access to IP and technical data
- output guarantees
- liquidated damages for both delay and poor performance
- security from the Contractor and/or its parent company
- appropriate levels and types of insurances
- appropriate carve-outs to liability caps
- appropriate carve-outs to any exclusion of consequential loss
- restrictions on the ability of the Contractor to claim extensions of time and additional costs
- stepped approach to dispute resolution.

Operational phase risk

Principals and Investors must also understand the range of operational risks and opportunities post completion. If the asset fails to generate revenue, then the Investor's return is at risk. For example, patronage risk has been an issue for potential Investors in the past with the underperformance of some toll roads in Australia (such as Sydney's Lane Cove Tunnel and Brisbane's RiverCity Motorway), and may be an even greater short-term risk given the adverse impact of COVID-19 on transport infrastructure revenue. Best practice by Investors will therefore require a carefully designed contract package to ensure that appropriate safeguards for revenue are in place – the Best Practice Guide provides guidance on operation and offtaker contract protections to assist in this.

Supply chain and workforce risks are also operational risks for Investors especially for long-term investments in infrastructure assets. These risks have been heightened by both COVID-19 and the increased focus on the environmental and social elements of an ESG decision-making framework. It will mean a greater need for supply chain transparency and for local optionality which avoids the climate change cost of long haul transport. Infrastructure Principals and operators will rely more heavily on stock and inventory, and on clear access to IP and technical data for maintenance activities and mid-life upgrades. In terms of human capital, Principals and Investors will be looking for processes and systems in place to ensure regulatory compliance, strong governance, and technology options that improve safety and reduce cost and risk. These issues should all be considered in developing the procurement strategy, the contract delivery options and the operations and maintenance contracts underpinning the operations phase.



The future?

The future of investing in infrastructure and energy transition projects is a response to our immediate past. It will need to be dynamic and agile in order to rebound and leverage the effects of COVID-19, the demand for low carbon climate resilient infrastructure assets, and accountability against an ESG framework.

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PwC



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Key project and
procurement concepts

01 A strategic approach to construction contract preparation

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The nature of construction contracts

Purpose

The purpose of this paper is to explain the characteristics of construction contracts that are essential to understanding how and why they should be drafted by reference to the guidelines contained in other papers in this series.

Why are construction contracts different?

Construction contracts have a number of unique characteristics that bear on their drafting, interpretation and use.

Those characteristics include the following:

- **Long term:** Construction contracts are not instantaneous transactions. They deal with relationships that last for years, from the conception of a project through to its operation and maintenance.
- **Dynamic:** Construction contracts deal with dynamic events and ever changing circumstances. They must be prepared so as to assist the parties through those conditions and govern, with certainty, a range of events that are foreseeable and some which are not.
- **Numerous stakeholders:** The construction process involves many stakeholders: clients, contractors, subcontractors, suppliers, governments, financiers, offtakers and purchasers and community groups.
- **Value:** Projects range from tens of thousands of dollars to billions of dollars and are often of great social and economic importance.
- **Complexity and uncertainty:** Projects are complex. They involve many people, numerous disciplines and complex technologies. They are also uncertain. Often, the contract sum and Programme can be based on a wide range of assumptions and guesses. The construction contract must deal with the consequences of those assumptions being incorrect.
- **International:** Contractors and suppliers are often international and are influenced by the practices of their home countries.
- **Disputes:** When these issues are combined, disputes are understandably frequent in construction contracts.
- **People:** Most importantly, construction contracts must regulate complex interactions over a prolonged period by people. That's the tricky bit.

What must construction contracts do?

All construction contracts must deal with the issues set out above and other complex factors in a manner that is legally certain, able to be used effectively by the parties and is commercially sustainable.

The contracts will establish a set of rules that can be used by the parties to manage their relationship as the project unfolds and that guides them when disagreements arise.

In doing so, construction contracts will regulate matters such as:

- the scope of works and services to be carried out and their variation
- the purposes that must be fulfilled
- time and its extension
- payment and financial adjustment
- unforeseen intervening events
- compliance with laws
- the consequence of breach
- the management of disagreements.

All of these complicated matters must be taken into account by the parties when approaching their relationship.



Strategic contracting on an end to end basis

Purpose

The construction process is complex and lengthy. Construction contracts are entered into as a means of assisting the parties to achieve the goals they have when embarking on a project. The preparation of construction contracts and the organisation of the project must be based on a strategic analysis of the requirements for project success and the challenges that might be encountered.

What is project success?

Project success can be defined as the delivery of the project in circumstances where:

- the projections as to the time and cost of project delivery that are the basis of the investment decision have been achieved
- quality and reliability are to specification
- social, safety and environmental standards have been met
- there are no material unresolved claims that require dispute resolution.

In a positive sense, the contracting strategy should have a material effect on the achievement of those outcomes.

In a negative sense, the contracting strategy should not be an impediment to them.

If the elements of project success are not all met, the project might not be a complete failure, but it will have resulted in waste because the investment of time, money and effort has not resulted in the required positive outcomes to the fullest possible extent.

Sources of project failure

Projects can fail for many reasons. However, experience indicates that a combination of the following factors are usually material contributors:

- inadequate scope definition
- unrealistic Principal expectations
- failure to identify and develop strategies for key project risks
- changes in personnel
- poor communication
- lack of problem solving skills and processes
- absence of predictive planning tools
- poor contractor or consultant selection.



Methodology

Taking into account the requirements for project success and the sources of project failure, the following template can be used as a tool in developing an effective project delivery strategy.

Planning phase	Contracting phase	Delivery phase	Resolution phase
<p>Commercial and other project goals</p> <p>Have the commercial and other project goals and their priority been clearly explained?</p>	<p>Tender strategy</p> <p>Have there been pre-tender market soundings?</p> <p>Is pre-qualification appropriate?</p> <p>What is the critical information required in order to make an informed choice?</p> <p>What is the best approach to maintain competitive tension?</p> <p>Have clear offers been obtained?</p> <p>To what extent is pushback on contractual terms critical?</p> <p>Have any contractual terms attracted premiums in relation to risks that could be better managed by amended terms?</p> <p>What is the level of confidence in the contractor's ability to perform in accordance with the contract?</p>	<p>Processes</p> <p>Are the processes in the contract feasible and useful?</p> <p>Have effective processes been established in relation to:</p> <ul style="list-style-type: none"> • time • cost • variations • defects • completion • claims? <p>Governance</p> <p>Does the contract provide for effective project governance, including between contracts (where there are interfaces) and at a strategic level?</p> <p>Information</p> <p>Does the contract provide for the provision of all information required to monitor performance and other factors relevant to project delivery?</p> <p>Personnel</p> <p>Are all personnel performing in a competent and constructive manner?</p> <p>What can be done where that is not the case?</p>	<p>Strategic issues</p> <p>What is the capacity of the Principal to participate in a significant dispute?</p> <p>What would be the effect of a significant dispute on the project?</p> <p>What are the most likely sources of dispute, particularly in relation to:</p> <ul style="list-style-type: none"> • the Programme • technology • cost • interface • variations • defects • under-performance? <p>Does the Principal have adequate self help remedies, such as security and set off in the event of a dispute, especially taking into account SOPA?</p> <p>Processes</p> <p>Are the dispute resolution processes suitable for the different types of disputes that might be encountered?</p> <p>Do the claims and dispute resolution processes encourage the exploration and resolution of the issues or do they shunt the parties into proceedings?</p>

Methodology

Taking into account the requirements for project success and the sources of project failure, the following template can be used as a tool in developing an effective project delivery strategy.



Planning phase	Contracting phase	Delivery phase	Resolution phase
<p>Performance and other technical requirements</p> <p>What project technical outcomes must be achieved in order to achieve the project goals?</p> <p>Are they realistic or stretch targets?</p> <p>Is new technology involved?</p> <p>To what extent have the engineering specifications required to achieve the technical outcomes been finalised?</p> <p>What is the extent of scope uncertainty?</p> <p>What is the pathway to scope certainty?</p>	<p>Contracting strategy</p> <p>Do the contracts manifest the requirements for project success in a reasonable, feasible manner?</p> <p>If the scope is not certain, does the contract recognise the pathway to scope certainty?</p> <p>If not, how and by when will the scope be made certain?</p> <p>Is any residual scope to be performed by the Principal clear and able to be satisfied by the Principal by the required times?</p> <p>Have the consultancy agreements been prepared on the basis that they are to be novated?</p> <p>Are the scopes and terms of the consultancy agreements suitable for novation?</p> <p>Do the contracts deal with the requirements of financiers and other stakeholders?</p>		



Methodology

Taking into account the requirements for project success and the sources of project failure, the following template can be used as a tool in developing an effective project delivery strategy.



Planning phase	Contracting phase	Delivery phase	Resolution phase
<p>Budget constraints</p> <p>Is the project budget known and what are its tolerances?</p> <p>Is it realistic?</p> <p>If not, where is it vulnerable?</p>	<p>Risks and responsibilities</p> <p>Is the risk allocation clear and sustainable?</p> <p>If neither party can control the risk but it is allocated to one party, how is that risk to be managed?</p> <p>Where risks are to be shared, are the price and time mechanisms adequate?</p> <p>Do the contracts and the associated specifications set out all of the responsibilities required for project delivery?</p>		
<p>Programme constraints</p> <p>Are the overall Programme requirements known?</p> <p>Are they realistic?</p> <p>If not, where is it vulnerable?</p>	<p>Interfaces</p> <p>Does the project entail inter-contract interfaces?</p> <p>If so, how are those interfaces managed?</p> <p>Is the risk allocation in relation to them feasible?</p>		
<p>Resources</p> <p>What resources will be required?</p> <p>To what extent can they be provided by the Principal?</p> <p>Are the other resources available?</p>			



Methodology

Taking into account the requirements for project success and the sources of project failure, the following template can be used as a tool in developing an effective project delivery strategy.



Planning phase	Contracting phase	Delivery phase	Resolution phase
<p>Known risks</p> <p>What are the key known project risks?</p> <p>Have any risk mitigation strategies been developed?</p> <p>Are lessons learned from comparable projects available?</p>			
<p>Potential for unknown risks</p> <p>Is the project such that there is an unusual susceptibility to unknown risks, such as ground conditions, technology failures or political interference?</p>			
<p>Financier requirements</p> <p>Have financier requirements been taken into account?</p>			
<p>Other stakeholder requirements</p> <p>Who are the other key stakeholders, such as governments and community group and have their interests been taken into account?</p>			





Key project and
procurement concepts

02 Key issues for performance testing regimes

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Introduction

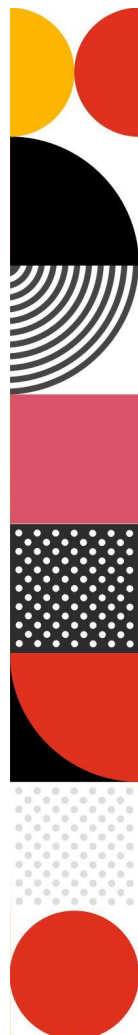
A clear and workable performance testing regime that is consistent across all project agreements is a key element in assessing whether the project has and will continue to meet the specified outcomes. Such testing provides assurance to all stakeholders: the Principal, the Contractor, financiers, offtakers and government authorities.

The drafting of a performance testing regime is a complex task and is usually the subject of detailed negotiations between the Principal, the Contractor and the Lenders. This paper provides an overview of the key features of a performance testing regime.

Types of tests

Performance tests may cover a range of areas. Four of the most common tests are:

- **Factory tests:** These are conducted in the supplier's factory to demonstrate that the equipment or combinations of equipment operate to specification in factory conditions.
- **Functional tests:** These test the functionality of specific parts of the plant. For example, pumps, conveyors, pressure vessels, etc. They are usually discrete tests which do not test the plant as a whole. No liquidated damages are normally attached to these tests. Instead, they are absolute obligations that must be complied with. If they are not complied with, the plant will not reach the next stage of completion (for example, mechanical completion or provisional acceptance).
- **Emissions tests:** These test compliance against environmental requirements. Again, these are normally absolute obligations because the consequences of failure can be as severe as being forced to shut down the plant. These tests should ensure that the most stringent obligations imposed on the Project Company, whether by government regulations or by lenders, are met. Emissions tests occur at various times, including during and after guarantee tests.
- **Guarantee tests:** These test the ability of the plant to meet the performance criteria specified in the contract. There are often minimum and maximum levels of performance specified and providing that the minimum levels are met, the consequence of failure normally results in the payment of performance liquidated damages (**PLDs**). Satisfaction of the minimum performance guarantees is normally an absolute obligation. In some projects, the guarantee tests occur after handover of the plant to the Project Company. This means the Contractor no longer has any liability for delay liquidated damages during performance testing. In our view, it is preferable, especially in project financed projects, for the handover to occur after completion of performance testing. This means the Contractor continues to be liable for delay liquidated damages until either the plant operates at the guaranteed level, or the Contractor pays PLDs where the plant does not operate at the guaranteed level.

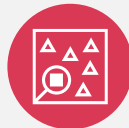


Performance liquidated damages

As stated above, PLDs are payable if the guaranteed levels are not met. The guaranteed levels relate to those aspects of the operation of the plant which will have an economic impact on the project. They will differ depending on the project, however, the most common are linked to:



Output: the rate of production of the plant.



Availability: the reliability of the plant.



Efficiency: the efficiency of the plant in producing the required level of output.

The guaranteed levels and the associated PLDs will be a key issue for the lenders. PLDs should be calculated as the present value of the revenue forgone over the design life of the project as a result of the failure of the plant to operate at the guaranteed levels.

Technical issues

Ideally, the technical testing procedures should be set out in the contract. However, it is often left to be agreed by the Contractor, the Project Company's representative or engineer and, if relevant, the Lenders' engineer, during construction. If the testing procedures are left to be agreed during construction (which we do not recommend), the contract must, at a minimum, set out general guidelines.

Regardless of when it is agreed, the testing procedures must, at a minimum, set out details of:

- **Testing methodology:** reference is often made to standard methodologies, for example, the American Society of Mechanical Engineers methodology
- **Testing equipment:** who is to provide it, where it is to be located, how sensitive must it be
- **Tolerances:** what is the margin of error
- **Ambient conditions:** what atmospheric conditions are assumed to be the base case (testing results will need to be adjusted to take into account any variance from these ambient conditions).

In addition, for multi-unit plants the testing procedures must state those tests to be carried out on a per unit basis and those on an entire plant basis.

Provision of consumables and fuel

The responsibility for the provision of consumables and fuel, required to carry out the performance tests, must be clearly set out in the contract. In general, the Project Company will be responsible for the provision of those consumables.

As the proper interpretation of the Project Company's obligation to supply consumables is often a matter of dispute between the Project Company and Contractor, it is important for the contract to precisely identify the quality and quantity of consumables to be provided as well as the time for provision of those consumables (which should be linked to the progress of the works rather than a specific date). The responsibility for the cost of providing consumables and fuel must also be clearly identified.

Provision of necessary associated infrastructure

The responsibility for the provision and availability of the associated infrastructure required for the performance of the performance tests must be clearly set out in the contract. In general, the Project Company will be responsible for the provision and availability of associated infrastructure. For example, the provision of transmission facilities and responsibility for grid access is a key obligation of the Project Company in the context of the testing and commissioning of a power station.

It is important for the contract to precisely identify the extent of the Project Company's obligations and the timing for commencement and completion of those obligations.

Performance of tests

The contract must clearly specify the arrangements for reperformance of tests where the performance guarantees have not been achieved. It is common practice to have an extended testing period which gives the Contractor additional time to achieve the performance guarantees after the minimum performance guarantees have been met. An extended testing period is preferable to termination or immediately requiring the payment of PLDs because the Contractor is often best placed to be able to rectify any problems with the plant to increase performance. The Contractor is also likely to be liable for delay liquidated damages during this extended testing period (subject to our comments above). The Project Company should not suffer financially by giving the Contractor an opportunity to retest.

Consequences of failing to achieve performance guarantees

There are a number of options which may be included in the contract if the plant fails to achieve the performance guarantees. These are:

- payment of PLDs by the Contractor (consider whether this should be at the direction of the Project Company or at the election of the Contractor, or both)
- termination of the contract
- rejection of the plant.

The contract must clearly specify the time when each of these remedies may be exercised. For example, the contract could specify that the Project Company's right to direct the Contractor to stop reperformance of tests and to pay PLDs may not be exercised by the Project Company until after the expiry of the extended testing regime.

Consistency across the project agreements

It is important to ensure back-to-back performance testing arrangements under each of the project agreements, in particular, the EPC Contract and the offtake agreement. This will result in smoother progress of the testing and commissioning of the plant, and will facilitate necessary supervision and certification under various project agreements.

The specific nature of a performance testing regime will depend on the type of plant and will differ from project to project as it is a matter for negotiation between the parties. However, we recommend that for a performance testing regime to be effective it must, at a minimum, appropriately deal with the key issues outlined in this paper.





Key project and
procurement concepts

03 How to draft time related clauses

Investing in Energy Transition Projects
March 2023



Introduction

Extension of time (**EOT**) clauses are an essential element of infrastructure contracts.

Legally an EOT regime is required to preserve the ability of the Principal to claim liquidated damages. In some contracts, the entitlement to an EOT for delays caused by the Principal's acts of prevention is not specified. If the Contractor is delayed by such an act of prevention, both the date for completion and the obligation to pay liquidated damages for delays to that date will be set aside and replaced with an obligation to complete within a reasonable time. Such an obligation and the calculation of damages resulting from its breach (as opposed to pre-agreed liquidated damages) are too uncertain to be the basis of a sound commercial agreement and would undermine the expectations of the parties to the contract and other stakeholders, such as lenders.

Accordingly, it is essential to draft EOT and related clauses with great care.

In broad terms, the EOT regime will have five elements:

- the claims process
- the assessment process
- the dispute process
- a number of rules that govern how the process operates
- the availability of costs arising out of the delays.

A well drafted EOT clause requires consideration of the following matters:

- the required notices
- the grounds for an EOT claim
- the administrative and timing requirements for the claim
- the measurement of the extension
- the role of the assessor
- the exercise of the unilateral right to extend
- concurrent delay
- the role of the Programme
- the consequences of the Principal's failure to comply with the process
- the connection with delay costs and liquidated damages.

Notices

The EOT process usually requires three types of notice:

- a notice of delay (**NOD**), which notifies likely delays to completion irrespective of whether they are caused by an EOT ground
- the EOT claim
- a delay costs notice.

As discussed below, both steps will usually have mandatory administrative and timing requirements.

The NOD is intended to alert the Principal as to the possibility of a delay so that it can prepare for the claim and possibly investigate mitigation measures.

The EOT claim must contain such detail as is required to permit the Principal and the assessor to determine whether the claim is justified and, if so, the period of the extension.

The delay costs notification must set out the likely costs that will result from the delay, if any.



Grounds for an EOT

The EOT grounds must include Principal Acts of Prevention.

'Act of Prevention' is usually defined as 'an act of the Principal or its Associates or the omission of the Principal or its Associates to act in a manner that is required of them under the contract.'

An alternative formulation is 'any act or omission of the Principal or its Associates'.

The difficulty with the second formulation is that it gives rise to the inference that an omission can be an Act of Prevention even where there is no contractual obligation to act in the first place, thereby, arguably, giving rise to an implied obligation to assist the Contractor beyond the Principal's express obligations.

An Act of Prevention can be an action that is permitted by the contract. For example, the issuing of a variation is permitted by the contract, however, it is an Act of Prevention.

Other EOT grounds are a matter of negotiation. Grounds might include extreme weather, widespread industrial disruption, latent conditions, authority delays and claims by third parties. It is also permissible to allocate the risk of delay by agreeing that the Principal will accept the delay risk of either specific EOT grounds or all grounds up to an agreed limit and that the Contractor accepts the risk thereafter.

The contract should distinguish between delays that occur after the date for completion and before the date for completion. Once the date for completion has passed, the EOT grounds should be limited to Acts of Prevention.

The parties must decide whether there is to be an opportunity for such a dispute and, if so, how the dispute is to be conducted.

Time related disputes are very expensive and can be quite artificial in that they rely on re-creating events, often some years after they have occurred and are largely based on expert programming evidence.

Accordingly, the parties might opt to make some assessments, up to an agreed level, final and binding and to refer other disputes to a summary expert process.



Administrative and timing requirements

The contract should stipulate the requirements for the EOT claim.

The administrative requirements will typically include:

- the requirement that the notices and claims be in writing and addressed to the Principal (usually through the Principal's Representative) and the assessor
- the information to be included, such as a description of the delay event, the effect of the delay, the duration of the delay, the mitigation being undertaken and a markup of the Programme.

Compliance with the administrative requirements and the timing requirements are usually expressed as conditions precedent to the entitlement to an extension of time. If that is done and the requirements are not met, then the Contractor will lose its ability to claim the EOT.

It is important for all parties that the administrative requirements are sensible. The purpose of the administrative requirements is to allow EOT claims to be assessed in a fair and timely manner and for delays to be addressed. They should not be used to trap Contractors or to create an administrative burden that will inevitably affect the performance of all of the parties.

All of the steps in the EOT process should be subject to sensible timing requirements.

The purpose of the timing requirements is not to set up unreasonable barriers to claims, but to ensure that EOT claims can be dealt with efficiently and in a timely manner so that all parties know the status of the Programme.

Where the administrative requirements are important, which will usually be the case, they should be expressed as conditions precedent to the Contractor's entitlement to an EOT. If that approach is not taken, the failure to comply with the requirements will only be a breach of contract, leaving the Contractor entitled to the extension and the Principal with an ineffective right to claim damages arising out of the failure to comply.

A sample clause is as follows:

Notice of Delay Event

The Contractor must immediately give notice to the Principal of all incidents, circumstances or events of any nature affecting or likely to affect the progress of the Contractor's Activities which might reasonably be expected to result in a delay to the achievement of any Milestone by its Milestone Date and/or achieving Practical Completion by the Date for Practical Completion (**Delay Event**).

Further notice

Within ten Business Days after a notice is submitted in accordance with clause [#], the Contractor must submit to the Principal a further notice referring to this clause [#] which must include:

- a) the material circumstances of the Delay Event including the cause(s)
- b) the nature and extent of any delay caused by the Delay Event
- c) the corrective action already undertaken or to be undertaken
- d) the effect on the critical path noted in the Programme
- e) whether, in its opinion, the Delay Event qualifies as an Extension Event, and if it does, the period (if any) by which in its opinion the Milestone Date and/or Date for Practical Completion should be extended.



Measurement

The extension of time granted should be the duration of the delay to completion, taking into account reasonable mitigation, the Contractor's contribution to the delay, if any, opportunities for mitigation and concurrency.

The initial step is for the parties to agree who 'owns the float' in the Programme.

Float is the period of time that can be lost before completion is actually delayed beyond the contractual date for completion.

If the Principal owns the float, the Contractor will only be granted an extension of time to the extent that completion is delayed beyond the date for completion. In other words, if the delay does not cause the likely date of completion to be later than the contractual date for completion, there is no extension of time. The rationale for that approach is that the purpose of the EOT clause is to alleviate the Contractor's obligation to pay liquidated damages and that is not triggered until the date for completion has been reached.

If the Contractor owns the float, the Contractor is entitled to an EOT to the extent that the delay has postponed completion, irrespective of whether the delay has pushed the likely date of completion to beyond the date for completion. The rationale for that approach is that the Contractor is entitled to the buffer in the Programme in order to fully protect itself from liquidated damages.

The ownership of the float will be a matter of commercial negotiation in the context of the project details.

The contract will usually oblige the Contractor to take reasonable steps to mitigate the effects of the delay event and to reduce the EOT entitlement to the extent that it fails to do so and will reduce the EOT to the extent that the Contractor has caused the delay.

A sample clause dealing with measurement and the administrative requirements is set out below.

Conditions precedent

If the Contractor fails to submit any of the notices required under clauses [#] to [#] within the time required, or fails to comply with any other notice requirement under this Contract in relation to a Delay Event (including, in the case of a Force Majeure Event, the notice under clause [#]), then:

- a) *the Contractor has no entitlement to an extension of time*
- b) *the Contractor must comply with the requirements of this Contract to meet the Milestones by the Milestone Dates and achieve Practical Completion by the Date for Practical Completion.*

Notwithstanding clause [#], it is a further condition precedent to the Contractor's entitlement to an extension of time that:

- a) *the Contractor is or actually will be prevented from meeting the Milestone by its Milestone Date and/or achieving Practical Completion by the Date for Practical Completion by an Extension Event*
- b) *the relevant delay is demonstrable on an assessment of the actual and then current critical path to meeting the Milestone by its Milestone Date and/or achieving Practical Completion by the Date for Practical Completion.*

The Contractor will not be entitled to an extension of time under this clause [#]:

- a) *if the Contractor can meet the Milestone by its Milestone Date and/or achieve Practical Completion by the Date for Practical Completion without the extension of time*
- b) *to the extent that the Contractor has or will overcome a relevant delay by accelerating the Contractor's Activities in accordance with clause [#]*
- c) *to the extent that the delay was caused or contributed to by an act or omission of the Contractor or its Personnel.*

The assessor

Generally, EOTs are determined by either a representative of the Principal or a third party jointly appointed by both the Contractor and the Principal.

The assessor will be provided with guidelines for the assessment either in the contract or, where an independent third party is appointed, in the agreement making that appointment.

At a basic level, the assessor must act independently and reasonably.

Where the assessor is a representative of the Principal, the Principal will be obliged to ensure that the assessor acts independently.

Where the assessor is a third party, the appointment agreement will oblige the assessor to warrant to both parties that it will act honestly and reasonably.

In both cases it is important that the dispute process makes it clear that the assessor's determination can be reopened and considered afresh.

The assessment process will usually entail:

- delivery of the NOD to the Principal and the assessor
- delivery of the EOT claim to the Principal and the assessor
- an opportunity for the assessor to seek further information and the provision of that information
- the assessment, which is delivered to the Contractor and the Principal.

The unilateral right to extend

It is important for the contract to contain a unilateral right for the Principal to extend time even where there has been no claim made by the Contractor or no determination issued by the assessor.

The purpose of such a clause is to ensure that the Principal can preserve the contractual date for completion and the liquidated damages regime if there has been a failure to comply with the EOT process.

The right must be vested in the Principal, not its representative, to avoid the obligation to act reasonably; and must be cast as an absolute discretion.

A sample clause is as follows:

Discretion to extend

- Without limiting clause [#], notwithstanding that the Contractor is not entitled to or has not claimed an extension of time to a Milestone Date and/or the Date for Practical Completion, the Principal may at any time grant an extension to a Milestone Date and/or the Date for Practical Completion.*
- Without limiting clause [#], the Principal has no obligation to grant, or to consider whether it should grant, an extension of time under clause [#] and is not required to exercise this discretion for the benefit of the Contractor.*

Concurrent delay

Concurrent delay clauses exclude the entitlement to an EOT to the extent that the delay caused by an EOT ground occurs at the same time as a delay that is not caused by an EOT ground. For example, if an Act of Prevention causes a delay between 1 January and 31 January and the Contractor has itself caused delays that have impacted from 1 January until 15 January, the EOT entitlement will be reduced to 16 days.

Concurrency can be difficult to assess, however it is a standard provision in Australian contracts.

A sample clause is as follows:

Concurrent delays

If there are two or more concurrent causes of delay and at least one of those delays would not entitle the Contractor to an extension of time under this clause [#] then, to the extent of that concurrency, the Contractor is not entitled to an extension of time.



The Programme

The Programme sets out the sequence in which the Contractor will perform its activities, the duration of each activity, and the inter-relationship between the activities. Programmes are developed using computer programs and are based on assumptions about the way the project will be designed and constructed. Those assumptions and the other rules that result in the Programme are called the program logic.

Complex contracts will set out extensive requirements for the Programme, including the ability to read the Programme in native form, that is, with all logic disclosed.

It is important to note that the Programme is usually created by the Contractor: it sets out the Contractor's best assessment about how it will perform its activities in order to reach completion by the date for completion; and it can change, either because of intervening events or to correct errors in logic.

The Contractor should be free to amend the Programme provided that it does not have a detrimental effect on the Principal or third parties who must provide inputs to the project, such as authorities.

The Contractor should be required to update the Program regularly to reflect actual as compared to planned progress; and should be required to amend the Programme if the logic changes.

The Programme can be used as a guide to the assessment of an EOT but it should only be one tool used in that process.

Protection of the Principal if the process is not followed

Sometimes the Principal or its representative fails to comply with the process.

In such instances the Principal should be protected from the complete failure of the EOT regime.

A sample clause is as follows:

Time not set at large

Neither:

- a) *the failure of the Principal to grant an extension of time to the Date for Practical Completion in accordance with this clause [#] or at all*
- b) *the existence of any Dispute between the Contractor and the Principal as to the Contractor's entitlement to, or the extent of, any extension of time to a Milestone Date and/or the Date for Practical Completion*

will cause the Milestone Dates or the Date for Practical Completion to be set at large or prevent the Principal from subsequently exercising its discretion under clause [#].

Any principle of Law which might render a Milestone Date or the Date for Practical Completion immeasurable and liquidated damages unenforceable (including any entitlement to relief and the prevention principle) does not apply under or in connection with this Contract.

Delay costs and liquidated damages

Some EOT events will also be compensation events in that they will give rise to an entitlement for the Contractor to claim delay costs.

The contract should stipulate how delay costs are to be calculated. In simple contracts the method might be as simple as reasonable cost.

The failure to achieve completion by the contractual date for completion will entitle the Principal to delay liquidated damages.

The contract should stipulate:

- the rate at which liquidated damages accrue
- the liquidated damages cap
- the consequence of reaching the cap termination or extension of the cap
- how the liquidated damages are paid
- the entitlement to call on the security if they are not paid.

A sample clause is as follows:

Compensation Events

- Subject to the other terms of this clause [##], if the Contractor has been granted an extension of time under clause [##] in relation to an Extension Event that is also a Compensation Event, the Contractor is entitled to all extra costs it necessarily incurs (which do not include non-Project specific overheads, profit or loss of profit) as a direct consequence of that delay (Delay Costs).*
- The Contractor must, at the same time as submitting a notice in accordance with clause [##] or a final notice in accordance with [##] (as the case may be), give notice to the Principal of its claim for all extra costs that, in its opinion, should qualify for reimbursement as Delay Costs in accordance with clause [##], including all available particulars and supporting documentation and a statement that it is a notice under this clause [##].*
- Upon receipt of a notice in accordance with clause [##], the Principal must assess and decide as soon as reasonably practicable the Delay Costs that qualify for reimbursement in accordance with clause [##].*
- It is a condition precedent to the Contractor's entitlement to Delay Costs under clause [##] that the Contractor provide the notices referred to in clause [##].*
- Delay Costs incurred in connection with extensions of time in accordance with:*
 - paragraph (a) of the definition of Compensation Event must be assessed under clause [##] only*
 - paragraph (b) of the definition of Compensation Event must be valued as a Variation under clause [##]*
 - paragraph (c) of the definition of Compensation Event must be valued as a Variation under clause [##]*
 - paragraph (d) of the definition of Compensation Event must be assessed under clause [##].*
- In all other circumstances that are not each a Compensation Event, an extension of time (if any) is the limit of the Contractor's entitlement for the delay and the Contractor is not entitled to claim any additional cost or expense or any adjustment to the Contract Price or to make any claim under this Contract, any applicable Law or otherwise.*
- The sums payable for Delay Costs represent the Contractor's sole entitlement to compensation for delay or disruption, including delay or disruption caused by the Principal, whether in breach of contract or otherwise and are in substitution for and exclude the Contractor's rights and remedies under this Contract, at Law or otherwise (including the right to recover damages for breach of contract or otherwise).*

Delay Liquidated Damages

- The Contractor warrants that it will meet the Milestones by the Milestone Dates and achieve Practical Completion by the Date for Practical Completion.*
- If the Contractor fails to meet the Milestones specified in Schedule [##] by the Milestone Dates and/or achieve Practical Completion by the Date for Practical Completion, the Contractor must pay to the Principal the Delay Liquidated Damages specified in Schedule [##].*

Payment

- a) *Delay Liquidated Damages must be invoiced by the Principal in respect of each day of delay after the relevant Milestone Date and/or Date for Practical Completion on a weekly basis.*
- b) *The Contractor must pay the Delay Liquidated Damages invoiced by the Principal in accordance with clause [#] within ten Business Days after the date of the relevant invoice, unless the Principal has agreed to deduct or set off such amounts against payments due and payable to the Contractor.*
- c) *If, after the expiration of the period for payment by the Contractor specified in clause [#], an amount of Delay Liquidated Damages invoiced by the Principal has not been paid by the Contractor, the outstanding amount:*
 - i. *will be a debt due and payable by the Contractor to the Principal on demand*
 - ii. *may be deducted from any payments otherwise due from the Principal to the Contractor*
 - iii. *may be recovered by the Principal having recourse to the Security.*

Genuine pre-estimate of loss and damage

The parties agree that the Delay Liquidated Damages are a genuine pre-estimate of the loss and damages likely to be sustained by the Principal as a result of the Contractor's failure to meet the Milestones specified in Schedule [#] by the Milestone Dates and/or achieve Practical Completion by the Date for Practical Completion.

Payment is not a release

The payment of Delay Liquidated Damages does not relieve the Contractor from any of its obligations to meet any Milestone and/or achieve Practical Completion or from any of its other warranties, obligations and liabilities under or in connection with this Contract.

Delay Liquidated Damages Cap

The aggregate liability of the Contractor for Delay Liquidated Damages under clause [#] will not exceed the Delay Liquidated Damages Cap.

If the Principal is disentitled from claiming Delay Liquidated Damages

- a) *If this clause [#] (or any part thereof) is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Principal from claiming Delay Liquidated Damages, the Principal is entitled to claim against the Contractor for damages at Law for the Contractor's failure to meet the Milestones specified in Schedule [#] by the Milestone Dates and/or achieve Practical Completion by the Date for Practical Completion.*
- b) *If clause [#] applies, the damages claimed by the Principal must not, in aggregate, exceed the Delay Liquidated Damages Cap.*

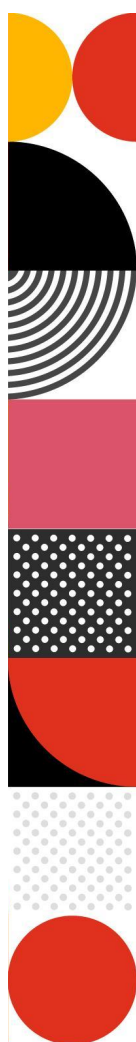
Exclusion of consequential loss does not apply

The Contractor is not entitled to the benefit of the exclusion in clause [#] in any claim for Delay Liquidated Damages or damages at Law by the Principal against the Contractor under clauses [#] or [#] for failure to meet the Milestones specified in Schedule [#] by the Milestone Dates and/or achieve Practical Completion by the Date for Practical Completion.

Expiry of Delay Liquidated Damages

If the Contractor fails to achieve Practical Completion by the date on which the Principal has become entitled to the maximum amount of Delay Liquidated Damages specified in clause [#], the Principal may:

- a) *have the Works or any part of the Works completed by itself or by others and the Contractor must pay the Principal's costs in doing so*
- b) *require the Contractor to grant the Principal such reduction in the Contract Price as may be agreed between the parties, or in the absence of agreement, determined to be a reasonable reduction, with reference to the ongoing delay, any incomplete Works and the effect on the Project in accordance with clause [#], and the Contractor must promptly pay to the Principal such reduction unless the parties agree otherwise*
- c) *require the Contractor to complete the Works and achieve Practical Completion*
- d) *terminate this Contract in accordance with clause [#].*





Key project and
procurement concepts

04 Key issues for tendering and pre-contract arrangements

Investing in Energy Transition Projects
March 2023



The tender process and other pre-contract steps

Tendering is an essential element of the contractual process and can take many forms, but its key purposes are to:

- convey to the market the Principal's requirements and preferred legal and commercial terms
- test the market's response to those preferences
- elicit an offer capable of acceptance from the tenderers
- position the Principal to maximise competition between tenderers to obtain the best offer in terms of scope, price, time and legal terms
- result in the formation of a contract.

In the construction industry the tender process is the last time that the Principal is truly on level terms with the Contractor. Once the contract is executed the bargaining power shifts to the Contractor in a practical sense. Therefore, the tender phase must be carefully considered by the Principal and be part of a well considered strategy to obtain the best deal from the market and enter into a contract that is balanced, sustainable and clear.

The steps to the formation of the contract will usually consist of:

- pre-tender market soundings
- the invitation to tender (ITT)
- the tender
- post-tender negotiations
- a letter of intent or memorandum of understanding
- contract formation.

Pre-tender market soundings

For major projects the tender process is time consuming and expensive for all concerned.

The Principal can save time and money for all stakeholders and refine its tender strategy by engaging with the market participants and obtaining their feedback to inform its decisions about key issues such as the best delivery method, current market trends, joint venture possibilities and technology choices.

The market soundings should be conducted after the Principal has enough information to clearly define the project and its expectations, while leaving enough time in the procurement schedule to allow it to incorporate the findings in the tender strategy.

The invitation to tender

The ITT is typically comprised of:

- the terms of tender
- the tender administration details
- the information the tender should contain
- the scope of the works and services that are the subject of the contract
- the Principal's preferred form of contract.

Terms of tender

Process contract

The terms of tender set out the legal basis of the tender process.

The threshold decision is whether the Principal prefers that a contract is formed in relation to the tender process itself, that is, that it and the tenders agree to follow and not depart from the process outlined in the tender documents in a legally binding manner.

In complex projects it can be desirable for a process contract to be formed so that the parties have clarity as to the status of the terms of tender and their consequent rights and obligations. For example, if the Principal wants to ensure that it can share tendered information or amend the process initially set out, those rights should be expressly stated and made clear and binding. It must be noted however, that if the Principal does conduct a legally binding process, it will not be permitted to depart from those rules without the express right to do so or the agreement of the tenderers.

This is a critical issue and must be dealt with expressly.

If the Principal does not want any process contract to be formed, so that the tender process is directory only, it must expressly stipulate that position.

If the Principal wants a process contract to be formed then it should expressly state which terms form that contract. A deed poll that is executed by the tenderer as a pre-condition to receiving the tender materials is a suitable method of entering into such an agreement.

Terms

Typical terms include:

- the Principal is not obliged to accept the lowest or any offer
- whether non-conforming offers may be lodged and whether a conforming tender must be lodged
- whether the Principal is obliged to consider non-conforming tenders
- the extent to which information in the ITT and the tender is confidential and how any such information may be utilised by the Principal
- the extent to which any information provided with the ITT or provided as part of the tender process can be relied on
- the acceptance of late tenders
- the tender process, for example, short listing and the negotiation process
- amendment of the tender process
- inclusion of new tenderers
- the period for which the tender cannot be amended or withdrawn
- termination of the tender process
- how enquiries can be made and whether replies will be shared with other tenderers
- whether there will be workshops or site visits
- how departures are expressed
- how the tender is submitted and executed
- the tender evaluation criteria (which should be indicative, not binding).

Returnable schedules

The Principal must give careful consideration to the information it requires from the tenderers as part of the tender and the form and level of detail that is preferred.

That information is usually included in schedules that are to be returned by the tenderers.

A good guide to the information to be obtained are the details that are required for the contract to be prepared and executed.

Some information might be provided in stages. For example, the Programme that is attached to the contract will probably be very detailed and include the logic in its native form. Such a Programme is time consuming and expensive to prepare. Therefore, at an early stage a more general Programme might suffice.

Similarly, pricing might be refined as the tender process evolves.

The guideline is that the Principal should obtain all information required to make a detailed assessment of the tenderers.



Letters of intent



Ideally, construction work should not proceed on a project until a full and complete contract has been entered into by the parties. The benefits of entering into a formal contract are significant and include:

- certainty of rights and obligations
- certainty of price
- clear allocation of risk between the parties
- detailed description of the scope of works
- provision for the resolution of disputes between the parties
- provision for the termination of the agreement in clearly defined circumstances.

However, sometimes it is not practicable or commercially desirable to delay the commencement of construction until a contract has been signed. In these circumstances, the parties may wish to proceed on the basis of a letter of intent, sometimes referred to as a letter of agreement or letter of acceptance (**LOI**). This alert raises and comments on the critical issues for a Principal or Developer to consider if it is contemplating proceeding with construction before executing a contract with its Contractor (or design with its consultant).

The primary disadvantages for a Principal in relation to many LOIs are as follows:

- There is often uncertainty as to whether an LOI creates a binding agreement. As a result, the parties' rights and obligations in relation to carrying out the work and the payment for that work are not certain.
- Often there is little incentive for the Contractor to complete negotiations and execute a final contract, since the uncertainty referred to above will generally benefit the Contractor.

Nonetheless, a properly worded LOI is generally better than proceeding without any documentation, but it is no substitute for a complete contract.

Binding or non-binding?

The main issue to consider is whether the Principal wants to merely express an intent to enter into a contract or actually enter a contract for the commencement of certain works whilst the contract is finalised and executed.

If the Principal wants to express intent but not be bound by the LOI, then the LOI needs to clearly state that position. Specific legal advice should be sought on the content of any LOI before it is issued to a Contractor or consultant.

Although it is not strictly necessary if the LOI is clearly drafted, the following paragraph can be added to the LOI for certainty:

This non-binding letter of intent is simply a statement of the parties' present intentions with respect to its contents. Each party represents to the other that no reliance will be placed on this letter. This letter does not and is not intended to constitute a binding obligation.

In most circumstances the Principal's purpose with an LOI is to authorise certain works to commence before the contract is signed. In this case, the LOI is in fact a contract and therefore the usual pre-requisites for a contract must be present.

It is crucial that the LOI does accept the Contractor's or consultant's proposal or submission (usually as part of a tender process). This is important regardless of whether the letter is merely expressing intent to enter a contract or is a binding contract itself. By accepting a Contractor's proposal, certain qualifications, exclusions or contractual terms that conflict with the Principal's requirements may be incorporated into the deal inadvertently.

Essential terms for a LOI

Payment and scope of the works

The critical portion of the LOI is dealing with payment, the scope of the Contractor's works and the standard of performance required of the Contractor. In this regard, the LOI should cover the following:

- The basis upon which the Contractor is to be paid for work under the letter (for example, cost plus margin, lump sum, etc.).
- Timing and processes for the submission of invoices for payment (it may be appropriate for no payments to be made until the contract is signed – this can be a useful incentive for the Contractor to sign the contract).
- A cap on the amount payable to the Contractor under the letter, which can be extended at the discretion of the Principal (this is to avoid the risk of the Contractor incurring significant costs and then claiming for these costs).
- Identify as precisely as possible the scope of the works to be carried out.
- Provision for the Principal's right to vary the scope of the works.

- where appropriate, a completion date for the works
- a statement of the Contractor's standard of care to be adopted in performing the works
- a right of set-off for the Principal.

Termination

It is critical that the letter clearly sets out the circumstances under which the agreement contained in the LOI comes to an end. There are three ways for the agreement to end:

- the parties sign a formal contract
- the parties do not sign a contract by an agreed date
- the Principal elects to terminate the agreement.

Following termination under the second and third dot points above, the LOI should prescribe a procedure for the Contractor to stop work, make the site safe, vacate the site and return any equipment or documents provided to it by the Principal.

The LOI should state that the Contractor's entitlement to further payment following termination is limited to any amounts outstanding for work performed up to the date of termination. And in all cases payments under or in connection with the LOI should be subject to the overall cap.

Draft contract

If, at the time of entry into the LOI, a draft detailed contract is in existence, it is suggested that one of the following approaches is adopted:

- Attach the whole of the draft terms, and specify that even though they have not yet been agreed by the parties as forming the final contract, the full terms will be binding with respect to the whole of the works until the LOI is replaced by the final contract.
- Simply identify the relevant terms of the draft contract which have been finalised to date, for example, contractual conditions in relation to insurance, and intellectual property rights.

Intention to enter into a contract

Given the purpose of the LOI is to bridge the time between commencement of construction and execution of a final contract, it should state that the intention of the parties is to enter into a formal contract and that the parties will use their best endeavours to execute the contract as soon as reasonably possible.

Whilst such a provision is unlikely to be legally enforceable, it provides an important indication of the parties' commercial intent for a more detailed discussion about agreements to enter into a formal contract. The LOI can be drafted such that it creates incentives for the Contractor to execute the final contract, for example, there should be no limitation of liability for the Contractor (also see the termination regime referred to below).

Retrospective effect of a contract

The LOI should also provide for the retrospective effect of the final contract. For example, by providing that:

If and when the contract is signed, the terms and conditions of the contract will retrospectively govern the work carried out by you pursuant to this letter. Any monies paid to you in respect of works performed pursuant to this letter shall form part of the contract sum under the contract.

It is also essential that a similar provision is included in the final contract.

Failure to enter into a contract

The LOI should provide that, if no contract is entered into, the LOI covers the whole of the works.

Other terms

There are a number of other terms that should be included in the LOI. Ideally these terms should be the same as those contained in the draft contract attached to the LOI. These should cover the following topics:

- insurance (including a clear statement of what insurance the Contractor is required to effect and maintain)
- approvals (which party is to obtain)
- intellectual property
- subcontracting
- confidentiality
- governing law and language of the agreement
- dispute resolution.

Conclusion on LOIs

Although an LOI should never replace a complete contract, an LOI covering the issues discussed above can significantly reduce the risks inherent in commencing construction in the absence of a full and complete contract between the parties.

Memorandum of understanding

At the outset of a project (and often throughout a project), parties often look to record the basic terms of a transaction, in advance and in anticipation of more detailed terms and conditions.

This preliminary agreement comes in many forms and is commonly referred to as a memorandum of understanding (**MOU**), a heads of agreement, or a term sheet.

This paper examines the typical contents of an MOU and the practical and legal implications which arise as a result of entering into an MOU.

Purpose of an MOU

An MOU can be useful in giving commercial certainty (even if not a legally binding agreement). An MOU can serve a number of purposes, including:

- providing a framework for negotiations
- having parties decide on a general commitment to the particular project
- giving focus to the key commercial terms (permitting key commercial terms to be negotiated in principle without the need to settle detailed/legal aspects)
- assisting parties in raising funds or outlining the project details to third parties
- allowing for regulatory processes to be initiated, including merger clearance or FIRB approvals.

However, entering into an MOU may not be appropriate in certain circumstances. It may limit flexibility in future negotiations or distract the parties from negotiating a more complete agreement. There is also a risk that the parties inadvertently enter into an MOU that amounts to a legally binding arrangement when this is not intended or the parties breach competition rules without appropriate clearances or approvals in place. Whether an MOU or any preliminary agreement is legally binding depends on its terms.

Contents of an MOU

Every MOU is, by definition, unique to the particular project. There are, however, terms and conditions that are commonly found in an MOU. These are usually included to provide the basic legal framework and confirm the legal relationship between the parties, particularly in relation to the time between the execution of the MOU and the execution of the long form agreement. Terms can be binding or non-binding in a legal sense.

Common terms include:

- identification of the parties to the project
- statements in relation to the legal status of the MOU e.g., whether it is binding or which components are binding
- key commercial terms, including conditions to completion
- due diligence arrangements and processes
- an agreement to negotiate in 'good faith' along with project timing and key deliverables (binding)
- standstill/lock-out/exclusivity arrangements (binding)
- confidentiality (if not already provided for in a confidentiality agreement) and terms in relation to announcements (binding)
- allocation of costs of preparation and negotiations (binding)
- governing law and jurisdiction (binding).

Of the terms above, the final five items (listed as 'binding') are often intended to legally bind the parties.

Binding or non-binding?

Apart from the key terms noted above, it is not usual for an MOU to be binding on the parties. There is a myriad of case law relating to the enforceability of MOUs, where one party may renege on a commitment or not follow through on the project. The drafting of MOUs is critical.

The preeminent case relating to enforceability is the High Court decision in *Masters v Cameron*.¹ In essence, the case confirms that MOUs will fall into one of three categories.

Further case law in Australia² has suggested there is a fourth category, beyond those identified in *Masters v Cameron* (which may be considered as another example of a Category One or Category Two situation). Each of these categories is set out below:

- **Category One (binding on the parties):** The parties have agreed to the terms and intend to be bound, but also intend to restate their agreement in a more complete or precise manner.
- **Category Two (binding on the parties):** The parties have agreed to the terms but performance is conditional on an event, such as the execution of a formal agreement.
- **Category Three (not binding on the parties):** The parties' intention is to not agree or finalise the terms until they execute a formal agreement.
- **Category Four (binding on the parties):** The parties intend to be bound by the terms, but also accept that a further more formalised contract will be put in place in substitute for the original agreement.

¹ (1954) 91 CLR 353.

² See, for eg *Baulkham Hills Private Hospital Pty Ltd v GR Securities Pty Ltd* (1986) 40 NSWLR 622.

While Category Four may be simply a variation on Category One or Two, the categorisation is an indication of the courts willingness to find a binding arrangement despite the circumstances not aligning precisely with Category One or Two. Precise drafting is essential to achieving the intended outcome of whether an arrangement is binding or not.

At the time of drawing up the MOU, it is important for the parties to decide whether they wish to be bound by the terms of the MOU. This is a decision that will change from project to project. However, it is common practice for an MOU to be part binding and part non-binding.

The question as to whether an MOU is binding is essentially one of the formation principles found in contract law.

A contract will be binding if there is consideration, intention to be legally bound (often evidenced by offer and acceptance) and certainty of the terms. For an MOU, the intention of the parties at the time of signing the MOU and certainty of terms are particularly important.

Intention to create binding obligations

Historically there is a strong presumption that commercial parties intend to create a legally binding contract if the terms are certain, clearly defined and supported by consideration.³ However, more recent authority, such as *Ermogenous v Greek Orthodox Community of SA Inc*,⁴ instead stresses the focus on an objective assessment of the parties' intentions in the particular transaction. In this judgment it was stated that:

'To be a legally enforceable duty there must, of course, be identifiable parties to the arrangement, the terms of the arrangement must be certain, and, unless recorded as a deed, there must generally be real consideration for the agreement. Yet "[t]he circumstances may show that [the parties] did not intend, or cannot be regarded as having intended, to subject their agreement to the adjudication of the courts".⁵

Ultimately the court looks to the objective intention of the parties (looking to what a reasonable person would understand by what the parties have documented), to identify whether or not there was the requisite intent to contract in any given context.⁶ In this regard:

- if the parties do not wish to be bound by the MOU (or any terms within it), then the parties should state clearly and unambiguously their intention not to be bound
- the terms of the agreement will be assessed objectively, and intention will be assessed by the content not the title or label of the document (for example just because the document is entitled MOU or similar, it may still be construed as binding)

- given this is a question of whether a contract has been formed, extrinsic evidence is admissible when determining whether a contract has been formed (as contrasted with the assessment made where the issue is construction or interpretation of a contract).

Using words such as 'subject to contract', 'subject to board approval', and 'subject to formal agreement' are not always construed to indicate an intention not to be bound immediately by a document. Accordingly, it is advisable to include a clause in any MOU which clearly states which provisions of the MOU are binding and which are not. A suggested clause would be:

Except for the provisions of clauses [#], this MOU does not constitute or create, and shall not be deemed to constitute, any legally binding or enforceable obligations on the part of any party.

The requirement of certainty

The courts do not require commercial documents to be drafted with strict precision to be enforceable, provided that the intention of the parties is clear. For an MOU to have legal effect, the essential terms must be sufficiently clear and certain. For example, terms such as 'usual terms' or 'fair and equitable price' may be too vague and, depending on the circumstances, the court may not be able to give meaning to them, rendering the MOU unenforceable.

As mentioned earlier, it is important to understand that under Australian law, an MOU may still have legal effect even though it contains uncertain terms or the words 'subject to contract'. However, if this creates sufficient uncertainty in the document, the MOU will not give rise to contractual obligations.⁷

If terms that objectively seem important to the particular arrangement have not been included, it is unlikely the MOU would be binding.⁸ If however all the terms are agreed to at the time of the MOU, except for uncertainties which are anticipated (such as the name of a purchaser to be finalised in a formal contract), the MOU will be binding.⁹

Agreements in relation to negotiations

As mentioned above, an MOU can be expressed to be non-binding as to some of the terms (typically the commercial terms) and binding as to others (terms such as confidentiality and governing law).

For this reason, it is possible to include in an otherwise non-binding MOU legally effective terms which create some sort of obligation on the parties to continue the negotiation process.

These may include:

- agreement to negotiate in good faith
- standstill/lock-out agreement
- confidentiality obligations.

³ *Edwards v Skyways* [1964] 1 All ER 494.

⁴ (2002) 209 CLR 95.

⁵ (2002) 209 CLR 95, [24] (Gaudron, McHugh, Hayne and Callinan JJ).

⁶ *Gate Gourmet Australia Pty Ltd (In Liq) v Gate Gourmet Holding AG* [2004] NSWSC 149, 213 (Einstein J).

⁷ *LMI Australasia v Baulderstone Hornibrook* [2001] NSWSC 886.

⁸ *British Steel Corp v Cleveland Bridge Engineering Co* [1984] 1 All ER 504.

⁹ *Damon Compania Naviera SA v Hapag-Lloyd International SA* [1985] ANZ ConvR 333.

Agreements to negotiate in good faith

An MOU often contains a statement to the effect that the parties undertake to negotiate in good faith with a view to finalising the terms of a formal agreement to be entered into between them. For example, a standard clause would be:

The parties agree that during the negotiation period described in clause [#], they will negotiate with each other in good faith in order to endeavour to reach the concluded arrangements described in clause [#].

Such a clause would have symbolic significance, however, may not be enforced without further detail as to what is required by the parties during the negotiation. Even with enforceable negotiation clauses, damages for breach will be minimal (and not amount to the loss of the bargain for the project itself).¹⁰

'Lock-out' clauses in standstill agreements

Similar to an 'agreement to negotiate in good faith', the purpose of a 'lock-out' clause in an MOU is to provide an incentive for the parties to continue the negotiation process.

A 'lock-out' clause is essentially a negative covenant where the party bound by the clause agrees not to negotiate with third parties. In other words, a 'lock-out' clause locks the party out of negotiation with third parties. It does not, however, in a legal sense oblige the party to complete the transaction.

A narrow form of a 'lock-out' clause is called a 'no-shop' clause. The essential effect of a 'no-shop' clause is to restrict one party from soliciting third party offers. The party, however, can entertain an offer by a third party if the approach is unsolicited. A wide form of a standstill agreement is called a 'no-talk' clause.

A 'no-talk' clause is basically an agreement not to negotiate with a third party even where the approach is unsolicited.

There are two essential elements to a 'lock-out' clause:

- good consideration
- length of 'lock-out' is restricted to a definite period of time.

A 'lock-out' clause may not be binding if the length of the 'lock-out' clause reaches a point where the agreement falls foul of the restraint of trade doctrine or laws governing unconscionable conduct. In addition, a 'lock-out' clause may give rise to issues concerning directors' duties. For example, if restricting the company's freedom to deal with other potential parties is not in the interests of the company.

Best or reasonable endeavours

An MOU often requires parties to undertake particular contractual obligations with 'best endeavours' or 'reasonable endeavours'. For example, the parties may agree to use their best (or reasonable) endeavours to obtain board approval. The issue of whether the parties should undertake best or reasonable endeavours is often a difficult issue raised during the negotiation of the terms of an MOU.¹¹ Please refer to Reasonable Endeavours – KaL FAQs for further information on these terms.

Conclusion on MOUs

When entering into an MOU, it is important to be aware of the legal and practical implications. MOUs may unduly limit future negotiations and/or impose binding obligations on the parties.

From a legal perspective, the enforceability of an MOU largely depends on the circumstances of the negotiations and the language of the terms agreed by the parties. Whether the language indicates an intention to create legal obligations is key.

The nature and extent of remedies available when there is a breach of an MOU will depend on which terms are legally enforceable (or whether there are other potential causes of action available including misrepresentation, misleading or deceptive conduct or estoppel). If terms are found to be binding, normal contractual or equitable remedies will flow (including damages and specific performance).

From a practical perspective, although an MOU may help to secure some form of commitment of the parties to the negotiation process, its ability to secure certainty in relation to commercial terms and conditions may be more moral than legal.

¹⁰ In *Coal Cliff Collieries v Sijehama* (1991) 24 NSWLR 1, Kirby P acknowledged that, in some circumstances, a promise to negotiate in good faith will be enforceable.

¹¹ See, for eg *Electricity Generation Corporation v Woodside Energy Ltd* [2014] 88 ALJR 447.



Key project and
procurement concepts

05 Loss and liability

Investing in Energy Transition Projects
March 2023



1 Recovery of loss

1.1 Introduction

Contractors limit their liability to the Principal under or in connection with an infrastructure contract by:

- excluding 'consequential' or 'indirect' losses and/or specific heads of loss
- including liability caps and/or an aggregate liability cap that restricts their overall liability in connection with the project.

The construction, definitions and carve outs associated with these types of clauses are commonly negotiated together and in conjunction with insurance arrangements as the parties seek to reach a compromise between the scope and risk of each party's liability to the other and the application and value of any liability cap.

Each of these concepts are discussed in turn.

1.2 Excluding liability for indirect or consequential loss

It is usual for Principals and financiers to accept drafting that limits the Contractor's liability for 'consequential' or 'indirect' losses under or in connection with an infrastructure contract.

However, this requires careful consideration of the context, construction and wording of a contract to ensure the Principal does not overly or inadvertently restrict its rights to recover various types of loss from a Contractor.

In particular, Principals should be cognisant of the different positions under English and Australian law, as well as between different jurisdictions within Australia, in relation to how courts will interpret the words 'indirect' or 'consequential' loss.

The classification of a particular loss as indirect or consequential at law is difficult to draft in a manner that gives certainty. If there is a particular loss that the Principal wants to be able to recover it should be expressly stipulated.

Position under English law

Under English law, the two limbed principle governing the remoteness of damage for breach of contract was stated by Alderson J in *Hadley v Baxendale* (1854) 9 Ex 341 (**Hadley v Baxendale**). It provides that where a party breaches a contract, the damages to which the other party is entitled are those which may be fairly and reasonably considered:

- to arise naturally, that is, according to the usual course of things, from the breach of contract itself (often referred to as direct loss or damage) (**first limb**), or
- to be in the contemplation of both parties, at the time they made the contract, as the probable result of the breach of contract (often referred to as indirect loss or damage) (**second limb**).¹

The terms 'indirect' and 'consequential' loss are often used interchangeably in the context of the second limb of this principle, and if they fall within the second limb, then they will be recoverable under the rule in *Hadley v Baxendale*.

Case law relating to the second limb

It is worth noting that the court took a more expansive interpretation of the meaning of 'indirect and consequential' loss in the case of *2 Entertain Video Ltd & Ors v Sony DADC Europe Ltd*.² The court considered whether the plaintiff's claim for loss of profit was precluded by an exclusion in the following terms:

Neither party shall be liable under this Agreement in connection with the supply of or failure to supply the Logistics Services for any indirect or consequential loss or damage including (to the extent only that such are indirect or consequential loss or damage only) but not limited to loss of profits, loss of sales, loss of revenue, damage to reputation, loss or waste of management or staff time or interruption of business.

After the considering the recent judicial criticism of the traditional approach the Court accepted the submission:

[...] that any general understanding of the meaning of 'indirect or consequential loss' must not override the true construction of that clause when read in context against the other provisions in the Logistics Contract and the factual matrix.

However, in evaluating the natural and ordinary meaning of the clause, the judge reached the same conclusion as the traditional approach whereby the lost profits were nevertheless caused as a direct and natural result of the fire at the respondent's warehouse. Nonetheless, this case marks the first attempt in articulating a gradual shift in the judicial opinion towards broadening of the traditional approach to the second limb of *Hadley v Baxendale*.

¹ *Hadley v Baxendale* (1854) 9 Ex 341, 354 (Alderson J).

² [2020] EWHC 972.

Case law relating to the first limb

The case of *Transfield Shipping v Mercator Shipping Inc*³ (**The Achilleas**) also introduced the test of assumption of responsibility to the assessment of damages for breach of contract. In this case, a time-chartered vessel (The Achilleas) was delayed and, in breach of contract, was redelivered to the Principal late. The Principal had already agreed a follow-on charter with a third party and, because of the late delivery, they were forced to renegotiate the rate of hire to a substantially reduced rate. The Principal sued for breach of contract claiming damages for the difference between the original and renegotiated hire rates for the entire duration of the follow-on charter.

The majority in the House of Lords took a new approach to remoteness of damages, by introducing an 'assumption of responsibility for the loss' element to the Hadley v Baxendale test. The remoteness test applied was whether the parties had the type of loss within their contemplation when the contract was made and also whether they had liability for this type of loss within their contemplation then. In other words, was the charterer to be taken to have undertaken legal responsibility for this type of loss?

Lord Hoffman said that the 'standard' Hadley v Baxendale test would be applicable in the 'great majority of cases' but that it would not be sufficient in cases 'in which the context, surrounding circumstances or general understanding in the relevant market shows that a party would not reasonably have been regarded as assuming responsibility for such losses'.

Applying the new test in this case, the House of Lords held that although the loss of profits on the charter were foreseeable, the general understanding in the shipping market was that liability was restricted to the difference between the market rate and the charter rate for the overrun period. The charterer had, therefore, only assumed liability for these losses and the House of Lords awarded damages accordingly.

Since this case there has been some uncertainty as to whether the correct remoteness test is the 'orthodox' test in Hadley v Baxendale or the 'assumption of responsibility' test. However, the *High Court in Sylvia Shipping Co Limited v Progress Bulk Carriers Limited* confirmed that Hadley v Baxendale test remains the standard rule of remoteness and it is only in relatively unusual cases such as The Achilleas where a consideration of assumption of responsibility may be required.

Position under Australian law – Peerless approach

Courts in Australia have previously supported the English law position discussed above — that is, that recoverable indirect or consequential loss is loss that was in the contemplation of both parties, at the time the contract was made, as the probable result of the relevant breach of contract.

However, in the case of *Environmental Systems Pty Ltd v Peerless Holdings Pty Ltd* [2008] VSCA 26 (**Peerless**), the Victorian Court of Appeal moved away from second limb of the principle in Hadley v Baxendale and decided that the term 'consequential loss' should be given its ordinary and natural meaning as would be conceived by ordinary reasonable business persons.⁴ In applying this approach, the court drew a distinction between:

- loss that every plaintiff in a like situation will suffer (**normal loss**)
- anything beyond the normal measure of damages, such as profits lost or expenses incurred through breach (**consequential loss**).⁵

Accordingly, the approach in Peerless highlights that indirect or consequential loss, given its ordinary meaning, is no longer consigned to the second limb of Hadley v Baxendale. Rather, indirect or consequential loss may include a range of losses that have historically fallen under the first limb of Hadley v Baxendale. As such, it is increasingly important for a Principal to consider carve outs to any exclusion of liability for indirect or consequential loss to ensure it does not inadvertently preclude the recovery of certain losses.

The approach in Peerless has been considered by a number of lower courts in Australia, but not determinatively by the High Court of Australia.

For instance, in *Alstom Ltd v Yokogawa Australia Pty Ltd (No 7)* [2012] SASC 49 (**Alstom**), the Supreme Court of South Australia considered a clause in a contract which excluded a party's liability as subcontractor to Alstom (the head Contractor) for 'any indirect, economic or consequential loss whatsoever'. In relation to the interpretation of such clauses, consistently with Peerless, Belby J at 281 stated:

To limit the meaning of indirect or consequential losses and like expressions, in whatever context they may appear, to losses arising only under the second limb of Hadley v Baxendale is, in my view, unduly restrictive and fails to do justice to the language used. The word 'consequential', according to the Shorter Oxford English Dictionary means 'following, especially as an effect, immediate or eventual or as a logical inference'. That means that, unless qualified by its context, it would normally extend, subject to rules relating to remoteness, to all damages suffered as a consequence of a breach of contract. That is not necessarily the same as loss or damage consequential upon a defect in material where other remedies are also provided.

In Alstom, the terms of the contract in question required the subcontractor to pay damages if it did not complete the works on time and/or if the works did not meet the performance tests. Alstom made claims against the subcontractor and sought compensation in relation to breaches of these obligations, asserting that the breaches had resulted in losses that flowed naturally from each breach, and therefore were within the first limb of Hadley v Baxendale. The subcontractor disagreed and instead relied upon the exclusion clause, arguing that the clause should be read to include losses that occurred as a consequence of the breach of contract.

³ [2008] UKHL 48.

⁴ *Environmental Systems Pty Ltd v Peerless Holdings Pty Ltd* [2008] VSCA 26, [93] (Nettle JA, Ashley JA and Dodds-Streeton JA agreeing).

⁵ *Ibid*, [87] (Nettle JA, Ashley JA and Dodds-Streeton JA agreeing).

Importantly, the contract did not carve out the recovery of liquidated damages and performance guarantee payments from the exclusion of indirect or consequential loss.

The Supreme Court of South Australia considered these arguments, and held that although the losses claimed by Alstom fell within the first limb of *Hadley v Baxendale*, the breadth of the exclusion clause meant that the subcontractor was not liable for damages occurring as a consequence of any breaches of contract. The court stated at 290:

The expression 'indirect ... or consequential loss' appears, in this case, as part of a freestanding and powerfully expressed exclusion clause. It is not affected by the immediate presence of any concession as to liability which it might qualify, although it must be read against the background of the qualified exposure of [the subcontractor] to the exclusive remedies of Liquidated Damages and reimbursement of Performance Guarantee Payments. The Article in question was intended to operate in respect of potential liability for loss incurred by Alstom, which was caused by a breach of contract by [the subcontractor] in circumstances other than those giving rise to the payment of Liquidated Damages and reimbursement of Performance Guarantee Payments. The words must be given their ordinary and natural meaning. In those circumstances any loss consequential or following, immediate or eventual, flowing from a breach of contract by [the subcontractor] is excluded from recovery by Alstom.

The Peerless approach has also been considered or applied in more recent decisions of the Supreme Court of NSW and the Federal Court of Australia.⁶

Position under Australian law – Regional Power approach

On the other hand, in *Regional Power Corporation v Pacific Hydro Group Two Pty Ltd (No 2)* [2013] WASC 356 (**Regional Power**), the Supreme Court of Western Australia opted against both the English law position and the Peerless approach because of their rigid adherence to classification. Instead, the court held that clauses excluding consequential loss should be construed in accordance with the circumstances of the case and the natural and ordinary meaning of the contract:

To reject the rigid construction approach towards the term 'consequential loss' predicated upon a conceptual inappropriateness of invoking the Hadley v Baxendale dichotomy as to remoteness of loss, only then to replace that approach by a rigid touchstone of the 'normal measure of damages' and which always automatically eliminates profits lost and expenses incurred, would pose equivalent conceptual difficulties. Accordingly, I doubt whether the [93] observations in [Peerless] were intended to carry any general applicability towards establishing a rigid new construction principle for limitation clauses going much beyond the presenting circumstances of that case.⁷

This case concerned a power purchase agreement between Regional Power (as offtaker) and Pacific Hydro (the asset owner) for the supply of electricity from the Ord Hydro Power Station. The power station suffered an outage which resulted in flooding and led to the power station being inoperative for two months. As a result, Regional Power claimed damages for breach of the agreement consisting of costs relating to the hiring of replacement diesel generators, cranes and fuel required to run the extra generators, as well as wages, travel, accommodation and meal expenses of the additional operators required during that period.

Pacific Hydro argued that the damages claimed by Regional Power were indirect or consequential losses and therefore excluded from recovery by the following exclusion clause:

Neither [party] shall be liable to the other party in contract, tort, warranty, strict liability, or any other legal theory for any indirect, consequential, incidental, punitive or exemplary damages or loss of profits.

The Supreme Court of Western Australia held that costs incurred by Regional Power in relation to the replacement power generation and associated outlays constituted a direct economic loss and therefore were not excluded from recovery by the exclusion clause.⁸

In reaching this position, the Supreme Court of Western Australia emphasised the earlier High Court of Australia authority of *Darlington Futures Ltd v Delco Australia Pty Ltd* (1986) 161 CLR 500 which provides that an exclusion clause must be given its natural and ordinary meaning within the context of the contract as a whole.⁹ In this respect, the court stated:

Construing [the exclusion clause] within the [agreement] as a whole, the court should not be artificially fettered towards assessing the character of an economic loss by rather vague criteria of whether or not the loss arose 'in the ordinary course of things'. Nor should the court be oriented from the start towards trying to determine if a claimed loss falls under the equally porous concept of a 'normal measure of damage'.¹⁰

Implications for infrastructure contracts

In summary, there are now three different approaches used to determine the meaning of the words 'indirect' or 'consequential' when used in an exclusion or limitation of liability clause:

- the **English approach**, where 'indirect' or 'consequential' loss are construed as a reference to the second limb of *Hadley v Baxendale* resulting from the special circumstances under which the contract was made and communicated by one party to the other

⁶ See for example, *Macmahon Mining Services v Cobar Management* [2014] NSWSC 731, [14]; *Sherrin Hire Pty Ltd v Tidd Ross Todd Ltd (No 2)* [2016] FCA 891, [19]-[20].

⁷ *Regional Power Corporation v Pacific Hydro Group Two Pty Ltd (No 2)* [2013] WASC 356, [96].

⁸ *Regional Power Corporation v Pacific Hydro Group Two Pty Ltd (No 2)* [2013] WASC 356, [117]-[118].

⁹ *Darlington Futures Ltd v Delco Australia Pty Ltd* (1986) 161 CLR 500, 510.

¹⁰ *Regional Power Corporation v Pacific Hydro Group Two Pty Ltd (No 2)* [2013] WASC 356, [116].

- the **Peerless approach (Victoria, New South Wales and South Australia)**, where ‘indirect’ or ‘consequential’ loss can be recovered under the first limb of *Hadley v Baxendale* if they are a consequence of the breach, and, for example, may include loss of profits
- the **Regional Power approach (Western Australia)**, where ‘indirect’ or ‘consequential’ loss and damage are said to refer to losses that are in some ways less direct and more removed when considered in the context of the transaction at hand.

Each of these approaches can create uncertainty for a Principal looking to recover a range of damages from a Contractor following a breach of contract.

1.3 Suggested sample drafting

In Australia, with the Peerless approach creating scope for recovery of losses historically classified as indirect losses to be considered as direct losses, the response by Principals and Contractors alike has been to tighten the drafting of exclusion clauses — instead of simply excluding the broad category of indirect and consequential loss, clauses now commonly specify in detail those losses which are to be specifically excluded.

The advantage of this drafting approach is that it forces the parties to address, prior to entering into the contract, those consequential or indirect losses it wishes to be able to recover, and those which it might be prepared to negotiate as excluded losses. This drafting can also be adopted in those jurisdictions which follow the English approach as a way to add further legal and commercial certainty.

Drafting example: Exclusion of liability for Consequential Loss

1. ‘Neither party will be liable to the other party in any circumstances for any Consequential Loss.
2. For the purpose of clause 1, “Consequential Loss” means:
 - a. any Loss that does not flow directly and naturally from the relevant breach of this Agreement or a duty of care
 - b. any loss of financial opportunity, profit, anticipated profit, business, business opportunities, revenue, reputation, income, funding or goodwill, in each case, irrespective of whether direct, indirect or consequential.’

1.4 Carve outs to the exclusion of consequential loss

For a Principal agreeing to exclude consequential loss under an infrastructure contract, it is important to consider whether there should be any carve-outs to this exclusion, such that certain types of consequential or indirect loss are still recoverable.

The carve outs are often the same as or similar to the carve outs to the liability cap (discussed in section 1.5) as they are consistent with the risks which the Contractor has agreed to bear more broadly under the contract without limitation. Addressing appropriate carve outs is also important to ensure that losses intended to be recoverable that would otherwise be considered indirect or consequential (such as those covered by delay liquidated damages or performance liquidated damage) are not inadvertently excluded from the Contractor’s liability to the Principal.

Drafting example: Carve outs to Consequential Loss exclusion

‘Consequential Loss does not include the following (which are Direct Loss):

- a. Loss that the Principal is entitled to recover pursuant to an express term of this Contract
- b. Performance Liquidated Damages
- c. Delay Liquidated Damages
- d. damages at law under clause [insert reference to the clause which entitles the Principal to damages at law for delay and breach of performance guarantees if the relevant liquidated damages regimes are held to be void or unenforceable]
- e. costs incurred by the Principal under clause [insert reference to the clause which requires the Contractor to pay the Principal’s costs of completing the works if the performance guarantees have not been met by the time the delay liquidated damages cap has been exhausted]
- f. Loss that would have been covered by insurance held by either the Contractor or the Principal under clause [insert reference to the clause which sets out the requirements for insurance] but for a breach of that clause or the terms of those insurance policies by the Contractor
- g. Loss arising from fines or penalties levied by any government authority for breach of any law by the Contractor
- h. Loss arising from the Contractor’s fraud, wilful misconduct, corrupt acts or omissions or unlawful acts
- i. Loss arising where the Contractor abandons the works or repudiates this Contract
- j. Loss to the Principal covered by clause [insert reference to the clause which requires the Contractor to take care, custody and control of the Works and the Facility until the Date of Commercial Operations]
- k. Loss incurred by, or claims brought against, the Principal under any Project Approval as a direct result of a breach by the Contractor of its obligations under this Contract
- l. Loss arising from any breach by the Contractor under clauses [insert reference to the clauses which deal with confidential information and intellectual property]
- m. Loss arising from the Contractor’s liability under clauses [insert reference to the clause which requires the Contractor to pay the Principal’s costs of repairing the Facility where the Contractor has failed to do so or to make the Facility meet the performance guarantees]
- n. Loss incurred by the Principal following termination of this Contract under clauses [insert reference to the clauses which entitle the Principal to terminate the Contract if either of the sub-caps for Delay Liquidated Damages or Performance Liquidated Damages is met].’

As discussed in relation to carve-outs to liability caps, it is also common for Principals to carve out from the exclusion of consequential loss any payments recovered or recoverable under insurances taken out in accordance with the contract. This is discussed further in section 1.5 and a similar analysis applies here.

1.5 Liability caps

Drafting issues

The following matters must be considered:

- Is it a cap on all liabilities or just some?
- Is it an aggregate/overall cap or are there sub-caps which apply to specific liabilities. For example, a cap on the liability for liquidated damages?
- Is it a cap on the liabilities under the contract only or at law as well (for example, tort)?
- What is the size of the cap? Is it a lump sum figure or is it expressed as a percentage or multiple of the contract price?
- Are there any 'carve-outs' or exceptions to the liability cap (for example, liabilities that are not covered by the cap)?

Quantum

Despite the common practice of fixing liability caps based on industry norms, the quantum of a liability cap should be determined by a detailed risk and liability assessment for the relevant project, and therefore it will vary from project to project. In terms of drafting, liability caps are often expressed as a percentage or a multiple of the contract price.

Determining the quantum of a liability cap will also be influenced by the extent and nature of the liability cap carve-outs. For example, the more extensive the carve-outs, the smaller the quantum of the liability cap might be. It may also be influenced by the Contractor's financial capacity to honour its liabilities, but a better way of dealing with this very important issue is to ensure the Contractor has provided appropriate security and that appropriate insurances have been taken out.

In practice, the quantum of a liability cap will be determined by reference to the Contractor's exposure. It is unlikely for the Principal to set the cap and, if it does, this will be reflected in the contract price.

Sub-caps

In addition to an overall or aggregate liability cap, sub-caps may also be used to limit liability for specific types of liability under a contract, such as the liability to pay delay liquidated damages or performance liquidated damages.

Drafting example: Liability cap and sub-caps

1. *'Subject to clauses [insert reference to the clause which excludes liability for indirect or consequential loss and the clause which specifies the carve outs to that clause and the overall liability cap], the total aggregate liability of the Contractor to the Principal under or in connection with this Contract, whether based on breach of contract or otherwise, will not exceed the Contract Price.*
2. *The aggregate liability for Delay Liquidated Damages must not exceed 10% of the Contract Price.*
3. *The aggregate liability for Performance Liquidated Damages must not exceed 10% of the Contract Price.'*

Typically, each sub-cap is mutually exclusive and applied separately to the specific liability it relates to, while the aggregate or overall cap is left to 'mop up' the other liabilities not specified in the sub-caps.

To illustrate how sub-caps might apply in practice, the application of sub-caps in relation to delay liquidated damages and performance liquidated damages is discussed in section 2.9.

Carve outs to liability caps

For a Principal, it is important that certain types of liability are excluded from an overall liability cap, as well as any sub-caps. These carve outs should align to the risks which the Contractor has assumed under the contract or assumes at law without limitation. Common carve outs to a Contractor's liability cap include liability for loss or damage in relation to:

- personal injury, disease or death
- third party property damage
- fraud, wilful misconduct, negligence or corrupt, malicious, illegal or unlawful acts
- breach of confidentiality
- breach of privacy
- claims of infringement of intellectual property
- abandonment of the works.

These carve outs are often the same as or similar to the carve outs to the exclusion of consequential loss (see section 1.4).

It is also common for Principals to carve out payments recovered or recoverable under insurances taken out in accordance with the contract. The rationale for this is that, although connected with the Contractor's liability, recovery is through the insurer rather than the Contractor, and often the cost of the insurance is borne by the Principal directly or indirectly. The drafting of an insurance carve-out needs to be done carefully to ensure it covers other payments actually recovered and payments recoverable under the insurance, in order to cover situations where the Contractor fails to comply with its insurance obligations.

1.6 Indemnities

What is an indemnity?

A contractual indemnity is a promise by one party (**indemnifier**) to pay the specified loss suffered by the other party (**indemnified**) in specified situations.¹¹

Infrastructure contracts use indemnities as a means of allocating risk between the Principal and the Contractor. In particular, the Contractor often agrees to indemnify the Principal for loss in connection with:

- the Contractor's breach of the contract
- infringement of intellectual property rights licensed or assigned under the contract to the Principal
- claims for third party death, injury, illness or disease or property damage
- claims for death, injury, illness or disease to Contractor's employees.

The question as to whether an indemnity will give rise to a claim in damages or should be treated as an action for recovery of a debt has not been addressed in Australia. However, the High Court of England and Wales has specified that an indemnity gives rise to a claim in unliquidated damages.¹² The Court stated in *AXA SA v Genworth Financial Holdings Inc* 'I consider that the weight of authority, and the more orthodox view, is that a claim under a contract of indemnity is a claim in unliquidated damages'.¹³

If an indemnity is treated as a debt, it may help the claimant party to avoid dealing with some of the typical issues that may arise in claiming damages for breach of contract. For example, an indemnity can be a means to avoid grappling with the remoteness of the loss (see commentary on *Hadley v Baxendale* in section 1.2) and any limiting factors that may relate to the conduct of the claimant such as mitigation, contributory negligence and proportionate liability (see section 5).

Law on indemnities in Australia

*Andar Transport v Brambles Limited Andar Transport Pty Ltd v Brambles Ltd*¹⁴ is a leading authority in Australia. The majority of the High Court held that an indemnity provision in a commercial contract is to be construed strictly in the context of the contract as a whole, and in the event of ambiguity, to be read *contra proferentem* in favour of the indemnifier.¹⁵

Similarly, in *Erect Safe Scaffolding (Aust) Pty Ltd v Sutton*,¹⁶ Giles JA stated that '[d]ecisions on the operation of contractual indemnities in different words in different contracts are likely to be of limited assistance'.

In *Woolworths Group Ltd v Twentieth Super Pace Nominees Pty Ltd atf the Byrns Smith Unit Trust t/as SCT Logistics*, the Court found that by virtue of the construction of the contract, Woolworths was entitled to be indemnified for loss or damage to goods despite whether the loss or damage was caused by a 'force majeure' event.¹⁷

Law on indemnities in England

In the United Kingdom, courts have typically favoured the interpretation of the ordinary and natural meaning of the terms of the contract, rather than strictly interpreting the clause according to a technical legal doctrine.¹⁸ The scope of liability under a contractual indemnity may rely on the nature and terms of the contract. In *Total Transport Corp v Arcadia Petroleum Ltd (The Eurus)*,¹⁹ the Court of Appeal affirmed a paragraph in Halsbury's Laws of England stating that the 'extent of a person's liability under an indemnity depends on the nature and terms of the contract'.

In *Gwynt y Môr OFTO Ltd v Gwynt y Môr Offshore Wind Farm Ltd*,²⁰ the High Court of England and Wales found that the indemnity clause in question was to be construed according to the natural and ordinary meaning of the language and to reflect the intentions of the parties.

Difference between an indemnity, a guarantee and a warranty

Contractual guarantees and indemnities are both obligations and both operate to protect a person against loss suffered.²¹ However, the way in which they achieve this differs.

As described above, an indemnity is a contractual promise by the indemnifier to compensate the indemnified in certain circumstances.²² The indemnifier assumes a primary liability for the unliquidated loss.

This differs from a guarantee, which is a promise to answer for the debt or default of another who is, or may become, liable to the person to whom the guarantee is given.²³ The guarantor assumes a secondary liability which only arises if a third party (primary obligor) does not perform their obligation.²⁴

¹¹ *Sunbird Plaza Pty Ltd v Maloney* (1988) 166 CLR 245; *Yeoman Credit Ltd v Latter* [1961] 2 All ER 294; *Total Oil Products (Aust) Pty Ltd v Robinson* [1970] 1 NSW 701 at 703.

¹² *Firma C-Trade SA v Newcastle Protection and Indemnity Association (The Fanti) (No 2)* [1991] 2 AC 1 (HL).

¹³ [2019] EWHC 3376 (Comm) at [117].

¹⁴ (2004) 217 CLR 424.

¹⁵ See *Coghlan v S H Lock (Australia) Ltd* (1987) 8 NSWLR 88 at 92; 70 ALR 1 at 5; *BI (Contracting) Pty Ltd v AW Baulderstone Holdings Pty Ltd* [2007] NSWCA 173 at [19] and [25]; *Rava v Logan Wines Pty Ltd* [2007] NSWCA 62 at [55]; *Cherry v Steele-Park* (2017) 96 NSWLR 548 at [112].

¹⁶ (2008) 72 NSWLR 1 at 4.

¹⁷ [2021] NSWSC 344.

¹⁸ *AXA SA v Genworth Financial Holdings Inc* [2019] EWHC 3376; *Total Transport Corp -v- Arcadia Petroleum Ltd (The Eurus)* [1998] 1 Lloyd's Rep. 351.

¹⁹ [1998] 1 Lloyd's Rep. 351.

²⁰ [2020] EWHC 850 (Comm).

²¹ *Andar Transport Pty Ltd v Brambles Ltd* (2004) 217 CLR 424.

²² *Sunbird Plaza Pty Ltd v Maloney* (1988) 166 CLR 245 at 254.

²³ *Sunbird Plaza Pty Ltd v Maloney* (1988) 166 CLR 245 at 254; *Re Conley (t/as Caplan & Conley)* [1938] 2 All ER 127 at 130-31; *Yeoman Credit Ltd v Latter* [1961] 2 All ER 294; *Total Oil Products (Aust) Pty Ltd v Robinson* [1970] 1 NSW 701 at 703.

²⁴ For example, *Turner Manufacturing Co Pty Ltd v Senes* [1964] NSW 692; *Permanent Trustee Co of New South Wales Ltd v Hinks* (1934) 34 SR (NSW) 130.

Courts have therefore distinguished between a guarantee and an indemnity by emphasising the difference between the guarantor's secondary liability and the indemnifier's primary liability.²⁵ The reference to primary liability is thought to refer to ultimate liability.²⁶

A warranty may be used for several different purposes:

- as a contractual warranty, being a minor term of a contract as opposed to a fundamental condition in a contract²⁷
- as a representation or statement of fact made by the warrantor to the warrantee
- as to a performance level in a contract, prescribing a certain standard in relation to a good or service being provided
- as a statutory warranty in the context of consumer protection legislation.

Like indemnities, warranties are commonly used in infrastructure contracts as a means to transfer risk from one party to another and, depending upon the nature of the warranty, to enable specific remedies. If a party breaches a mere contractual warranty, the other party will not necessarily be entitled to terminate the contract or accept repudiation and recover damages, and will only be entitled to recover damages.

Drafting considerations

Both warranties and indemnities are construed strictly and any ambiguity will normally be resolved in favour of the indemnifier.²⁸ For example, indemnities that purport to cover the Indemnified's own negligence may be interpreted by a court on the basis that the Indemnifier did not intend this, and therefore the indemnity should be read down or limited in its scope to exclude loss caused through the Indemnified's own negligence.²⁹

In *Andar Transport Pty Ltd v Brambles Ltd*, the High Court held that the requirement to construe indemnities strictly meant that certain ambiguous clauses in the contract should be read down in favour of the party providing the indemnity.³⁰ Similarly, in *Samways v Workcover Queensland*,³¹ Applegarth J held that the phrase 'arising out of' is wide and can lead to ambiguity.

It is critical therefore that the warranties and indemnities are drafted clearly and unambiguously so as to avoid them being read down or ruled void for uncertainty.

Given the drafting complexity of indemnities (and their frequent length and detail), it is especially important to ensure the key elements of an indemnity clause are all addressed, namely:

- the party providing the indemnity
- is the party being indemnified, noting that sometimes this will include more than just the Principal itself

- the scope of the 'loss' being indemnified – a typical formulation is 'costs, expenses, loss and damage' but are those words separately defined and do they include consequential or indirect losses?
- the specified circumstances triggering the indemnity – for example, claims by third parties for death or injury
- any limits on the liability to indemnify or 'carve-outs' – for example, the Principal's own default or negligence.

It is also worth considering how any liability caps will operate on the Contractor's liability under the indemnities. If a liability cap is drafted to include liability under an indemnity, this will reduce the potency of the indemnity.

Drafting example: Scope of loss covered by an indemnity

'Each indemnity given by the Contractor in this Contract is a continuing obligation separate and independent from any other obligations. All indemnities given by the Contractor in this Contract are subject to, and limited by, the exclusion of Consequential Loss in GC [] and the Total Limit of Liability in GC []. For clarity, no Consequential Loss will be recoverable under the indemnity in GC [].'

The example drafting set out below can be used where the Contractor is indemnifying the Principal for loss arising out of the Contractor's breach.

Drafting example: Indemnity in relation to breach

'The Contractor indemnifies the Principal against any Loss or Claim suffered or incurred by the Principal as a consequence of or in connection with any breach by the Contractor of the Project Agreements, save that the Contractor's liability will be reduced to the extent the Contractor demonstrates that the Loss or Claim was caused by the negligence or breach of the relevant Project Agreement by the Principal.'

The example drafting set out below can be used where the Contractor, as the assignor of intellectual property rights being licensed or assigned under the contract, is indemnifying the Principal if the intellectual property ultimately infringes a third party's intellectual property rights.

²⁵ For example, the comments of Lord Esher MR, in *Baynton v Morgan* (1888) 22 QBD 74 at 77–8.

²⁶ *Sunbird Plaza Pty Ltd v Maloney* (1988) 166 CLR 245.

²⁷ *Tramways Advertising Pty Ltd v Luna Park (N.S.W) Ltd* (1938) (SR) (NSW) 632.

²⁸ *Andar Transport Pty Ltd v Brambles Ltd* (2004) 217 CLR 424 at [17] – [23].

²⁹ *Davis v Commissioner for Main Roads* (1968) 117 CLR 529 at 534 per Kitto J (Windeyer J agreeing); *Westina Corporation Pty Ltd v BGC Contracting Pty Ltd* [2009] WASCA 213 at [64] – [65].

³⁰ *Andar Transport Pty Ltd v Brambles Ltd* (2004) 217 CLR 424 at [29].

³¹ [2010] QSC 127.

Drafting example: Warranty and indemnity clause in respect of intellectual property

'Intellectual Property indemnity

The Contractor indemnifies the Principal, the Principal's Representative, and its Personnel, successors and assigns or any other person with a right to use the Contractor IP or Project IP under GCs [] and [] (Indemnified Persons), from and against all Claims and Losses (including but not limited to legal costs on an indemnity basis) in any way in connection with:

- any Claim that the Project IP or the Contractor IP or any use, reproduction, modification or adaptation by or on behalf of the Indemnified Persons infringes the Intellectual Property, moral rights or any other rights of any third party or entitles any third party to Claim any compensation, royalty fee or other amount (including, without limitation, any Loss suffered by the Indemnified Persons where any Indemnified Persons are the author of any Project IP or the Contractor IP)
- any breach by the Contractor of the warranties in GCs [] or [].

If an action is brought against the Principal claiming that its use of the Spare Parts or the Licensed Technology infringes any Intellectual Property (an Infringement), the Contractor or its Affiliates have the right and obligation to defend the Principal at the Contractor's expense and the Contractor has sole control over the defence of the claim and any negotiation for its settlement but must use its best endeavours to ensure that any defence or settlement provides that the Principal can continue to operate the [infrastructure project] in accordance with the terms of this Contract. The Contractor shall indemnify the Principal in connection with any direct loss (and any loss described in GC []) specifically on account of such infringement or as agreed by the Contractor in an out of court settlement but only if:

- the Principal notifies the Contractor of the Infringement
- the Principal takes no negligent or wilfully wrongful action that impairs the Contractor's defence of the claim
- the Principal acts in accordance with the Contractor's reasonable instructions.

At the Contractor's request, the Principal shall cooperate with the Contractor in such defence.

The Contractor must not settle any action referred to in GC [] without the prior written consent of the Principal if by such settlement the Principal is obliged to suffer any loss, to make any monetary payment, to part with any property or any property interest, to assume any obligations or to grant any licence or other rights (to the extent that the Principal is not indemnified in accordance with GC []).

Moral rights

The Contractor warrants that the performance of the Works, the provision of the Project IP or Contractor IP to the Principal and the use of the Project IP or the Contractor IP by the Principal or its licensees and sublicensees (including making distortions, additions or alterations to the Project IP and the Contractor IP) will not:

- require the Principal or its licensees and sublicensees to identify the authority of any such work, or
- infringe or contravene any moral rights or similar personal rights which by law are not assignable, of any person,

and all necessary consents to give effect to this warranty have been or will be obtained, and will be effective and irrevocable.'

Other drafting considerations

It is also important to consider whether the indemnity drafting should set out the machinery for the making of a claim and the payment of or recovery of the indemnity, including any requirements in relation to notices to be given, the timing of the payment and any rights of set off.

Drafting example

'Conduct of Claims

As soon as reasonably practicable after the Contractor receives any Claim or demand or is served with any legal proceedings which is likely to lead to liability on the part of the Principal under any Claim, the Contractor must give written notice to the Principal setting out details of the Claim, demand or legal proceedings.

The Contractor must not compromise or pay any Claim or demand or admit liability in relation to any Claim or demand or agree to arbitrate, compromise or settle any legal proceedings which is likely to lead to liability on the part of the Principal under any Claim without the prior written approval of the Principal (such approval not to be unreasonably withheld or delayed).

Subject to clause [], in respect of a Claim for which the Principal has accepted liability, the Principal may at any time at its election:

- require the Contractor (and the Contractor must) at the cost of the Principal to take such action as the Principal reasonably requires to avoid, contest, compromise or defend any Claim, demand or legal proceedings which may lead to liability on the part of the Principal under such Claim, or
- take over responsibility for the conduct or defence of such Claim or demand or legal proceedings at the cost of the Principal and the Contractor must cooperate with the Principal in such circumstances.

The Contractor is not required to take any action or conduct or defend any Claim or demand or legal proceedings in accordance with clause [] if to do so would be detrimental to the ongoing conduct of the Contractor's Business.'



2

Liquidated damages

2.1 Introduction

Liquidated damages are an efficient, accessible and convenient contractual remedy for specified breaches of contract. In infrastructure contracts, they are commonly used as a Principal remedy for Contractor breaches in relation to the delayed completion or underperformance of works.

A liquidated damages regime operates in the following way:

- At the time of entering into the contract, the parties agree to fix (for example, liquidate) the actual amount payable as damages in respect of breach of a specific obligation by the Contractor.
- If a breach of that obligation occurs, the Principal's right to claim liquidated damages arises and the pre-agreed liquidated damages are payable by the Contractor or set off against payments due to the Contractor, without the Principal needing to prove actual loss.
- In some circumstances, this may prove to be a windfall for the Principal if its actual loss suffered is less than the liquidated damages. In other cases, the liquidated damages may be less than the actual loss suffered by the Principal. In the former case, the Contractor is unable to complain unless it seeks to challenge the enforceability of the liquidated damages regime itself (for example because the liquidated damages amount constitutes a 'penalty' – see discussion below). In the latter case, the Principal is unable to seek further damages from the Contractor as the pre-agreed liquidated damages are in effect treated as a 'cap' on the Contractor's liability for the relevant breach.

Two common types of liquidated damages are 'delay liquidated damages' and 'performance liquidated damages'. These are discussed in turn in sections 2.2 and 2.3.

2.2 Delay liquidated damages

Delay liquidated damages are payable by the Contractor to the Principal if the works are not completed by the fixed date for completion. Their purpose is to compensate the Principal for the losses it will suffer as a result of the delay. These losses may include direct and indirect losses, for example, additional costs incurred in relation to insurances required, corporate overhead, increased supervision and other consultancy fees, financing charges and revenue forgone.

Delay liquidated damages are typically expressed as a rate payable for each day, week or month of the delay to the completion of the works. This is a way of ensuring that the liquidated damages payable will accurately reflect the actual losses that will be suffered for the relevant period of delay.

Example delay liquidated damages regime

An example delay liquidated damages regime is set out below.

Drafting example: Delay liquidated damages regime

1. *'If the Contractor does not achieve Commercial Operation by the Date for Commercial Operation, the Contractor must pay the Principal the following Delay Liquidated Damages:*
 - a. *[insert amount] per day of delay*
 - b. *if the Commercial Operation Date does not occur by the specified dates below (such that the Principal incurs [insert a description of specific additional costs that the Principal will incur, for example, because it will be in breach of an offtake agreement if Commercial Operation is not achieved by a certain date]):*
 - i. *[insert date] – [insert amount]*
 - ii. *[insert date] – [insert amount]*
2. *The total revenue (if any) received by the Principal from any sale of [insert output of facility, for example, electricity] before the Commercial Operation Date but after the Date for Commercial Operation, will be offset from the amounts payable under clause 1.'*

2.3 Performance liquidated damages

Performance liquidated damages are discussed in further detail in Annexure A.

Performance liquidated damages are payable by the Contractor to the Principal if the works (for example, a facility) underperform. Their purpose is to compensate the Principal for the losses it will suffer as a result of the underperformance of the facility. These losses may include direct and indirect losses, for example, revenue forgone as a result of the reduced output.

The nature of performance liquidated damages will depend on the performance guarantee(s) provided by the Contractor for the facility — that is, the agreed performance specifications that the facility must achieve, as measured in terms of, for example, efficiency, output or availability.

Performance liquidated damages are typically expressed as a net present value calculation of the revenue forgone over the design life of the facility. For example, in the case of a power solar PV facility, if the output of the facility is 5 MW less than the performance guarantee, the performance liquidated damages will equal the revenue forgone over the life of the facility as a result of being unable to sell that 5 MW shortfall.

‘Performance guarantees’ vs ‘minimum performance guarantees’

Some performance liquidated damage regimes have a two tier structure which provides that after certain minimum performance guarantees are met, the Principal will assume care, custody and control of the facility but continue to allow the Contractor to work on the facility and attempt to improve its performance while continuing to pay delay liquidated damages.

This regime is appropriate where:

- the Principal prefers to take possession of the facility and begin operations as soon as commercial operation is achieved (effectively, in certain circumstances, as soon as the minimum performance guarantees are met)
- it is viable, even after the Principal has assumed the care, custody and control of the facility, for the Principal to allow the Contractor access to attempt to improve performance while continuing to pay delay liquidated damages.

2.4 Drafting an enforceable liquidated damages clause

The enforceability of a party’s right to liquidated damages will be assessed by reference to the common law penalties doctrine. This is on the basis that a liquidated damages regime, in accordance with the first limb of that doctrine, imposes a detriment as a collateral or secondary obligation (being the obligation to pay liquidated damages). This arises upon a breach of a primary obligation (being the obligation, for example, to complete the works by a fixed date for completion or in compliance with various performance guarantees).³²

The concern for Principals is the second limb of the penalties doctrine. It historically provided that a liquidated damages clause will be unenforceable if the amount set as liquidated damages is not a ‘genuine pre-estimate of the damage’ that would be suffered in the relevant circumstances. However, as discussed below, recent case law has reframed this second limb in terms of the ‘legitimate interests’ of the parties.

In accordance with the case law below, the question of whether a liquidated damages regime constitutes a penalty is one of construction to be decided upon the terms and circumstances of each particular contract at the time of formation. Whether a clause uses the words ‘penalty’ or ‘liquidated damages’ is not conclusive of its enforceability.³³

If the liquidated damages are found to be a penalty, they will be unenforceable under common law. However, the Principal will still be able to recover unliquidated damages at law provided the contract does not contain an exclusive remedies clause (see discussion in section 2.6).

The penalties doctrine under English law

The penalties doctrine was most recently considered by the Supreme Court of the United Kingdom in the case of *Cavendish Square Holding BV v Talal El Makdessi; ParkingEye Limited v Beavis* [2015] UKSC 67 (**Cavendish**).

In this case, the majority moved away from the concept of ‘genuine pre-estimate of damage’, instead reframing the test as whether a liquidated damages clause ‘imposes a detriment on the contract-breaker out of all proportion to any legitimate interest of the innocent party in the enforcement of the primary obligation’.³⁴ If found to do so, it will be deemed a penalty and therefore unenforceable.

Therefore, the new question for a Principal is — what constitutes its legitimate interests? Here, the majority of the Supreme Court made it clear that the considerations which may be taken into account are broad. For example, it was recognised that compensation is not necessarily the only legitimate interest that a party may have.³⁵ Further, the majority also noted that where a liquidated damages regime is negotiated between properly advised parties of comparable bargaining power, the ‘strong initial presumption must be that the parties themselves are the best judges of what is legitimate’.³⁶

The penalties doctrine under Australian law

Shortly after the Cavendish decision was handed down, the High Court of Australia also had the opportunity to reconsider the penalties doctrine in the case of *Paciocco v Australia and New Zealand Banking Group Limited* (2016) 258 CLR 525.

In this case, the majority closely followed the Cavendish decision and similarly reframed the penalties doctrine, holding that a liquidated damages clause will be unenforceable if it is ‘out of all proportion’ with the ‘legitimate interests’ of the party it serves to protect.³⁷ The majority also emphasised, as in Cavendish, that few constraints apply to the scope of the ‘legitimate interests’ concept.

³² *Andrews v Australia and New Zealand Banking Group Limited* (2012) 247 CLR 205, [10]; *Cavendish Square Holding BV/Beavis v Talal El Makdessi/ParkingEye Limited* [2015] UKSC 67, [14]-[15] (Lord Neuberger and Lord Sumption, Lord Carnwath and Lord Clarke agreeing).

³³ *Dunlop Pneumatic Tyre Co Ltd v New Garage and Motor Co Ltd* [1915] AC 79, [86] (Lord Dunedin).

³⁴ *Cavendish Square Holding BV/Beavis v Talal El Makdessi/ParkingEye Limited* [2015] UKSC 67, [32] (Lord Neuberger and Lord Sumption, Lord Carnwath and Lord Clarke agreeing).

³⁵ *Ibid.*

³⁶ *Ibid.*, [35] (Lord Neuberger and Lord Sumption, Lord Carnwath and Lord Clarke agreeing).

³⁷ *Paciocco v Australia and New Zealand Banking Group Limited* (2016) 258 CLR 525, [51]-[56] (Kiefel J, French CJ agreeing at [2]), [166] (Gageler J), [269]-[270] (Keane J).

However, unlike in *Cavendish*, the majority did not completely discard with the ‘genuine pre-estimate of damage’ formulation. Instead, it appears that it will remain as a form of catchphrase, but with the new ‘legitimate interest’ test adopted as the proper methodology for determining what is considered enforceable. Indeed, as the majority accepted, the exercise of pre-estimating losses may be difficult and ‘not one which calls for precision’.³⁸

Also unlike in *Cavendish*, the majority refrained from any meaningful discussion about whether discretionary factors such as the relative bargaining power of the parties would be considered in assessing the legitimacy of a liquidated damages clause.

Distinguishing between delay liquidated damages and performance liquidated damages

We have seen infrastructure contracts where delay liquidated damages and performance liquidated damages are combined, that is, the same liquidated damages are payable by the Contractor both when the works are delayed or when they fail to meet the performance guarantees.

This drafting approach is not recommended. A combined liquidated damages regime may not differentiate between the different types of breaches and their corresponding losses. For example, it may not differentiate between the alternate scenarios where (a) the works are delayed only but otherwise meets all performance guarantees, or (b) where the works fail to meet the performance guarantees but otherwise were completed on time. In both these circumstances, the liquidated damages ostensibly include a category of loss which the Principal has not suffered. It creates a high risk that the liquidated damages regime will be struck down as a penalty on the basis that it is out of all proportion to the legitimate interests of the Principal when only one type of breach occurs.

Distinguishing between different types/categories of performance liquidated damages

It is also important distinguish between different types/categories of performance liquidated damages to avoid any potential challenges by the Contractor that the performance liquidated damages are out of all proportion to the legitimate interests they serve to protect.

For example, if performance liquidated damages are calculated by reference to output but not efficiency, challenges and uncertainties may arise if a facility meets the specified output guarantees but fails to meet the specified efficiency guarantee. In these circumstances, the Contractor may argue first, that the (output based) performance liquidated damages do not apply and second, if they do apply, that they constitute a penalty because they reflect losses that would be suffered for output shortfalls which are higher than losses that would be suffered for efficiency underperformance.

A combined performance liquidated damages regime is unlikely to be the answer for the same reasons why combined delay liquidated damages and performance liquidated damages are inherently problematic, as discussed above.

2.5 Liability caps in relation to liquidated damages

In practice, the liquidated damages amounts set for major infrastructure projects that are financed on a non-recourse or limited recourse basis are typically estimated below the likely loss that a Principal would suffer. This reflects the commercial reality that the market will only bear a certain level of liquidated damages, and the acceptance of that reality by the Principal given the market response and the significant advantages to it of a liquidated damages regime.

In addition, most infrastructure contracts contain an overall cap on the Contractor’s liability for liquidated damages, often expressed as a percentage of the contract price. There may also be sub-caps for each of delay liquidated damages and performance liquidated damages.

As with all liability caps, this has the effect of transferring the relevant delay and/or performance risk to the Principal. One approach for Principals to deal with this risk is to include a right to terminate when the liquidated damages cap is reached.

2.6 Losing the right to delay liquidated damages if Principal causes delay

Even if a contract contains an enforceable delay liquidated damages regime, the Principal will lose its right to claim delay liquidated damages if it prevents the completion of the works and the Contractor is not given an extension of time to the fixed date for completion. This is the ‘prevention principle’ at work, discussed further in section 4.

Indeed, it is quite common for Contractors to claim that the Principal has committed an act of prevention, especially when an event occurs that is not expressly contemplated by the contract and not within the Contractor’s sphere of responsibility.

This means it is imperative for infrastructure contracts to have a comprehensive extension of time regime that allows extensions to be granted in all circumstances where the delay to the fixed date for completion is caused by a Principal act of prevention.

The ‘prevention principle’ and the corresponding risk it has for the liquidated damages regime also highlights the importance of the Principal resisting the inclusion of an exclusive remedies clauses (discussed in section 2.7).

2.7 Are liquidated damages the Principal’s only remedy?

If a liquidated damages regime is found to be unenforceable (for example because it constitutes a ‘penalty’ — see section 2.4), the Principal may still claim damages at law in respect of its loss, provided there is no exclusive remedies clause which would prevent this or exclude such a right.

³⁸ Ibid, [57]-[58] (Kiefel J, French CJ agreeing at [2]), [176] (Gageler J), [243] (Keane J).

However, if a contract contains an exclusive remedies clause, the Principal may be prevented from doing so — where that exclusive remedies clause provides that the remedies expressly provided for in a contract (for example, liquidated damages) are to the exclusion of any remedies at law. In these circumstances, a Principal may be left without any monetary compensation for delay or underperformance. Depending on the drafting of the exclusive remedies clause however, it may still be open to the Principal to call on other express remedies such as termination.

Exclusive remedies clauses are discussed further in section 3.

2.8 Failsafe clauses to ensure remedies at law remain available

If a liquidated damages regime is found to be unenforceable because it constitutes a ‘penalty’ (see section 2.4) or because the Principal commits an act of prevention (see section 2.5), a failsafe clause may preserve the Principal’s right to obtain a remedy at law.

An example failsafe clause in relation to a delay liquidated damages regime is set out below.

Drafting example: Failsafe clause in relation to a delay liquidated damages regime

‘If this clause (or any part thereof) is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Principal from claiming “Delay Liquidated Damages”, the Principal is entitled to claim damages at law against the Contractor for its failure to achieve “Completion” by the “Date for Completion” up to the “Aggregate Liability Cap for Delay Liquidated Damages”.’

Contractors often argue that an exclusive remedies clause should be included in its contract without a failsafe clause so that liquidated damages are the Principal’s only possible remedy for the Contractor’s delay or underperformance. As discussed in section 3.6, we advise that Principals should resist this.

2.9 When are delay liquidated damages and performance liquidated damages paid?

It is common for a liquidated damage regime to operate in the following way (assuming neither the Principal or the Contractor exercises any right to terminate the contract):

- Delay liquidated damages are payable by the Contractor if the facility is not completed by the agreed date for completion. These are invoiced by the Principal in accordance with the agreed calculation, for example a rate payable for each day, week or month of the delay.
- The Contractor’s aggregate liability for delay liquidated damages will be subject to a liability sub-cap (for example 10% of the contract price).

- Performance liquidated damages are payable by the Contractor if the facility does not meet the performance guarantees at the agreed date for completion and one of the following occurs:
 - the Principal determines or the Contractor elects at any time after that date that the Contractor will stop further modifications of the facility
 - the Contractor’s liability for delay liquidated damages has been exhausted under the sub-cap for delay liquidated damages (for example, the cap has been reached).

What if there is also an availability guarantee?

The simplified liquidated damages regime above does not take into account that performance liquidated damages may also arise because a facility fails to meet an availability guarantee. This is because performance against an availability guarantee is measured over a period of time.

An example availability guarantee is set out below.

Drafting example: Availability guarantee

‘The Contractor guarantees that the facility will operate at the guaranteed availability for a period of 12 months from not later than two months after the Date of Commercial Operation.’



3

Exclusive remedy clauses

3.1 Introduction

Contractors commonly request a clause which provides that the remedies expressly provided for in a contract (for example termination, suspension, force majeure and liquidated damages) are to the exclusion of any remedies at law (**exclusive remedies clause**). In the same vein, they may also request to remove any express references to a Principal's recourse to remedies at law.

Contractors have a number of reasons for doing this, including:

- increasing the certainty of their agreements by specifying the remedies they agree to
- fixing their financial exposure in the event of any breach, delay or non-performance
- being able to expedite dispute resolution processes by making it clear that only remedies expressly provided for in the contract can be called on.

Agreeing to an exclusive remedies clause may have significant consequences for a Principal. In particular, it will limit their legal remedies to those expressly set out in the contract and, in some cases where there are no remedies for a particular liability, it will leave the Principal without a remedy at all.

The true effect of an exclusive remedies clause will always depend on its drafting. The key issues to be determined are:

- What remedies at law are being excluded? Is it all remedies or only common law damages?
- In respect of which legal liabilities are the remedies at law being excluded? Is it all types of legal liability, including negligence and breach of contract, or only particular liabilities such as the liability to pay liquidated damages?

If a contract does not contain an exclusive remedies clause, a Principal may be able to claim remedies at law (for example, breach of contract) as an alternative to any remedies expressly provided for in the contract (for example, liquidated damages), including in circumstances where the relevant contractual remedy is held to be unenforceable (see discussion in section 2.6 in relation to liquidated damages).

3.2 Exclusive remedies clauses

An exclusive remedies clause attempts to prevent a Principal from seeking common law remedies, including damages, as an alternative or in addition to the remedies expressly provided for in a contract (for example, liquidated damages), including where the express contractual remedy is unenforceable.

An example exclusive remedies clause is set out below.

Drafting example: Exclusive remedies clause

'The parties agree that their respective rights, obligations and liabilities as provided for in this Contract are exhaustive of the rights, obligations and liabilities of each of them to the other arising out of, under or in connection with this Contract or the Works, whether such rights, obligations and liabilities arise in respect or in consequence of a breach of contract, a statutory duty or a tortious or negligent act or omission which gives rise to a remedy at common law. Accordingly, except as expressly provided for in this Contract, neither party will be obligated or liable to the other in respect of any damages or losses suffered by the other which arise out of, under or in connection with this Contract or the Works, whether by reason or in consequence of any breach of contract, a statutory duty or tortious or negligent act or omission.'

The above example clause would significantly affect a Principal's ability to recover any losses it suffers. In particular, the final sentence provides that, other than those clauses in the contract for which a remedy is specifically provided, the Principal is not able to recover its loss from the Contractor arising out its breach of contract, breach of statutory duty or any tortious or negligent act or omission. It follows that, if there has been a failure by the Contractor to satisfy a contractual obligation, or if the Contractor has been negligent, then unless the Principal can point to a remedy expressly provided under the contract for such a breach or negligence, it would be left without a remedy.

3.3 Could a liquidated damages regime be sufficient?

Although a contract might include a delay liquidated damages regime and a performance liquidated damages regime, the Principal is usually concerned about more than just meeting the date for completion and performance guarantees.

There are many other Contractor obligations under a contract for which remedies should be available in the event of non-compliance or breach. If a comprehensive exclusive remedies clause is inserted and no remedy has been expressly provided for in the contract, then there are no legal consequences for these failures of the Contractor, no rights of the Principal to recover its loss and a resulting transfer of liability risk from the Contractor to the Principal.

3.4 Enforcing exclusive remedies clauses

It is clear that, whether the terms of a contract constitute a full statement of the rights and liabilities of the parties so as to exclude remedies at law, depends on the construction of each individual contract.³⁹ If a party's right at law to claim a remedy for a breach of contract is to be removed contractually, it must be done by clear words.⁴⁰

Courts in both England and Australia have held that clear wording may remove the common law right to damages. This view has been followed in a number of cases.⁴¹ In *Baese Pty Ltd v RA Bracken Building Pty Ltd* (1990) 6 BCL 137, Giles J stated at 142 that:

[...] it would require clear words [...] before it was held that a liquidated damages clause was the entirety of the proprietor's rights, because the proprietor would be exposed to being left with no entitlement at all to damages for delay if by reason of his own contribution thereto he was unable to rely upon the liquidated damages clause.

This position has arguably been broadened by Australian courts, so that 'clear words' does not necessarily mean 'express words'. In *Turner Corporation Ltd (Receiver and Manager Appointed) v Austotel Pty Ltd*,⁴² Cole J at 36 held that a party's rights to common law damages do not need to be excluded by express words, rather, a general intention, surmised from the terms of the contract more generally, can be sufficient:

If on the proper construction of the contract as a whole, it can be said that a party has surrendered its common law rights to damages, that construction must be given effect to, notwithstanding absence of express words surrendering the common law rights to damages.

However, the identification of one remedy in a contract is not in itself enough to impliedly exclude other remedies.⁴³

This is an important and controversial statement of principle, as it suggests that if, on the structure of the contract as a whole, it appears that a party has surrendered its rights to common law damages by the insertion of a particularly comprehensive exclusive remedies clause, that party will have no remedies other than those specifically stated in the contract.

3.5 Enforcing exclusive remedy clauses

Generally speaking, when in interpreting a contract, a court will aim to give effect to the parties' intentions as evidenced from the terms of the contract. Therefore, where the parties have expressly provided that the remedy set out in the contract (for example, liquidated damages) is to be an exclusive remedy, the courts will not interfere with this position. However, it is also clear from the authorities referred to above that, if a party's right at law to claim remedies for a breach of contract is to be contractually removed by an exclusive remedy clause, this must be done by clear words.

That said, courts have upheld less clearly worded exclusive remedy clauses.

For example, in *Temloc Ltd v Errill Properties Ltd* (1987) 39 BLR 30, a clause in a contract appeared under the heading 'Damages for Non-Completion' and stated that the amount of 'liquidated and ascertained damages' to be paid was as stated in the Appendix. The relevant section in the Appendix was completed with the word 'nil'. The court held that, on the proper construction of the contract, the parties had come to an exhaustive agreement that no damages would be payable by the Contractor at all for delayed completion, including no unliquidated damages at law.

3.6 Recommended solutions

A Principal's preferred position must always be to resist surrendering any legal rights, and therefore it should reject a proposal to include an exclusive remedies clause in a contract.

If that is not possible, there may be other compromise options available. One such option is for a Principal to accept a carefully drafted exclusive remedies clause which:

- is limited to a specific breach (for example, delay) and for which there is an express remedy in the form of delay liquidated damages
- only excludes specific remedies at law such as damages or other forms of monetary compensation, but does not exclude other rights, such as the right to terminate the contract.

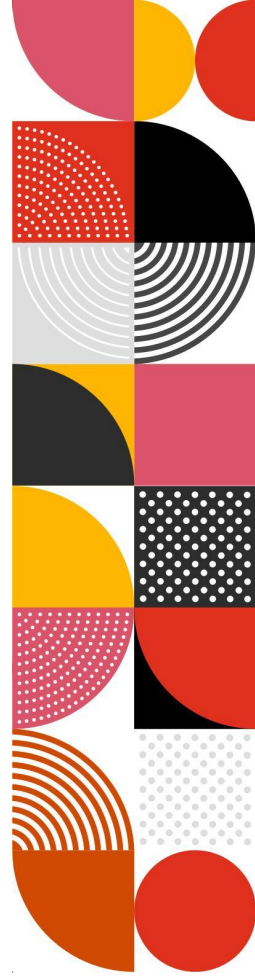
³⁹ *Turner Corporation Ltd (Receiver & Manager Appointed) v Austotel Pty Ltd* (1994) 13 BCL 378.

⁴⁰ *Bitannia Pty Ltd v Parkline Constructions Pty Ltd* (2010) 26 BCL 335 at [77]; *Concut Pty Ltd v Worrell* (2000) 75 ALJR 312 at [23]; *H W Nevill (Sunblest) v William Press & Sun* (1981) 20 BLR 78, 88; *Baese Pty Ltd v R A Bracken* (1990) 6 BCL 137.

⁴¹ For example, *Photo Production Ltd v Securicor Transport Ltd* [1980] AC 827 (Lord Diplock); *Hancock v Brazier (Anerley) Limited* (1966) 1 WLR 1317; *Billyack v Leyland Construction Co Ltd* (1968) 1 WLR 471; *Bitannia Pty Ltd v Parkline Constructions Pty Ltd* (2010) 26 BCL 335 at [77]; *Concut Pty Ltd v Worrell* (2000) 75 ALJR 312 at [23]; *H W Nevill (Sunblest) v William Press & Sun* (1981) 20 BLR 78; *Baese Pty Ltd v RA Bracken Building Pty Ltd* (1990) 6 BCL 137.

⁴² (1994) 13 BCL 378.

⁴³ *Semantic Software Asia Pacific Ltd v Ebbsfleet Pty Ltd* (2018) 124 ACSR 146; *Gilbert-Ash (Northern) Ltd v Modern Engineering (Bristol) Ltd* [1974] AC 689; *Concut Pty Ltd v Worrell* (2000) 176 ALR 693.



There remains a risk with this approach which is that if the remedy expressed in the contract (for example, delay liquidated damages) is found to be unenforceable, the right to claim the specified and excluded remedies at law will have been lost, unless there is some form of failsafe clause which preserves a Principal's right to obtain remedies at law. This is discussed further in the context of liquidated damages in section 2.7.

If the Contractor insists on an exclusive remedies clause another option is to ensure that the Principal has an express remedy in the contract that corresponds to each obligation or liability of the Contractor. However, the risks associated with this approach are leaving gaps and drafting less than adequate remedies.

A modified approach might be to include a 'code of rights' provision in the contract, providing that, except where express remedies are specifically provided under the contract (for example, under a liquidated damages regime), each party will be able to claim remedies at law for breaches of the contract.



4

Prevention Principle

4.1 What is the Prevention Principle?

The 'Prevention Principle' is classically applied by the courts in infrastructure contracts to preclude Principals from claiming liquidated damages for delay in circumstances where the Principal is itself responsible for causing the delay. Sometimes known as the 'Peak' Principle, in reference to the English case of *Peak Construction (Liverpool) Ltd v McKinney Foundations Ltd* (1970) 1 BLR 111 (**Peak**) where the principle was first applied, the Prevention Principle ensures that neither party may benefit under the contract from its own breach.

The position under English law is that if the Principal prevents the completion of the works in any way, it loses the right to claim liquidated damages for failure to complete by the fixed date for completion.⁴⁴

Acts of prevention resulting in the loss of the right to levy liquidated damages typically include breach of express and implied obligations under the contract. However, they also extend to acts that are in accordance with the contract but that prevent completion by the date for completion, for example, ordering extras as a variation, and the Prevention Principle can apply even where the Contractor is also responsible for part of the delay. We examine the broad application of the rule in more detail below.

The Prevention Principle has also been applied in the same way in Australia as it has in England.⁴⁵ In fact, acts of prevention were extended significantly by the court in *Peninsula Balmain Pty Ltd v Abigroup Contractors Pty Ltd* (2002) 18 BCL 322. In that case, the Contractor failed to comply with the prescribed notice or claim requirements under the contract. The court decided that the contract administrator was nevertheless required to consider the merit of the Contractor's claim honestly and fairly, and if it did not do so, this would be an act of prevention.

4.2 The operation of the Prevention Principle

Time at large

Under infrastructure contracts, the effect of the Prevention Principle is that if the Principal causes delay to the date for completion and there is no extension to the date for completion, time will be considered to be 'at large', meaning that the Contractor has a reasonable time within which to complete. There no longer being an ascertainable date for completion, the Principal cannot levy liquidated damages and the remedy is lost.

The loss of the right to levy liquidated damages is more acute for the Principal if the contract also contains an exclusive remedies clause that precludes recovery of common law damages. What this means is that if time is 'at large' as a consequence of the Prevention Principle and the Contractor fails to complete within a reasonable time, the Principal may also be denied common law damages for the breach.

Rationale

There are various rationales for the existence of the Prevention Principle. They have been variously described as:

- the principle that a party should not be able to recover damages caused by that same party
- an implied term or implied supplemental contract⁴⁶
- waiver or estoppels⁴⁷
- unjust enrichment.

Others have suggested that there is in fact no coherent overarching rationale for the Prevention Principle or that it may be regarded as a manifestation of the obligation to cooperate implied as a matter of law in all contracts (see *Secured Income Real Estate (Australia) Ltd v St Martins Investments Pty Ltd* (1979) 144 CLR 596, 607 (Mason J) and *Bensons Property Group Pty Ltd v Key Infrastructure Australia Pty Ltd* [2021] VSCA 69). In any case, the fundamental considerations are of fairness and reasonableness.⁴⁸

⁴⁴ *Trollope & Colls Ltd v North West Metropolitan Regional Hospital Board* [1973] 1 WLR 601 at 607; *Multiplex Ltd v Honeywell Ltd* (No 2).

⁴⁵ See, for example, *Gaymark Investments Property Ltd v Walter Construction Group* (1999) 16 BCL 449 and more recently *Probuild Constructions (Aust) Pty Ltd v DDI Group Pty Ltd* (2017) 95 NSWLR 82.

⁴⁶ *SBS International Pty Ltd v Venuti Nominees Pty Ltd* [2004] SASC 151, [11] (Besanko J).

⁴⁷ *Ibid.*

⁴⁸ *SMK Cabinets v Hilli Modern Electrics* [1984] VR 391, 397 (Brooking J); *Spiers Earthworks Pty Ltd v Landtec Projects Corp Pty Ltd* (No 2) (2012) 287 ALR 360; *Probuild Constructions (Aust) Pty Ltd v DDI Group Pty Ltd* (2017) 95 NSWLR 82.

Response to the Prevention Principle

The Prevention Principle will not operate if the contract contains a mechanism which allows the fixed date for completion to be extended to reflect the delay to that date caused by the Principal's acts of prevention, and that mechanism is exercised.

In many infrastructure contracts there is also an 'override' clause which permits the Principal or the Contract Administrator to extend the date for completion at any time and for any reason, and whether or not the Contractor has submitted an extension of time claim. It can be used to defeat the Prevention Principle in circumstances where the extension of time clause is deficient or is not administered properly.

Neither a comprehensive extension of time mechanism nor an override clause will, however, protect the Principal from the Prevention Principle where the Principal or the Contract Administrator (as relevant) fails to invoke either of these provisions.

As discussed earlier, under both English and Australian law the scope of acts of prevention giving rise to the Prevention Principle is broad. Courts have generally regarded any wrongful act or fault as sufficient to enliven the principle, and it is not necessary that the act constitutes a breach of contract or carries any fault element.

The extension of time clause therefore needs to be drafted in similarly broad terms and if there is any ambiguity, Peak makes it clear that the clause will be construed *contra proferentem* against the Principal. Delay events described as 'events beyond the control of the Principal', do not appear to be sufficient.⁴⁹ However, where the extension of time clause provides specifically for the Principal's breach, waiver or prevention, the Prevention Principle will not apply and the liquidated damages regime will be preserved. As stated by Salmon LJ in Peak:⁵⁰

*'The liquidated damages and extension of time clauses in printed forms of contract must be construed strictly contra proferentem. If the Principal wishes to recover liquidated damages for failure by the Contractors to complete on time in spite of the fact that some of the delay is due to the Principals' own fault or breach of contract, then the extension of time clause should provide, expressly or by necessary inference, for an extension on account of such a fault or breach on the part of the Principal.'*⁵¹

One of the more contentious aspects of this area of law concerns the interaction of conditions precedent to the granting of an extension of time with the operation of the Prevention Principle. The issue is whether the Prevention Principle is subject to an administrative act (such as the provision of notice by the Contractor) or whether it can operate independently of such procedural requirements of particular contracts.

In England, Jackson J in *Multiplex Ltd v Honeywell Ltd (No 2)* held that the Prevention Principle is not engaged when the parties have agreed to make notice by the Contractor a condition precedent, as terms requiring notice of delay 'serve a valuable purpose'.⁵² However, the case law in Australia remains divided. In *Gaymark v Walter Construction (Gaymark)*,⁵³ the contract under dispute provided that a notice of delay was to be given within 14 days of the cause of delay arising. The Supreme Court of the Northern Territory reaffirmed an arbitral award that found that, even though the notice requirements were not complied with by the Contractor, because at least some of the delay was caused by the Principal, the right to claim liquidated damages was lost and time was set at large. This view has been subjected to strong academic criticism.⁵⁴ Later cases have suggested that conditions precedent must be satisfied before the Prevention Principle can have application. Indeed, in *Turner Corporation Limited (Receiver and Manager Appointed) v Austotel Pty Ltd*,⁵⁵ Cole J stated that the builder could not:

*[...] claim that the act of prevention which would have entitled it to an extension of the time for practical completion resulted in its inability to complete by that time. A party to a contract cannot rely upon preventing conduct of the other party where it failed to exercise a contractual right which would have negated the affect [sic] of the preventing conduct.'*⁵⁶

A further question regarding the scope of the Prevention Principle concerns the extent to which the liquidated damages regime is invalidated by the Principal's act of prevention, and how to reset the completion date where there are concurrent delays, including as a result of a Principal act of prevention. If the Principal causes four days of delay to a Programme, and the Contractor is 100 days late in delivery of the project, can the Principal recover 96 days of liquidated damages, or is the entire liquidated damages regime invalidated? And what is considered to be a reasonable time to complete?

Early authority on this point favoured the view that any act of prevention by the Principal invalidated the entire liquidated damages regime. In *Holme v Guppy*,⁵⁷ the delay in completion was five weeks; the Principal was responsible for four weeks of the delay and the Contractor for one week. The court found that the Principal was not entitled to any liquidated damages due to its act of prevention.

This view appears to be based on the needs of certainty and predictability and finds its foundation in the classic case of Peak. More recent authority suggests that the Principal's delay and the Contractor's delay could be in some circumstances divisible for the purposes of determining and enforcing liquidated damages, but should be viewed with caution in light of Peak's authority. In *Rapid Building Group Ltd v Ealing Family Housing Association Ltd*,⁵⁸ Lloyd LJ remarked that:

⁴⁹ Jones, D., 2009. Can Prevention be Cured by Time Bars?, *Society of Construction Law*, (Paper 158).

⁵⁰ (1970) 1 BLR 111.

⁵¹ *Ibid.*, 121.

⁵² [2007] EWHC 447 (TCC).

⁵³ [1999] 16 BCL 449.

⁵⁴ Wallace, I. D., 2002. Prevention and Liquidated Damages: A Theory Too Far?, *Building and Construction Law*, pp. 18, 82.

⁵⁵ (1994) 13 BCL 378, [11] (Cole J).

⁵⁶ *Ibid.*

⁵⁷ (1838) 3 M&W 387.

⁵⁸ (1984) 29 BLR 5.

I was somewhat startled to be told in the course of the argument that if any part of the delay was caused by the Owner, no matter how slight, then the liquidated damages clause [...] becomes inoperative.⁵⁹

I can well understand how that must necessarily be so in a case in which the delay is indivisible and there is a dispute as to the extent of the Owner's responsibility for that delay. But where there are, as it were, two separate and distinct periods of delay with two separate causes, and where the dispute relates only to one of those two causes, then it would seem to me just and convenient that the Owner should be able to claim liquidated damages in relation to the other period.⁶⁰

Nevertheless, Lloyd LJ went on to note that:

[...] it was common ground before us that is not a possible view [...] in the light of the decision of the Court of Appeal in Peak's case, and therefore I say no more about it.⁶¹

In *SMK Cabinets v Hili Modern Electrics*,⁶² Brooking J stated that the Principal's act of prevention served only to prevent the Principal from taking liquidated damages that accrued after the Principal's breach.⁶³ While this view has much to commend it, the case of Peak remains dominant and authorities seem to suggest that where an act of prevention goes to part of the delay but not the whole, the entire liquidated damages clause will be invalidated. This traditional view has been reinforced in Australia in *SBS International Pty Ltd v Venuti Nominees Pty Ltd*,⁶⁴ where Besanko J held that, in a situation where delay to the completion date is caused by the Contractor as well as the Principal, it is not open to a court to apply the liquidated damages clause to the delay specifically caused by the Contractor:

In those cases where both Principal and Contractor are responsible for delay, the liquidated damages clause will be held inapplicable unless there is a contractual provision by way of an appropriate extension of time clause which accommodates or deals with the delay caused by the contract of the Principal.⁶⁵

There is some uncertainty as to the application of the Prevention Principle in the context of offshore shipbuilding contracts. Hamblen J in *Adyard Abu Dhabi v SD Marine Services* [2011] EWHC 848 (Comm) confirmed that the Prevention Principle applies to shipbuilding contracts generally, but later shipbuilding cases have avoided detailed discussion on the Prevention Principle.⁶⁶ As such, where the contract is seen as a complete code setting out the intention of the parties as to the allocation of the risk of delay, if the Contractor is delayed by anything that is not a permissible delay under the contract, it is considered to be a Contractor's risk.

4.3 Can the Prevention Principle be contracted out of?

It is possible for the parties to provide that some acts of prevention escape the Prevention Principle. However, this would need to be done by very careful drafting, given the presumption that the parties do not intend for the Contractor to take on the risk of the Principal's acts of prevention. One example of seeking to narrow the scope of the Prevention Principle and paring back the corresponding extension of time clause is set out below.

Drafting example

Set out below is an example definition of 'Act of Prevention':

'Act of Prevention means:

- any act by the Principal or its Personnel, other than as permitted or required under this Contract
- any omission by the Principal to do something which it is obligated to do under this Contract, other than as permitted or required under this Contract
- any breach by the Principal of this Contract

but does not include any act, omission or breach to the extent caused or contributed to by:

- a Force Majeure Event
- the Contractor's breach of this Contract
- the negligence or unlawful act or omission of the Contractor or any of its Personnel.

⁵⁹ *Rapid Building Group Ltd v Ealing Family Housing Association Ltd* (1984) 29 BLR 5, cited in Eggleston, B., 2009. *Liquidated Damages and Extensions of Time In Construction Contracts*. Wiley Blackwell.

⁶⁰ *Ibid.*

⁶¹ *Ibid.*

⁶² [1984] VR 391

⁶³ *Ibid.*, cited in Pickervance, K., 2006. Calculation of a Reasonable Time to Complete When Time is at Large, *International Construction Law Review*, pp. 167, 177.

⁶⁴ [2004] SASC 151.

⁶⁵ *Ibid.*, [12] (Besanko J).

⁶⁶ *Zhoushan Jinhaiwan Shipyard Co Ltd v Golden Exquisite Inc* [2015] 1 Lloyd's Rep. 283; *Jiangsu Guoxin Corporation Ltd (formerly known as Sainty Marine Corporation Ltd) v Precious Shipping Public Co. Ltd* [2020] EWHC 1030 (Comm).

Infrastructure contracts often also contain clauses which seek to exclude the Prevention Principle outright, for example:

'Any principle of law or equity (including the Prevention Principle and those which might otherwise entitle the Contractor to relief), which might otherwise cause the date for commercial operation to be set at large and liquidated damages unenforceable, will not apply.'

'For the avoidance of doubt, a delay caused by any act or omission of the Principal or any failure by the Principal or the Principal's representative to comply with this clause will not cause the date for commercial operation to be set at large.'

The England and Wales Court of Appeal has clarified that the Prevention Principle is an implied term, not 'an overriding rule of public or legal policy'.⁶⁷ As such, parties may use express terms to contract out of the Prevention Principle. Coulson LJ stated that:

*Clause 2.25.1.3(b) was an agreed term. There is no suggestion [...] that the parties cannot contract out of some or all of the effects of the prevention principle: indeed, the contrary is plain. Salmon LJ's judgment in Peak v McKinney [...] expressly envisaged that, although it had not happened in that case, the parties could have drafted an extension of time provision which would operate in the employer's favour, notwithstanding that the employer was to blame for the delay.*⁶⁸

This view has not yet received judicial confirmation in Australia. However, general principles of law in related areas provide guidance in this area.

The doctrine of freedom of contract means individuals are free to make agreements as they wish, although this can be outweighed by other public policy considerations.⁶⁹ Providing an agreement does not offend public policy, it will be enforced on its terms. This was confirmed by the High Court in relation to penalties:⁷⁰ exceptions from the doctrine of freedom of contract normally require an element of unconscionability or oppression. By analogy therefore, the Prevention Principle may be excluded in contracts where the parties have expressly agreed upon their risk allocation in terms of time and money.

But the competing argument is that a provision in a contract allowing a Principal to recover damages as a result of its own delay will be viewed by a court as unconscionable. Does this mean that a provision which attempts to exclude the operation of the Prevention Principle may sound in a claim for restitution through the principle of unjust enrichment? It would appear unlikely as the Prevention Principle is not a fundamental equitable principle, and a claim for unjust enrichment in respect of a clause mutually agreed to by the parties would be a highly unusual extension of restitutionary principle.

On balance, the better view is that the Prevention Principle can be contracted out of, provided there is no oppression or disadvantage – and if there is, the doctrine of unconscionability may apply to impose an equitable remedy.

Example regime

An example regime to assist a Principal to avoid the Prevention Principle is set out below.

Drafting example

'Subject to the provisions of this GC [], the Contractor is entitled to an extension of time to the Date for Commercial Operation as assessed by the Principal, where a delay to the progress of the Works is caused by any of the following events, whether occurring before, on or after the Date for Commercial Operation:

- *any act, omission, breach or default by the Principal, the Principal's Representative and their agents, employees and contractors (excluding the Contractor and its Subcontractors)*
- *a Variation, except where that Variation is caused by an act, omission or default of the Contractor or its Subcontractors, agents or employees*
- *a Suspension of the Works pursuant to GC [], except where that suspension is caused by an act, omission or default of the Contractor or its Subcontractors, agents or employees*
- *[etc].*

Despite any other provisions of this GC [], the Principal may at any time and for any reason and whether or not the Contractor has complied with the requirements of GC [], extend the Date for Completion. The right to extend the Date for Completion is for the benefit of the Principal only.'



⁶⁷ *North Midland Building Ltd v Cyden Homes Ltd* [2018] EWCA Civ 1744, [30].

⁶⁸ *Ibid.*, [36].

⁶⁹ See *Australian Securities and Investments Commission v Fortescue Metals Group Ltd* [2011] FCAFC 19 at [222].

⁷⁰ *Ringrow Pty Ltd v BP Australia Pty Ltd* (2005) 222 ALR 306, 314 (citing *AMEV-UDC Finance Ltd v Austin* (1986) 162 CLR 170 at 190).

5

Proportionate liability

5.1 Introduction

This section provides an overview of the proportionate liability regime which has been enacted in all Australian States and Territories in varying forms, and which represents a significant departure from the common law principles of liability sharing still used in parts of the United Kingdom.

This section also discusses how the regime applies and operates throughout Australia and the change that the regime has made to the common law doctrine of joint, several and joint and several liability for claims for property damage or economic loss arising from carelessness or a failure to take reasonable care. The proportionate liability regime is unfortunately quite complicated with much of the devil in the detail, a difficulty that is enhanced by the many subtle differences across the different jurisdictions. It is beyond the scope of this paper to cover all of the intricacies of the proportionate liability regime, but this section will highlight key aspects of the regime and discuss the slight variances in its application across different Australian jurisdictions.

This section also discusses the history to the introduction of the regime, as well as proposals to introduce a model and uniform law of proportionate liability in Australia.

Knowledge and understanding of the proportionate liability regime are important for commercial and infrastructure lawyers because the contractual risk allocation in infrastructure contracts can be materially altered by operation of the relevant proportionate liability legislation.

5.2 Why was the proportionate liability regime introduced into Australia?

In 1994, concerns about the way in which the common law doctrine of joint and several liability influenced litigation decisions and a perceived crisis regarding the cost of liability insurance prompted an inquiry instituted by the Commonwealth and NSW Attorneys General and conducted by Professor J L R Davis. Specifically, concerns were being voiced by professional and industry bodies that organisations with deep pockets (for example, auditors) or insurers were being targeted in negligence actions not because of their liability (which was often small), but because they were more able to pay large damages awards. A consequence was a significant increase in insurance premiums for liability insurance (especially professional liability). While recommendations for reform were made as a result of that inquiry, they lay dormant until the collapse of the HIH Insurance Group in 2001, which provided the catalyst for change.

5.3 What is the proportionate liability legislation?

In 2003, the Finance Ministers of all Australian jurisdictions agreed to produce uniform national legislation. This was not achieved, however, and proportionate liability legislation was introduced under 11 Acts with a range of differences.

The relevant Acts are set out below.

Jurisdiction	Legislation
Cth	<i>Competition and Consumer Act 2010 (Cth) – Part VIA (CCA)</i> <i>Australian Securities and Investments Commission Act 2001 (Cth) – Part 2, Division 2, Subdivision GA (ASIC Act)</i> <i>Corporations Act 2001 (Cth) – Part 7.10, Division 2A (Corporations Act)</i>
NSW	<i>Civil Liability Act 2002 (NSW) – Part 4 (NSW Act)</i>
VIC	<i>Wrongs Act 1958 (Vic) – Part IVAA (Vic Act)</i>
WA	<i>Civil Liability Act 2002 (WA) – Part 1F (WA Act)</i>
QLD	<i>Civil Liability Act 2003 (Qld) – Part 2 (Qld Act)</i>
SA	<i>Law Reform (Contributory Negligence and Apportionment of Liability) Act 2001 (SA) – Part 3 (SA Act)</i>
TAS	<i>Civil Liability Act 2002 (Tas) – Part 9A (Tas Act)</i>
NT	<i>Proportionate Liability Act 2005 (NT) (NT Act)</i>
ACT	<i>Civil Law (Wrongs) Act 2002 (ACT) – Chapter 7A (ACT Act)</i>

5.4 What is the effect of the proportionate liability regime and how does it differ from the common law regime?

What are the common law principles on shared liability?

The common law principles on shared liability are as follows:

- **Severall liability:** Where two or more parties undertake separate obligations and each is liable only for its own obligations. If one party fails to meet its obligations, the other party is not liable for that failure.
- **Joint liability:** Where two or more parties undertake the same obligation and each is liable in full for the performance of that obligation. In the event of non-performance, the parties would have to be sued jointly, and if one party pays the liability in full, it can require the other parties to pay their share.
- **Joint and severall liability:** Where two or more parties undertake the same obligation, action can be taken against and total loss recovered from one wrongdoer, regardless of the extent of its fault and leaving it up to that defendant to seek contribution from the other wrongdoers.

How does proportionate liability differ from the common law?

Where it applies, the proportionate liability regime replaces the common law rules of joint, severall and joint and severall liability with a system which requires liability for the loss to be apportioned between all the concurrent wrongdoers according to their respective responsibility for the loss. Each concurrent wrongdoer's liability will be limited to the amount of loss attributable to it.

The proportionate liability regime prevents the plaintiff from selecting the defendant(s) with the deepest pockets or those which are insured to recover from, and it 'protects defendants from having to bear more than a just share of liability'.⁷¹ It eliminates the chosen defendant(s)' burden of chasing the other wrongdoers for contribution and transfers the risk of an insolvent wrongdoer from the defendant to the plaintiff.

The way in which the proportionate liability regime interferes with the allocation of contractual risk is illustrated in the following common contractual scenarios:

Scenario	Example	Pre-proportionate liability regime	Post-proportionate liability regime
Co-Contractors	A Principal separately contracts with both an architect and a builder to construct a project. Both have a duty of care to the Principal with respect to the quality of the design, and both are in breach when the design is found to be defective.	Principal can recover 100% of its loss from either party.	Principal only entitled to recover from each party that portion of the loss for which the particular party is responsible.
Head Contractor and sub-contractor	A Principal contracts with a Head Contractor to construct certain works. The Head Contractor subcontracts aspects of the construction. Both Head Contractor and sub-contractor breach their obligation to carry out the works with reasonable skill and care and the Principal suffers loss.	Principal can recover 100% of the loss from the Head Contractor. (Note: the Head Contractor would likely have a contractual right to seek a contribution from the sub-contractor).	Principal only entitled to recover from each party that portion of the loss for which that party is responsible (for example, unable to solely rely on the financial capacity of the Head Contractor).
Co-sellers	A buyer contracts with multiple sellers to purchase shares in a company. The sellers breach a warranty given by them jointly under the sale contract in breach of the State/Federal misleading or deceptive conduct provisions.	Buyer can recover 100% of the loss from one of the sellers.	Buyer only entitled to recover from each seller that portion of the loss for which that seller is responsible.

⁷¹ Clarke QC, G. S., 2019. Proportionate Liability in Commercial Cases: Principles and Practice, *ALJ*, pp. 93, 188, 189.

Where the proportionate liability regime does not apply, the common law principle applies, and a wrongdoer will be jointly and/or severally liable (as the case may be) to the plaintiff for the whole of the plaintiff's loss and must rely on statutory, contractual or equitable rights of contribution or indemnity.

In England and Wales, as in Australia, rising insurance costs prompted debate about the introduction of a proportionate liability regime.⁷² However, England and Wales have retained the principle of joint and several liability in the context of breach of contract and construction disputes, with judicial commentary on proportionate liability mainly arising in the context of torts and mesothelioma cases.⁷³ For example, in *Barker v Corus*,⁷⁴ a plaintiff brought an action in tort law after being exposed to asbestos in the course of employment with several employers. Some employers were insolvent. The House of Lords held that the parties were liable in the proportions to which they contributed to the harm.

5.5 When and how does the proportionate liability regime apply?

For the proportionate liability regime to apply, the plaintiff must have brought an 'apportionable claim' against at least one defendant in circumstances where there are other concurrent wrongdoers which may also be liable.

'Apportionable claim'

While an 'apportionable claim' generally requires carelessness, the requirements are expressed differently across the different proportionate liability jurisdictions, which means that the range of claims falling within the proportionate liability regime may vary, particularly in a contractual context.⁷⁵

Carelessness – New South Wales, Victoria, Western Australia, Tasmania, Australian Capital Territory and Northern Territory

Subject to some minor variation, the legislation in these jurisdictions provides that proportionate liability applies to claims for economic loss or damage to property in an action for damages (whether in contract, tort or otherwise), arising from a **failure to take reasonable care**, excluding any claim arising out of personal injury.⁷⁶

There is a live issue around what constitutes an action for damages arising from 'a failure to take reasonable care' and, by extension, how the proportionate liability regime applies to claims based on breach of a strict contractual obligation or warranty.

On one interpretation, the legislation only applies to contractual claims where there is a breach of an express or implied contractual term requiring the defendant to exercise reasonable care, for example, a contractual duty of care. On this interpretation, apportionment would not be available in a claim for breach of a strict contractual duty or warranty, even if the breach were caused by a failure to take reasonable care. No court has yet applied such a narrow interpretation, although such an interpretation is not without support.⁷⁷

The alternative interpretation (supported by a string of cases in **New South Wales** and **Victoria**)⁷⁸ is that proportionate liability applies to any breach of contract provided the conduct giving rise to the breach originates in a failure to take reasonable care. The key question is whether, as a matter of fact, the cause of action originates from some carelessness by the defendant and does not depend on establishing a breach of any duty of care.

In the New South Wales Court of appeal decision in *Perpetual Trustee Company Ltd v CTC Group Pty Ltd (No 2)*,⁷⁹ Macfarlan JA stated that for an action to have arisen from a failure to take reasonable care, it was necessary for that failure to be an element of the cause of action relied on and that 'if claims could be apportioned where negligence is not an element of the successful cause of action, but merely arises from the facts, a plaintiff could lose his or her contractual right to full damages from a party whose breach of a contractual provision of strict liability happened to stem from a failure to take reasonable care'.⁸⁰ Barrett J disagreed⁸¹ (and referred to his reasoning in *Reinhold v NSW Lotteries Corporation (No 2)*),⁸² and Meagher JA preferred not to express a view on the issue (although he noted that the claim which may or may not arise out of a failure to take reasonable care is one which has been determined and established as a source of liability).⁸³

⁷² Professor Doug Jones, 'Proportionate Liability Revisited' - lecture delivered on 17 November 2020, at page 13.

⁷³ Ibid.

⁷⁴ [2006] 2 AC 572.

⁷⁵ Note: the SAAct refers to 'apportionable liability'.

⁷⁶ See NSW Act s 34(1) and s 34(3); ACT Act s 107B(2) and s 107B(3); NT Act s 4(2) and s 4(3); Tas Act s 43A(1), s 43A(8) and s 3B; WA Act, s 5AI(a), s 5AJ(2) and s 3A; and Vic Act s 24AF(1) and s 24AG(1).

⁷⁷ See for example the comments of Biscoe AJ (in an ex tempore judgment on an application for leave to amend a pleading during a trial) in *Pfizer Australia Pty Ltd v Probiotec Pharma Pty Ltd* [2010] NSWSC 532 at [8]. See also McDonald, B., 2011. Indemnities and the Civil Liability Legislation, *Journal of Contract Law*, 27, 56 in which she argues that such an interpretation 'leads to the absurd result that it would now be advantageous for a defendant to plead negligence in cases where he or she is sued for breach of a warranty or strict obligation'.

⁷⁸ See *Woods v De Gabriele* (2007) 2 BFRA 168; [2007] VSC 177, *Dartberg Pty Ltd v Wealthcare Financial Planning Pty Ltd* (2007) 164 FCR 450; [2007] FCA 1216, and *Reinhold v NSW Lotteries Corporation (No 2)* [2008] NSWSC 187.

⁷⁹ [2013] NSWCA 58.

⁸⁰ [2013] NSWCA 58 at [22].

⁸¹ [2013] NSWCA 58 at [37]-[42].

⁸² [2008] NSWSC 187.

⁸³ [2013] NSWCA 58 at [35]-[36].

Following *Perpetual Trustee Company Ltd v CTC Group Pty Ltd (No 2)*,⁸⁴ it remains uncertain whether a court will find that a claim is an apportionable claim due to the facts where it is uncertain whether the cause of action requires a failure to take reasonable care (although a court is likely to closely scrutinise pleadings that appear to have been deliberately phrased to exclude the proportionate liability regime).⁸⁵

Carelessness – Queensland and South Australia

The language used in the Queensland and South Australian legislation is different. In Queensland, the regime only applies if there is a claim for economic loss or property damage 'arising from a breach of a duty of care'.⁸⁶ Whereas in South Australia, the regime only applies to a liability in damages that arises under the law of torts or under statute or 'for breach of a contractual duty of care'.⁸⁷

There is presently no case law on these provisions, but they appear to reduce proportionate liability (in a contractual context) to a much narrower scope than in other jurisdictions.⁸⁸

Misleading or deceptive conduct

An 'apportionable claim' also includes claims for economic loss or damage in an action for misleading or deceptive conduct under designated State or Federal legislation (not limited to a failure to take reasonable care).⁸⁹

In *Selig v Wealthsure Pty Ltd*,⁹⁰ the High Court confirmed the scope of the proportionate liability regime in Division 2A of Part 7.10 of the *Corporations Act*, thereby resolving the conflicting judgments delivered by differently constituted Full Federal Courts in *Wealthsure Pty Ltd v Selig*⁹¹ and *ABN Amro Bank NV v Bathurst Regional Council*⁹² in 2014.

The Seligs brought several claims against Wealthsure Pty Limited for breaches of the prohibition against misleading or deceptive conduct in relation to financial products or services in section 1041H of the *Corporations Act* and section 12DA of the *ASIC Act* (which were apportionable claims), as well as other provisions of the *Corporations Act* and other statutes, and for breach of contract and negligence (which were not apportionable claims).

The High Court held that a defendant whose conduct renders it:

- liable for damages for misleading or deceptive conduct which contravenes section 1041H of the *Corporations Act*
- liable for damages on other bases (including other contraventions of the *Corporations Act*)

⁸⁴ The special leave application to the High Court was dismissed: [2013] HCATrans 248.

⁸⁵ Courts will be slow to resolve such issues summarily because of the complexity and uncertainty of the debate involved: see for example *ASF Resources Ltd v Clarke* [2014] NSWSC 252 per Kunc J.

⁸⁶ Qld Act s 28(1)(a).

⁸⁷ SA Act s 4(1), section 2 of the SA Act refers to negligent or innocent liability for harm.

⁸⁸ See Joshua Thompson, Leigh Warnick and Ken Martin, *Commercial Contract Clauses: Principles and Interpretation*, Thompson Reuters – Legal Online at para [26130] for further discussion of the position in Queensland and South Australia.

⁸⁹ NSW Act s 34(1)(b); ACT s 107B(2)(b); Tas Act s 43A(1)(b); WA Act s 5A(b); NT Act s 4(2)(b); SA Act s 3(2) and s 4(1)(c) (by implication); Vic Act s 24AF(1)(b); ASIC Act s 12GP(1); Corporations Act s 1041L(1) and CCA s 87CB(1). However, note that the second limb of s 24AF of the Vic Act refers to 'a claim for damages for a contravention of section 18 of the Australian Consumer law (Victoria)' without stating that it must also be a claim for economic loss or property damage.

⁹⁰ [2015] HCA 18.

⁹¹ [2014] FCAFC 64.

⁹² [2014] FCAFC 65.

⁹³ See [22] to [38] per French CJ, Kiefel, Bell and Keane JJ; [51]-[57] per Gageler J.

⁹⁴ [2015] NSWCA 177.

⁹⁵ See [55] to [64].

may be liable for the whole of the plaintiff's loss caused by that conduct, notwithstanding the application of the proportionate liability regime to the s1041H claim. In so finding, the High Court held that an apportionable claim under section 1041L of the *Corporations Act* is only a claim for damages caused by misleading or deceptive conduct which contravenes section 1041H, and does not extend to other claims for damages on other bases, even where the damages claims are brought in parallel with the misleading or deceptive conduct claim and are based on the same loss or conduct.⁹³

The High Court's reasoning also applies to equivalent proportionate liability provisions in the *ASIC Act* and to the contributory negligence defence in s1041I(1B) of the *Corporations Act*.

Following this, in *Williams v Pisano*,⁹⁴ the New South Wales Court of Appeal (albeit in obiter) applied the High Court's reasoning in *Selig v Wealthsure Pty Ltd* to the proportionate liability regime in Part VIA of the *Competition and Consumer Act 2010* (Cth) (CCA). The Court stated that where a party is liable for contravening both section 18 and section 30 of the Australian Consumer Law (Schedule 2 of the CCA), the party's liability under section 30 is not apportionable because an apportionable claim under section 87CB of the CCA is only a claim for damages caused by misleading or deceptive conduct which contravenes section 18 of the Australian Consumer Law.⁹⁵

The *Selig* decision is not good news for defendants who are only able to enjoy the protection of:

- the proportionate liability and contributory negligence regimes in Division 2A, Part 7.10 of the *Corporations Act* to the extent that the plaintiff alleges a breach of section 1041H of the *Corporations Act*
- the proportionate liability regime in Subdivision GA of Division 2, Part 2 of the *ASIC Act* to the extent that the plaintiff alleges a breach of section 12DA of the *ASIC Act*.

Similarly, while the comments of the New South Wales Court of Appeal in *Williams v Pisano* were obiter, they signal a comparable approach by the Court that defendants are only able to enjoy the protection of the proportionate liability regime in Part VIA of the CCA to the extent that the plaintiff alleges a breach of section 18 of the Australian Consumer Law.

While courts have not yet referred to other legislation, the logical application of these decisions is that courts will take a literal reading of any legislative definition of an 'apportionable claim'.

The defendant must be a concurrent wrongdoer

A concurrent wrongdoer is generally defined broadly to include one of two or more persons whose acts or omissions caused, independently of each other or together, the loss or damage that is the subject of the claim.⁹⁶ However, in **Queensland** and **South Australia**, the relevant persons must have acted independently of each other and not jointly.⁹⁷

A defendant seeking to limit its liability under the proportionate liability regime bears the onus of pleading and proving that it is only partially to blame for the plaintiff's loss, and that there are other concurrent wrongdoers which also bear some responsibility.⁹⁸

There have been numerous cases dealing with the issue of who is a concurrent wrongdoer and whether a person has caused the 'loss or damage that is the subject of the claim'. These cases culminated in the 2013 decision in *Hunt & Hunt Lawyers v Mitchell Morgan Nominees Pty Ltd*⁹⁹ in which the High Court adopted a more liberal interpretation as to the meaning of 'loss or damage' for the purposes of the NSW Act and confirmed that independent and unrelated acts which both cause the same damage can be apportioned. In that case, on the basis of fraudulently obtained certificates of title and forged documentation presented by Mr Caradonna and Mr Vella (the fraudsters), Mitchell Morgan Nominees Pty Ltd (MM) advanced money which was secured by mortgage. The mortgage was negligently drafted by Hunt & Hunt lawyers to secure money owed by Mr Vella (and not Mr Caradonna) and therefore secured nothing.

The majority of the High Court reinstated the trial judge's decision (overturning the Court of Appeal decision) and apportioned 72.5% liability to Mr Caradonna, 15% to Mr Vella and 12.5% to Hunt & Hunt.¹⁰⁰ The basis for the High Court's decision was that it did not matter that MM had different causes of action against Hunt & Hunt (for negligent drafting) and the fraudsters. The harm that MM suffered was the inability to recover the money and, so long as the acts of each wrongdoer were a material cause of that harm, they were concurrent wrongdoers (despite the legal bases of those claims).

The High Court also distanced itself from the decision in *St George Bank Ltd v Quinerts Pty Ltd*,¹⁰¹ which involved a negligent valuation and a subsequent mortgage default which left the Bank with a loss of more than AUD\$100,000. In that case, the Victorian Supreme Court held that for the purposes of identifying concurrent wrongdoers, the damage or loss caused must be the 'same damage' (and that the only actionable acts or omissions by the borrower and the Guarantor was the failure to repay the loan and that such failures did not cause the Bank to make the loan). However, the High Court was not prepared to delve into whether or not *Quinerts* was wrongly decided and so it remains law, particularly in relation to negligent valuations.¹⁰²

The decision in *Hunt & Hunt* is good news for defendants and insurers who will find it easier to establish that there were other concurrent wrongdoers responsible for the loss or damage the subject of the claim, and thus limit their liability under the proportionate liability regime. At this stage, whether or not parties are 'concurrent wrongdoers' continues to depend on a detailed analysis of the claims against each of them and a careful characterisation of the loss caused by each of them. However, a plaintiff wishing to target a particular party will need to ensure that their claim focuses on the particular loss or damage caused, to help show that a concurrent wrongdoer's conduct did not cause the same loss or damage as the targeted defendant.

Proportionate liability must not be excluded from the claim

There are a number of categories of claims which are excluded from the proportionate liability regime, which are set out below (although not all of these exclusions apply in every jurisdiction):

- intentional or fraudulent conduct¹⁰³
- where proportionate liability is excluded by other legislation¹⁰⁴
- vicarious liability and the liability of a partner¹⁰⁵
- agency¹⁰⁶
- consumer claims¹⁰⁷
- exemplary or punitive damages¹⁰⁸
- claims arising from personal injury¹⁰⁹
- criminal proceedings¹¹⁰
- the right to contract out¹¹¹ (see section 5.6 'Contracting out of the proportionate liability regime' below).

⁹⁶ NSW Act s34(2), ACT Act ss 107A and 107D; NT Act ss 3 and 6(1); Tas Act s 43A(2); Vic Act s24AH; WA Act s 5AI; ASIC Act s 12GP(3); Corporations Act s 1041L(3) and CCA s 87CB(3).

⁹⁷ Qld Act s 30 and SA Act s 3(2)(b). Note also that the SA Act uses the term 'wrongdoer' instead of 'concurrent wrongdoer' (s3 of the SA Act).

⁹⁸ *Dartberg Pty Limited v Wealthcare Financial Planning Pty Ltd* (2007) 164 FCR 450 at [31] and *Polon v Dorian* [2014] NSWSC 571 at [812].

⁹⁹ [2013] HCA 10; (2013) 246 CLR 613.

¹⁰⁰ French CJ, Hayne and Keifel JJ.

¹⁰¹ (2009) 25 VR 666. See also *Shrimp v Landmark Operations Ltd* (2007) 163 FCR 510; [2007] FCA 1468.

¹⁰² See also *Hadgelias Holdings Pty Ltd v Seirlis* [2014] QCA 117 where Holmes JA (with whom Gotterson and Morrison JJA agreed) explained the definition of concurrent wrongdoer in s87CB(3) of the *Trade Practices Act 1974* (Cth) (now s87CB(3) of the CCA) as 'concerned with distinct acts (or omissions) or sets of acts (or omissions) by different actors, combining or working independently to cause loss or damage, and consequently inapplicable where there is but a single act or set of acts causing loss, attributable to more than one person'. This approach has been questioned. For example, Joshua Thompson, Leigh Warnick and Ken Martin, *Commercial Contract Clauses: Principles and Interpretation*, Thompson Reuters – Legal Online at para [25770].

¹⁰³ NSW Act s 34A(1)(a) & (b); ACT Act s 107E(1); NT Act s 7(1); Qld Act ss 32D & 32E, SA Act s 3(2)(c); Tas Act s 43A(5); Vic Act s 24AM; WA Act s 5AJA(1)(a) & (b); ASIC Act s 12GQ(1)(a) & (b); Corporations Act s 1041M(1)(a) & (b); CCA s 87CC(1)(a) & (b).

¹⁰⁴ NSW Act s 39(c); ACT Act ss 107B(4) and 107K(d); NT(c) Act s 14(c); Qld Act s 28(4) & (5); Tas Act s 43G(1)(c); Vic Act ss 24AF(3) (fraudulent conduct only), 24AG(2) and 24AP(e); WA Act ss 5AJA(1)(c) & 5AO(c); ASIC Act s 12GW (c); Corporations Act s 1041S(c); and CCA s 87CI(c).

¹⁰⁵ NSW Act s 39(a) & (b); ACT Act s 107K; NT Act s 14(a) & (b); Qld Act s 32I(a) & (c); SA Act s 3(1) 'derivative liability'; Tas Act s 43G(1)(a) & (b); Vic Act s 24AP(a) & (c); WA Act s 5AO(a) & (b); ASIC Act s 12GW (a) & (b); Corporations Act s 1041S(a) & (b); CCA s 87CI(a) & (b).

¹⁰⁶ ACT Act s 107K(b); Qld Act s 32I(b); Vic Act s 24AP(b).

¹⁰⁷ ACT Act s 107B(3)(b); Qld Act s 28(3)(b).

¹⁰⁸ Qld Act s 32I(d); SA Act ss 3(1) (see definition of 'notional damages'), 3(3) & 8(6); and Vic Act s 24AP(d).

¹⁰⁹ NSW Act s 34(1)(a); ACT Act s 107B(3)(a); NT Act ss 3 definition of 'economic loss' and 4(3)(a); Qld Act s 28(3)(a); SA Act ss 3(2)(a)(i) & 8(6); Tas Act s 43A(1); Vic Act s 24AG(1); and WA Act s 5AI(1)(a).

¹¹⁰ SA Act s 4(2).

¹¹¹ NSW Act s 3A(2); Tas Act s 3A(3) and WA Act s 4A.

Apportionment

If the proportionate liability regime applies, then liability for a plaintiff's loss is apportioned by the courts between all concurrent wrongdoers according to their respective responsibility for the loss.

Each concurrent wrongdoer's liability is then limited to the amount of loss apportioned to it. The proportionate liability legislation operates to restrict the courts, when ordering damages, to such amounts as the court considers 'just', having regard to each concurrent wrongdoer's responsibility, and no more.¹¹²

What factors the court must take into account in determining what is 'just' will depend upon the facts of the case, but it seems the courts are guided by the apportionment principles used for contributory negligence,¹³³ noting they must exclude the extent to which the plaintiff's contributory negligence caused the loss or damage.¹¹⁴ The relative financial capacity of concurrent wrongdoers is not a factor to be considered.¹¹⁵ A more recent consideration of the apportionment factors was by Judge Woodward in the Lacrosse Tower case.¹¹⁶

Identifying and joining all possible concurrent wrongdoers

Courts may (and in **Western Australia, Tasmania and South Australia**, must) look to the proportionate responsibility of absent defendants.¹¹⁷ In **Victoria**, the legislation is silent on this issue because under subsection 24A(3), a court is only permitted to take into account the comparative responsibility of a non-party who has died or a corporation that has been wound up.¹¹⁸

A court has the power to grant leave for a concurrent wrongdoer to be joined as a defendant.¹¹⁹

Except in **Victoria**, plaintiffs must identify and join everyone legally responsible to ensure the recovery of 100% of their loss. To facilitate this, a concurrent wrongdoer must inform the plaintiff if it has reasonable grounds to believe that a particular person may also be a concurrent wrongdoer in relation to the relevant claim. This is not a duty to inform as such, but if a concurrent wrongdoer fails to do this, it may be liable for any costs incurred by the plaintiff because it was not aware of such additional concurrent wrongdoer.¹²⁰ In **Victoria**, the defendants must ensure that all concurrent wrongdoers have been joined as parties to the proceedings.

Contribution between concurrent wrongdoers

The legislation in all jurisdictions (apart from **South Australia**) provides that a defendant against whom judgment is given as a concurrent wrongdoer in relation to an apportionable claim cannot be required to:

- contribute to any damages or contribution recovered from another wrongdoer in respect of that apportionable claim (in **Victoria** and the **Northern Territory**, the damages must have been recoverable in the same proceedings in which judgment was given against the defendant, whereas in other jurisdictions, it does not matter whether or not the damages were recovered in the same proceedings)
- indemnify any such wrongdoer.¹²¹

Importantly, this protection only applies to concurrent wrongdoers against whom judgment is given in relation to an apportionable claim. As such, defendants who settle with a plaintiff ought to consider the relative benefits of having judgment entered against them.

Subsequent claims

A plaintiff who has previously recovered judgment against a concurrent wrongdoer for an apportionable part of any claim for damage or loss is not prevented from subsequently bringing another action against another wrongdoer, provided the plaintiff cannot recover in total more than the damage or loss sustained by the plaintiff.¹²²

However, a plaintiff risks recovering less than their total loss if separate actions are run because courts are not bound to find the same proportionate responsibility for the later defendant to that which was apportioned by the court in an earlier proceeding.

The scope of s12GU of the ASIC Act was considered in *City of Swan v McGraw-Hill Companies Inc.*¹²³ In that decision Rares J found that the proportionate liability regime does not envisage that quantification of the claimant's damages will necessarily be finalised in the first proceedings and, instead, subsequent proceedings can arrive at different apportionments for other concurrent wrongdoers not joined in the original proceedings.

¹¹² NSW Act s 35(1); ACT finalised s 107F(1)(a); NT Act s 13(1)(a); Qld Act s 31(1)(a) (although note that the reference is to 'just and equitable' as opposed to 'just'); SA Act s 8(2)(a) (although note that there reference is to 'fair and equitable' as opposed to 'just'); Tas Act s 43B(1)(a); Vic Act s 24A(1)(a); WA Act s 5AK(1)(a); ASIC Act s 12GR(1)(a); Corporations Act s 1041N(1)(a); and CCA s 87CD(1)(a).

¹¹³ Professor Doug Jones, 'Proportionate Liability Revisited' - lecture delivered on 17 November 2020, at page 10.

¹¹⁴ NSW Act s 35(3)(a); ACT finalised s 107F(2)(a); Vic Act s 24AN; NT Act s 13(2); Qld Act s 32G; Tas Act s 43B(3)(a); WA Act s 5AK(3)(a); ASIC Act s 12GR(3)(a); Corporations Act s 1041N(3)(a); CCA s 87CD(3)(a).

¹¹⁵ *Reinhold v. New South Wales Lotteries Corporation (No. 2)* [2008] NSWSC 187 per Barrett J.

¹¹⁶ *Owners Corporation No. 1 of PS613436T v. LU Simon Builders Pty Ltd (Building and Property)* [2019] VCAT 286.

¹¹⁷ NSW Act s 35(3)(b); ACT finalised s 107F(2)(b); NT Act s 13(2)(b); Qld Act s 31(3); SA Act s 8(2)(b); Tas Act s 43B(3)(b); WA Act s 5AK(3)(b); ASIC Act s 12GR(3)(b); Corporations Act s 1041N(3)(b); CCA s 87CD(3)(b).

¹¹⁸ Vic Act s24A(3).

¹¹⁹ NSW Act s 38; ACT finalised s 107J; NT Act s 11; Qld Act s 32H; SA Act s 11; Tas Act s 43F; Vic Act s 24AL; WA Act s 5AN; ASIC Act s 12GV; Corporations Act s 1041R; CCA s 87CH. Leave will be granted even if only declaratory relief is sought against a concurrent wrongdoer. For example, *Fudlovski v JGC Accounting & Financial Services Pty Ltd (No 3)* [2013] WASC 476 and also *Lion-Dairy & Drinks Pty Ltd v Sinclair Knight Merz Pty Ltd* [2014] FCA 386.

¹²⁰ NSW Act s35A (despite the section being titled 'Duty...to inform...'); ACT Dudovskiy s 107G; NT Act s 12; Qld Act s 32; SA Act s 10; Tas Act 43D; WA Act s 5AKA; ASIC Act s 12GS; Corporations Act s 1041O; CCA s 87CE.

¹²¹ See NSW Act s36. ACT Dudovskiy s 107H; NT Act s 15; Qld Act s 32A; SA Act s 9; Tas Act s 43C; Vic Act s 24AJ; WA Act s 5AL; ASIC Act s 12GT; Corporations Act s 1041P; CCA s 87CF are also in a similar form. Note that SA Act s 9(a) also provides that wrongdoers who are part of the same group are to be treated as a single wrongdoer.

¹²² Under the NSW Act s 37; ACT the Act s 107I; the NT Act s 16; the Qld Act s 32B; the Tas Act s 43E; Vic Act s 24AK; the WA Act s 5AM; the ASIC Act s 12GU; the Corporations Act s 1041Q and the CCA s 87CG, the plaintiff's rights are expressly preserved. The position under s 11 of the SA Act is different and may be broader in scope. It does not expressly preserve the plaintiff's rights but starts from the premise that such actions may be brought.

¹²³ [2014] FCA 442 at para 63.

5.6 Contracting out of the proportionate liability regime

Is it possible to contract out?

A key issue for parties to an infrastructure contract in Australia to consider is whether they should agree to 'contract out' of the applicable proportionate liability regime, that is, to expressly agree in the contract that the proportionate liability regime will not apply. On this issue, as between the different jurisdictions in Australia, there are various approaches:

- **New South Wales, Western Australia and Tasmania:** The proportionate liability legislation in these jurisdictions permits contracting out – expressly in Western Australia and by implication in New South Wales and Tasmania¹²⁴
- **South Australia, Victoria, Australian Capital Territory and Northern Territory:** The proportionate liability legislation in these jurisdictions is silent about contracting out. There is a significant risk that contracting out is not permitted because it is arguably inconsistent with the public policy underpinning proportionate liability¹²⁵
- **Commonwealth misleading or deceptive conduct legislation:** The proportionate liability legislation in this jurisdiction is the same as South Australia, Victoria, Australian Capital Territory and Northern Territory. It is generally accepted that it is not possible for parties to limit or exclude their liability for breach of the statutory misleading or deceptive conduct prohibitions
- **Queensland:** The proportionate liability legislation in this jurisdiction prohibits contracting out.¹²⁶

Should parties contract out?

Whether it is more beneficial to allow the proportionate liability regime to operate, or to exclude or modify its operation by contract (in those jurisdictions where it is currently permitted to do so), will depend on the party you are acting for. As a general rule, the proportionate liability regime benefits supplier defendants rather than customer plaintiffs – the blame is shared, and the losses distributed. However, a customer plaintiff is generally better off excluding the proportionate liability regime because, in the event that it needs to sue a supplier/Contractor, it is preferable to deal only with a single wrongdoer, namely the party it has contracted with, as opposed to also having to sue a number of other entities who may be unknown and of which there may be many.

How do parties contract out?

Where contracting out is permitted, there is a number of ways the parties can achieve this. For instance:

- by including an express clause which states that the relevant proportionate liability legislation does not apply
- by including provisions that have the effect of proportioning liability between the parties in a way that is inconsistent with the proportionate liability regime.¹²⁷ For example, a statement that the parties are jointly and severally liable, a statement that a Head Contractor is liable for the acts and omissions of its Sub-contractors,¹²⁸ or a statement that one party agrees to indemnify the other in relation to particular liabilities.

There has historically been some debate around whether a contractual indemnity alone is sufficient to constitute contracting out. However, the New South Wales Court of Appeal in *Perpetual Trustee Company Ltd v CTC Group Pty Ltd (No 2)*¹²⁹ found that an indemnity by CTC Group Pty Ltd in favour of Perpetual Trustee Company Ltd for loss suffered by Perpetual as a result of a breach of warranty by CTC Group was sufficient to constitute contracting out under section 3A(2) of the NSW Act, and that to find otherwise would have deprived Perpetual of its contractual right to full indemnity for its loss.¹³⁰

Indemnities and potential insurance issues

If an insured party to a contract contractually assumes joint and several liability of an obligation to indemnify in respect of a claim which would otherwise be apportionable, it may be assuming a liability that would otherwise not have arisen at law. Most liability insurances will exclude protection for contractually assumed liability that would not ordinarily arise at law. Therefore, before contracting out in this way, parties should consider whether their insurers need to be aware of and accept this proposed risk allocation.

Exclusion clauses

In **Western Australia, New South Wales and Tasmania**, where contracting out is permitted, an exclusion clause, whereby a defendant excludes all liability for breach of contract and negligence, would not seem to be affected by the proportionate liability regime.

Similarly, in **South Australia**, courts are expressly directed to take into account any special limitation of liability (which is defined to include a limitation under a contract) to which a defendant may be entitled and, as such, would not seem to affect the operation of an exclusion clause.¹³¹

¹²⁴ WA Act s 4A (which includes an express statement that contracting out is permitted) and NSW Act s 3A(2) and Tas Act s 3A(3) (where the ability to contract out is not as clear cut as in WA but the relevant sections state that parties are not prevented from making express provisions for their rights, obligations and liabilities and the relevant Acts do not affect the operation of such express provisions). Courts have expressed the view that the provisions in the NSW Act and the Tas Act permit contracting out. See for example, *Aquagenics Pty Ltd v Break O'Day Council* [2010] TASFC 3 at [19] and *Perpetual Trustee Company Ltd v CTC Group Pty Ltd (No 2)* [2013] NSWCA 58 at [11]-[12]. Legal commentators also agree with this position. For example, Hayford, O., 2010. Proportionate Liability – Its Impact on Contractual Risk Allocation, *Building and Construction Law Journal*, 26, 11 at 24 and McDonald, B., 2005. Proportionate Liability in Australia: The Devil in the Detail, *Australian Business Review*, 26, 29.

¹²⁵ For example, Joshua Thompson, Leigh Warnick and Ken Martin, *Commercial Contract Clauses: Principles and Interpretation*, Thompson Reuters – Legal Online at para [26790].

¹²⁶ Qld Act s 7(3) (the Qld Act does not prohibit contracting out entirely, but only in relation to Chapters 2 (which contain proportionate liability provisions) and 3).

¹²⁷ The Tasmanian Full Court held in *Aquagenics Pty Ltd v Break O'Day Council* [2010] TASFC 3 at [19] that parties can contract out just by adopting an allocation of liability wording that is inconsistent with the proportionate liability regime, and without referring specifically to the proportionate liability regime. See also the Western Australia District Court in *Owners of Strata Plan 13259 v Fowler* [2013] WADC 5 (noting its limited precedential value) and the new South Wales Court of Appeal in *Perpetual Trustee Company Ltd v CTC Group Pty Ltd (No 2)* [2013] NSWCA 58.

¹²⁸ This was the relevant contractual provision considered in *Aquagenics Pty Ltd v Break O'Day Council* [2010] TASFC 3.

¹²⁹ [2013] NSWCA 58.

¹³⁰ Further, the Tasmanian Full Court in *Aquagenics Pty Ltd v Break O'Day Council* [2010] TASFC 3 at [16] observed that the 'plain purpose' of s 3A(c) (the Tas Act equivalent of section 3A of the NSW Act) was 'to ensure the primacy of express provisions of a contract as to the parties' rights, obligations and liabilities under the contract, over any provision in relation to the same matter in the Act'.

¹³¹ SA Act s 8(4)(d).

In **Queensland**, where contracting out of proportionate liability is prohibited, the legislation is expressed to 'limit' the liability of a concurrent wrongdoer.¹³² As such, it is arguable because the Qld Act deals with the limitation of liability (and not the *imposition* of liability), there is no reason why liability should not be excluded altogether.¹³³ If such an argument is valid under the Qld Act, it should also be valid in **Victoria**, the **Australian Capital Territory** and the **Northern Territory**, where the legislation is silent on contracting out and are similarly expressed to limit the liability of a concurrent wrongdoer.¹³⁴

Other possible indirect methods of contracting out

Other, indirect, ways in which the parties may be able to effectively contract out of the proportionate liability regime include:

- by choosing a governing law clause that is in a state where contracting out is permitted – namely **Western Australia, New South Wales** and **Tasmania**) – there is a risk in pursuing this strategy if the chosen jurisdiction and the contract are not sufficiently connected¹³⁵
- by agreeing to arbitrate disputes under a contract – it is unclear whether arbitration is subject to the proportionate liability legislation.¹³⁶ If it is not, it may be possible to avoid proportionate liability in this way, although, for the sake of clarity, it is prudent to include an express provision in the contract that the proportionate liability regime does not apply to the arbitration
- possibly, by creating separate legal relationships or collateral arrangements with parties which may be found to be proportionately liable, for example, a Principal could enter into a deed with a sub-contractor pursuant to which the sub-contractor promises to the Principal that it will exercise due care in carrying out its obligations to the head Contractor. The Principal would then have a direct cause of action against the sub-contractor in the event that a claim for defective work against the head Contractor is met with a defence that the defects were caused by the sub-contractor. However, in the absence of a direct contractual relationship with the sub-contractor, the Principal may, nonetheless, be able to establish that the sub-contractor owed a duty of care to the Principal in carrying out the works contractually via the head Contractor.

5.7 Indemnities between concurrent wrongdoers

Are indemnities between concurrent wrongdoers permitted?

The availability of indemnities between concurrent wrongdoers depends on the relevant jurisdiction.

As noted in section 5.5 (Contribution between concurrent wrongdoers), the legislation in all jurisdictions (other than South Australia) provides that a defendant against whom judgment is given (as a concurrent wrongdoer in relation to an apportionable claim), cannot be required to indemnify any other wrongdoer for any damages or contribution recovered from that concurrent wrongdoer in respect of that apportionable claim.¹³⁷

In **Tasmania, Western Australia** and the **Northern Territory**, the right to re-allocate liability through contractual indemnities is also expressly preserved.¹³⁸

In other jurisdictions, a strict reading of the language above would operate to prevent a defendant from being required to indemnify a concurrent wrongdoer pursuant to a contractual right of indemnity. The position has not been judicially considered and remains unsettled.

Commentators have used various analyses to argue that this is not the intention. For example, McDonald highlights the importance of looking at the proportionate liability legislation in juxtaposition with the legislation it replaces. If this is done, she argues, it can be seen that the restriction is on the power of the courts under the former legislation to order contribution or an indemnity as part of the apportionment process.¹³⁹ Furthermore, there is no '*obvious reason of policy or justice which should prevent a defendant from enforcing a voluntarily entered, pre-existing contractual arrangement against another*'.¹⁴⁰ Conversely, Hayford argues that the limitation only applies to requirements arising under common law or statutory rights of indemnity,¹⁴¹ as opposed to contractual requirements, and Watson argues that the limitation only applies to indemnities which are sought after judgement is given.¹⁴²

¹³² Qld Act s31(1)(a).

¹³³ See Joshua Thompson, Leigh Warnick and Ken Martin, *Commercial Contract Clauses: Principles and Interpretation*, Thompson Reuters – Legal Online at para [27020].

¹³⁴ *Ibid.*

¹³⁵ For further discussion on choice of law as an indirect method of contracting out, see Joshua Thompson, Leigh Warnick and Ken Martin, *Commercial Contract Clauses: Principles and Interpretation*, Thompson Reuters – Legal Online at paras [26910] to [26970].

¹³⁶ In *Curtin University of Technology v Woods Bagot Pty Ltd* [2012] WASC 449, the Western Australia Supreme Court decided that the WA Act did not apply to commercial arbitrations as the word 'court' in the WA Act did not comfortably encompass arbitrators. While this decision was based on the WA Act, it would seem likely that the reasoning would also apply to the other proportionate liability legislation. The court also left open the possibility that the implied term in every arbitration agreement that the arbitrator should decide the dispute according to the existing law of the contract meant that the proportionate liability regime applied. Earlier, in *Aquagenics Pty Ltd v Break O'Day Council* [2010] TASFC 3, the Tasmanian Full Court (in obiter) also favoured the view that the proportionate liability regime under the Tas Act did not apply to arbitrations.

¹³⁷ In Victoria and the Northern Territory, the damages must have been recoverable in the same proceedings in which judgement was given against the defendant, whereas in the other jurisdictions, it does not matter whether or not the damages were recovered in the same proceedings).

¹³⁸ Tas Act s 43C; WA Act s 5AL(2); NT Act s 15(2).

¹³⁹ See McDonald, B., 2011. Indemnities and the Civil Liability Legislation, *Journal of Contract Law*, pp. 27, 56.

¹⁴⁰ *Ibid.*

¹⁴¹ Hayford, O., 2005. Proportionate liability – Its Impact on Contractual Risk Allocation, *Australian Business Review*, 29 at 44.

¹⁴² Watson, J., 2004. From Contribution to Apportioned Contribution to Proportionate Liability, *Australian Law Journal*, 78, 126.

In **New South Wales**, section 3A of the NSW Act specifically acknowledges that contracting parties may make express provisions for their rights, obligations and liabilities to which the proportionate liability regime applies. Arguably this means that contractual indemnities can be enforced against a concurrent wrongdoer.¹⁴³

In **Queensland**, the same provision applies about making express provisions, but includes an express carve out for the proportionate liability regime. This suggests that contractual indemnities that re-apportion loss between concurrent wrongdoers will not be enforced in Queensland.¹⁴⁴

In **Victoria** and the **Australian Capital Territory**, the proportionate liability regime does not include the additional express acknowledgment that contracting parties may make express provision for their rights, obligations and liabilities. As such, the position is less clear and despite the arguments of commentators outlined above, the question remains that it was open to legislatures to include similar provisions to other jurisdictions, but they chose not to.¹⁴⁵

In **South Australia**, indemnities are approached differently but the result seems to be that a contractual indemnity can be enforced against a concurrent wrongdoer, even where proportionate liability applies.¹⁴⁶

Do indemnities between concurrent wrongdoers breach the prohibition on contracting out?

The next question is whether contractual indemnities between concurrent wrongdoers breach the 'no contracting out position' in **Queensland** (and most likely **Victoria, South Australia, Australian Capital Territory** and the **Northern Territory**).

This point is arguable but commentators such as Barbara McDonald, who are in favour of the availability of indemnities, point to the fact that *'the primary liability of either wrongdoer to the plaintiff is not affected'* and that *'the common objection to allowing contracting out – That it enables powerful commercial clients to use their market power to insist on solitary liability and to undermine the effectiveness and benefits of the regime...does not apply where it is the potential defendants who have sorted out the allocation of risk between themselves in advance'*.¹⁴⁷

Indemnities given by non-concurrent wrongdoers

The proportionate liability regime does not operate to restrict indemnities given by a party who did not contribute to the loss (and is not a concurrent wrongdoer). These parties fall outside of the apportionment process under the proportionate liability regime.

5.8 Summary of jurisdictional differences

As noted throughout this paper, there are a number of important legislative inconsistencies between jurisdictions which raise the potential for forum shopping.

For ease of reference, we set out below a summary of the key differences across the different jurisdictions.



¹⁴³ NSW Act s 3A(2). See further Dominic Villa, *Annotated Civil Liability Act 2002 (NSW)* (Lawbook Co, Second edition 2013), para 4.36.020.

¹⁴⁴ Qld Act s 7(3).

¹⁴⁵ See Joshua Thompson, Leigh Warnick and Ken Martin, *Commercial Contract Clauses: Principles and Interpretation*, Thompson Reuters – Legal Online at para [26550].

¹⁴⁶ SA Act ss 6(1), 6(3), 6(5), 6(9)(a) and 9 and Pt 2 and Pt 3.

¹⁴⁷ See McDonald, B., 2011. Indemnities and the Civil Liability Legislation, *Journal of Contract Law*, 27, 56.

Scenario	NSW	VIC	QLD	WA	SA	TAS	ACT	NT
If acting for a plaintiff, concurrent wrongdoers should be joined as parties to an action	✓	☐	✓	✓	✓	✓	✓	✓
If acting for a defendant, concurrent wrongdoers should be joined as parties to an action	☐	✓	☐	☐	☐	☐	☐	☐
Concurrent wrongdoers acting jointly (as well as independently) are caught	✓	✓	☐	✓	☐	✓	✓	✓
Applies to contractual breaches regardless of whether there has been a breach of a duty of care (although there is some debate)	✓	✓	☐	✓	☐	✓	✓	✓
Intentional wrongdoing excluded (note fraudulent wrongdoing is excluded in all jurisdictions)	✓	☐	✓	✓	✓	✓	✓	✓
Proportionate liability excluded as between Principal and agent	☐	✓	✓	☐	☐	☐	✓	☐
Proportionate liability does not override the award of exemplary or punitive damages	☐	✓	✓	☐	✓	☐	☐	☐
Exclusion clause can be used to exclude liability for negligence and breach of contract	✓	?	?	✓	✓?	✓	?	✓
Reapportionment through contractual indemnities between wrongdoers permitted	✓	☐	☐	✓	✓	✓	☐	✓
Contracting out permitted	✓	?	☐	✓	?	✓	?	?



5.9 Proportionate liability reform

The lack of consistency in the proportionate liability legislation (particularly for claims involving more than one jurisdiction), prompted an extensive review of current proportionate liability beginning in 2007.

In September 2011, the Standing Council on Law and Justice (**SCLJ**) (formerly the Standing Committee of Attorneys General and then replaced by the Law Crime and Community Safety Council in December 2013) released consultation draft model proportionate liability provisions and a proportionate liability regulation impact statement for public consultation.

Following further submissions, the *Revised Draft Model Proportionate Liability Provisions – 26 September 2013 (Draft Model Provisions)* and a new *Decision Regulation Impact Statement – October 2013 (Regulation Impact Statement)* were presented to the SCLJ in October 2013. The Regulation Impact Statement notes that stakeholders and legal commentators have identified the following two main problems with the current proportionate liability regime:¹⁴⁸

- legislative inconsistencies between jurisdictions (particularly in relation to contracting out of the regime), which can lead to forum shopping
- a lack of clarity and/or certainty in the operation of particular provisions.

The Regulation Impact Statement considers a number of options and then recommends the introduction of uniform legislation applicable to all jurisdictions, which more narrowly defines an apportionable claim (for example as one where a failure to take reasonable care is an element of the action) and which prohibits contracting out.

The key recommended features of the proposed uniform legislation (reflected in the Draft Model Provisions), included:

- clarification that, apart from an action under the ACL for statutory misleading or deceptive conduct claims, a failure to take reasonable care must be an element of the claimant's cause of action
- 'concurrent wrongdoer' is one of two or more persons who cause the same or 'substantially or materially similar' loss or damage, even if a plaintiff has settled with them or released them from liability
- a defendant is required to provide information to a plaintiff about the identity and location of other possible concurrent wrongdoers, notify the possible concurrent wrongdoers and bears the onus of establishing a case against other possible wrongdoers
- in apportioning liability, the court must take into account the wrongdoing of a notified concurrent wrongdoer and may take into account the wrongdoing of any other concurrent wrongdoer
- in apportioning liability among concurrent wrongdoers, the court is to consider what is 'just and equitable'

- standardisation of the types of claims that are excluded from the proportionate liability regime
- if notice is given to a plaintiff of a concurrent wrongdoer, they should only be able to bring subsequent proceedings against that concurrent wrongdoer with leave of the court and caps should apply above which the plaintiff is not entitled to receive an award in subsequent proceedings
- proportionate liability legislation does not apply to arbitral tribunals or other entities capable of making a binding determination, unless they are a court or tribunal (jurisdictions may elect whether to include this provision)
- where a plaintiff settles with one concurrent wrongdoer, that concurrent wrongdoer will not be exposed to contribution claims from other concurrent wrongdoers
- contracting out is prohibited for all contracts except for an agreement by a concurrent wrongdoer to contribute to/indemnify another concurrent wrongdoer.¹⁴⁹

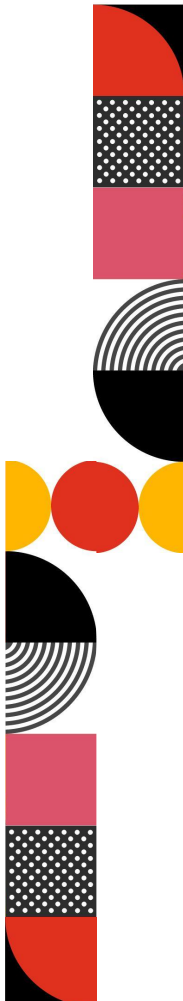
There is a useful table in the Regulation Impact Statement which illustrates the degree to which the Draft Model Provisions represent a change to the current proportionate liability legislation in each jurisdiction.¹⁵⁰

The Ministers of each jurisdiction have agreed to consider introducing the Draft Model Provisions, but there has not to date been any concrete developments in this area.

¹⁴⁸ Page 7 of the Regulation Impact Statement.

¹⁴⁹ See Pages 21 to 22 of the Regulation Impact Statement and also the Draft Model Provisions.

¹⁵⁰ See Page 23 of the Regulation Impact Statement.



Annexure A

Position paper on performance liquidated damages – Power projects

Introduction

The interaction between the performance and completion conditions in an Engineering, Procurement and Construction (EPC) contract and the provisions for Performance Liquidated Damages (PLDs) payable under it will vary depending on a number of circumstances, including the size, nature and complexity of the project.

This paper outlines two suites of clauses that may be included in an EPC Contract to accommodate these situations. They are drafted for power projects, but may be relevant to other sectors, such as oil and gas and for process plant projects. Solar and wind projects will require a different regime with more of a focus on post commercial operation testing: For example, a production guarantee mechanism.

Your project requirements

Overview

This section addresses the benefits and utility of two different PLDs regimes, before discussing some of the project characteristics that might render one regime more or less suitable to your project.

Features of the simple regime

The simple regime uses a two-stage completion process whereby the Contractor does not have the ability to access the facility after the Principal assumes care, custody and control for the purposes of improving performance. Sample clauses illustrating this approach are contained in Appendix 1 (Simple regime clauses).

This regime is appropriate where:

- the planned operation of the facility is such that it is not feasible for the Principal to allow the Contractor any significant period of time beyond the date for commercial operation in which to make modifications and retest the facility
- provided the minimum performance guarantees are met, the Principal allows the Contractor to choose to retain care, custody and control so that it can improve the results of the guarantee tests whilst paying Delay Liquidated Damages (DLDs).

Features of the detailed regime

The detailed regime uses a three-stage completion process, incorporating a period of time after the Principal assumes control of the facility in which the Contractor may, with the Principal's approval, attempt to improve the performance of the facility whilst paying DLDs.

This regime is appropriate where:

- the Principal prefers to take possession of the facility and begin generating electricity as soon as commercial operation is achieved (effectively, in certain circumstances, as soon as the minimum performance guarantees are met)
- it is viable, even after the Principal has assumed the care, custody and control of the facility, for the Principal to allow the Contractor access to attempt to improve performance whilst paying DLDs.

Features of your project

The following questions may help decide which regime is more appropriate.

Are you building a baseload facility or a peaking facility?

Both regimes have been drafted to apply to a baseload facility, but each can easily be tailored for a peaking facility.

However, given that a peaking facility only operates during periods of high demand, it may be possible for the Principal to grant the Contractor access to the facility (after the Principal takes over the facility) without suffering undue inconvenience or expense (through lost operation time).

This may make the detailed regime more suitable to a peaking facility, especially if DLDs will run during any period that the Contractor takes the facility out of service (even if not required to generate electricity during that period).

Is there an inflexible deadline for you to begin operating the facility?

If there is an inflexible deadline by which you must begin operating the facility (such as a contractual obligation to begin selling electricity),¹⁵¹ the detailed regime may be the more appropriate option.

Under the detailed regime, the Principal is better placed to take over the facility on or before the date for commercial operation (provided that the minimum performance guarantees are met), and later allow, at the Principal's discretion and convenience, the Contractor to attempt to improve the performance of the facility (during periods of low demand). The Contractor has an incentive during these periods to bring the performance of the facility to the highest possible level in order to minimise its PLDs liability. Accordingly, the Principal achieves the highest standard of plant performance without undue disruption to its operation of the facility.

Is the performance of the facility your highest priority?

If there is some flexibility in the date by which you must begin operating the facility, and the first priority is to ensure that the facility achieves the highest possible standard of performance, the simple regime may be more suitable. This regime requires commercial operation (and, in this regime, the point at which the Contractor is no longer permitted to continue work on the project) to be deferred as long as is required to meet the performance guarantees (limited only by the Contractor reaching the aggregate limit for DLDs). Under this arrangement, the Principal does not take control of the facility until the performance guarantees are met or DLDs cap out. This means the facility will be at the maximum possible level of performance by the time the Principal begins operating.



¹⁵¹ The performance regime for a project may also be influenced by the terms of any third party offtake agreements, particularly back-to-back arrangements for liquidated damages and other performance guarantees.

Simple regime

This section will analyse in detail the simple regime. As discussed above, it employs a two-stage completion process and does not permit the Contractor any opportunity to improve the facility's performance after the Principal assumes care, custody and control. Refer to Appendix 1 (Simple regime clauses) for the sample clauses illustrating the simple regime.

Preliminary steps

The simple regime requires several steps to be completed prior to commercial operation: mechanical completion, precommissioning, and commissioning.¹⁵²

Mechanical completion

Mechanical completion is the stage at which the facility has been completed mechanically and structurally, within the requirements of the contract, such that the facility is able to be started. The Contractor must notify the Principal's representative when it is satisfied that the facility has reached mechanical completion. The Principal's representative must then either:

- issue a certificate of mechanical completion
- notify the Contractor of any deficiencies in the facility preventing the issue of a certificate of mechanical completion.

The Contractor must correct any defects and reapply for a certificate of mechanical completion. This procedure is repeated until the certificate of mechanical completion is issued.

Precommissioning and commissioning

Commissioning is the stage at which the facility is operated by the Contractor in a limited way for the purpose of preparing the facility for operation and for the performance tests necessary to establish commercial operation.

Prior to commissioning, the Contractor must comply with certain procedures set by the Principal (as specified in the project documentation). After these precommissioning procedures are completed, the Contractor may begin commissioning.

Commercial operation

The simple regime then sets out the steps necessary for the facility to be placed into commercial operation. Broadly, commercial operation is the point at which the facility can be operated reliably, safely and legally under the conditions it is normally expected to operate within and:

- the environmental guarantees (that is, emissions and noise) have been met
- the performance guarantees have been met¹⁵³ or PLDs paid for any shortfall in meeting such guarantees.

It is permissible for some minor items to remain outstanding at the point of commercial operation, provided that the Contractor undertakes a Programme for their proposed completion and they do not impact on the safe and efficient performance of the facility.

The steps required for achieving commercial operation are as follows.

Performance tests

After commissioning the facility, and when the Contractor is satisfied that all requirements for commercial operation have been met, it must notify the Principal's representative that the facility has achieved commercial operation.

If, during the performance tests, the performance guarantees are not met, the Contractor must make such changes, modifications and/or additions to the facility as are necessary to meet the performance guarantees. On completion of these modifications, the Contractor must notify the Principal and continue to repeat the tests until the performance guarantees are met.

This process will ordinarily continue until DLDs cap out. However, at any time between the date for commercial operation and the date of DLDs capping out, either the Contractor or the Principal may elect to stop further work on the facility. Where such an election is made, the Contractor pays PLDs in consideration of its failure to satisfy the performance guarantees.

Certificate of commercial operation

On successful completion of the performance tests, the Contractor must notify the Principal's representative that, in the Contractor's opinion, the facility has reached commercial operation.

The Principal's representative must then either:

- issue a certificate of commercial operation
- notify the Contractor of any defects preventing the facility from reaching commercial operation.

¹⁵² Note that there will be different commissioning and testing requirements depending on the characteristics of the facility in question, including, for a gas-fired plant, whether it is single or combined cycle, and otherwise whether there are various units, staged completion or synchronisation issues.

¹⁵³ For example, both heat rate and output.

The Contractor must remedy any defects and repeat the performance tests until the Principal's representative issues a certificate of commercial operation.

The Contractor hands over care, custody and control of the facility when the Principal issues a certificate of commercial operation.

Final completion

The last stage in the simple regime is final completion, which is the point when:

- commercial operation has been achieved
- all defects and deficiencies have been remedied by the Contractor
- the defects liability period has expired.

The process for achieving final completion is as follows.

Notification

The Contractor must notify the Principal's representative that the facility has reached the stage of final completion.

Certificate of final completion

The Principal's representative must then either:

- issue a certificate of final completion
- notify the Contractor of any outstanding defects that must be remedied before final completion can be achieved.

The Contractor must remedy any defects and repeat the notification procedure until the Principal issues a certificate of final completion.

PLDs¹⁵⁴

Assuming that neither party exercises their right to terminate, PLDs are payable by the Contractor upon the earlier of:

- either party electing to stop further modifications by the Contractor, provided that the date for commercial operation has passed
- DLDs capping out.

For the purposes of assessing PLDs, commercial operation will be deemed at the point at which DLDs cap out.

(Note that this discussion does not take into account any PLDs that may arise because of a failure to meet the availability guarantee).

PLDs may be payable in the following four scenarios.

Opt-out election; minimum performance guarantees not met; performance guarantees not met

This scenario will arise if, at the date for commercial operation, the minimum performance guarantees have not been met. The Contractor is obliged to continue retesting until DLDs cap out, unless, as in this scenario, either the Contractor or the Principal exercises its rights to halt further work on the facility and have the Contractor pay PLDs. At the point of that election, the minimum performance guarantees will remain unsatisfied, meaning that the performance guarantees have also not been satisfied.

Liability to pay PLDs will arise for the Contractor's failure to meet the minimum performance guarantees and to meet the performance guarantees.¹⁵⁵

Opt-out election; minimum performance guarantees met; performance guarantees not met

This situation will arise as in the paragraph above, except that at the date for commercial operation the minimum performance guarantees may or may not have been met, and, in any event, at the point of the Contractor or the Principal electing not to continue modification, the Contractor will have achieved the minimum performance guarantees.

Accordingly, the Contractor's liability to pay PLDs will arise only in respect of the failure to meet the performance guarantees.

DLDs cap out; minimum performance guarantees not met; performance guarantees not met

This scenario will arise where the Contractor has failed to meet the minimum performance guarantees during the performance tests and continued modification and retesting by the Contractor fails to improve the facility for it to meet the minimum performance guarantees before DLDs cap out.

Liability to pay PLDs will arise for the Contractor's failure to meet the minimum performance guarantees and to meet the performance guarantees.

DLDs cap out; minimum performance guarantees met; performance guarantees not met

This scenario will arise where the performance tests demonstrate that the minimum performance guarantees have been met, but the performance guarantees have not. The Contractor is accordingly obliged to continue modifications and retesting. PLDs will become payable if, at the point DLDs cap out, the Contractor has failed to improve performance to meet the performance guarantees.

¹⁵⁴ Depending on the nature of the project and other commercial considerations, PLDs may not always be suitable compensation for a failure to achieve the minimum performance guarantees. Other options available to the Principal can include a right to reject the facility and buy-down (at a price determined by a pre-agreed valuation formula) or the Principal may wish to terminate the contract and engage others to complete the facility at the Contractor's cost.

¹⁵⁵ Note that there may be differing rates of PLDs. PLDs for a failure to meet the minimum performance guarantees may be higher than those payable for a failure to achieve the Performance Guarantees.

Detailed regime

This section will discuss the operation and function of the detailed regime. As stated earlier, the detailed regime establishes a three-stage completion process, incorporating a period of time in which the Contractor may, with the Principal's approval, attempt to improve the performance of the facility. This period of time occurs after the Principal certifies commercial operation and takes control of the facility.

Sample clauses illustrating the detailed regime are included in Appendix 2 (Detailed regime clauses).

Preliminary steps

Under the detailed regime, several steps must be completed to achieve commercial operation.

Mechanical completion, precommissioning and commissioning

Under the detailed regime, the concepts of mechanical completion, precommissioning and commissioning are identical to those under the simple regime (see above).

Commercial operation

After mechanical completion, precommissioning and commissioning, the detailed regime then specifies certain steps that are required for the facility to be placed into commercial operation. Similar to the notion of commercial operation in the simple regime, commercial operation is the point at which the facility can be operated reliably, safely and legally under the conditions it is normally expected to operate within and:

- the environmental guarantees have been met
- the minimum performance guarantees have been satisfied
- One of:
 - the performance guarantees have been met
 - the Contractor has paid PLDs in consideration of its failure to meet the performance guarantees
 - the Contractor has elected to utilise the subsequent testing period in an attempt to meet the performance guarantees post-commercial operation and has given security for the PLDs that would otherwise be payable.

It is permissible for some minor items to remain outstanding at the point of commercial operation, provided that the Contractor provides a Programme for their proposed completion.

After the preliminary steps are completed, the procedures that must be followed to achieve commercial operation are as follows:

Performance tests

Once the Contractor is satisfied that all requirements for commercial operation have been met, the Contractor must notify the Principal's representative. The performance tests must then take place.

If, after the performance tests are completed, the minimum performance guarantees have not been met, the Contractor must, at its own expense, make such changes, modifications or additions as may be required to meet the minimum performance guarantees. When the modifications are completed, the Contractor must notify the Principal and continue to repeat the overall performance test until the minimum performance guarantees are met.

Otherwise, if, after the performance tests are completed, the:

- performance guarantees have been met
- minimum performance guarantees have been met and either:
 - the Contractor elects to pay PLDs in lieu of meeting the performance guarantees
 - if DLDs have not capped out, the Contractor elects to give security and exercise its rights to utilise the subsequent testing period, the Contractor must notify the Principal's representative that the facility has reached commercial operation.

Certificate of commercial operation

The Principal must either:

- issue a certificate of commercial operation (effectively certifying that the minimum performance guarantees have been met)
- notify the Contractor of any defects or deficiencies that prevent the facility from reaching commercial operation.

The Contractor must remedy any defects and again notify the Principal that the facility is ready for commercial operation. This process must be repeated until the Principal issues a certificate of commercial operation.

When the Principal issues the certificate of commercial operation, care, custody and control of the facility is handed to the Principal. Note that the Principal has the discretion to issue a certificate of commercial operation at any time (notwithstanding that the requirements for issuing a certificate of commercial operation have not been met).

At this point, if the minimum performance guarantees have been met, but the performance guarantees have not, and the Contractor has elected to pay PLDs rather than attempt to improve the facility's performance, the PLDs must be paid.

Alternately, if the minimum performance guarantees have been met, but the performance guarantees have not, and the Contractor has provided the Principal with security for the PLDs (in the form of payment or a bank guarantee), the subsequent testing period commences.

Subsequent testing period¹⁵⁶

The subsequent testing period is a 60-day period after commercial operation in which, if the performance guarantees have not been met and the Contractor elects to utilise the subsequent testing period, the Contractor may request access to the facility to perform modifications and otherwise seek to improve performance (despite the fact that care, custody and control of the facility has passed to the Principal).

During the subsequent testing period, the Contractor may at any time:

- request the facility to be taken out of service
- at its own expense, make changes, modification or additions to the facility in an attempt to meet the performance guarantees
- notify the Principal upon completion of any changes or modifications
- continue to repeat the overall performance test.

The Principal has an absolute discretion to refuse or reschedule the Contractor's request to take the facility out of service. During periods where the facility is taken out of service, the Contractor assumes sole and absolute responsibility for the care, custody and control of the facility and bears the risk of loss or damage to it.

Final commercial operation

Where the Contractor has failed to meet the performance guarantees at the point of commercial operation and elects to utilise the subsequent testing period, a further stage of completion is required (Final Commercial Operation).

Final Commercial Operation is reached on the earliest of:

- the date DLDs cap out
- the expiration of the subsequent testing period
- the date on which the Principal issues the certificate of final completion.

There are two stages to the achievement of Final Commercial Operation.

Notification

The Contractor must notify the Principal's representative that it believes the facility has reached Final Commercial Operation.

Certification of final commercial operation

The Principal's representative must either:

- issue a certificate of Final Commercial Operation

- notify the Contractor of any defects preventing the facility from reaching Final Commercial Operation (effectively, any defect causing the facility to no longer satisfy the minimum performance guarantees or another compulsory condition).

The Contractor must remedy any defects and again notify the Principal's representative that the facility has reached Final Commercial Operation. This procedure must be repeated until the Principal's representative issues a certificate of Final Commercial Operation.

Final completion

The final completion procedure is identical under both the simple and detailed regimes (see above).

PLDs

PLDs become payable under the detailed regime at the point of:

- if the minimum performance guarantees are not met (and thus commercial operation is not achieved) before DLDs cap out commercial operation
- where the subsequent testing period is utilised, Final Commercial Operation.

(Note that this discussion does not take into account any PLDs that may arise because of a failure to meet the availability guarantee.)

The following sections set out the PLDs that will be payable in the three possible scenarios.

DLDs cap out; minimum performance guarantees not met; performance guarantees not met

This scenario will arise either where the Contractor:

- does not reach the point of carrying out performance tests on the facility before DLDs cap out and overall performance tests at that point reveal that the minimum performance guarantees have not been met
- has failed to meet the minimum performance guarantees at the point of the performance tests and continued modification and retesting fails to improve the facility for it to meet the minimum performance guarantees before DLDs cap out.

In this case, liability to pay PLDs will arise in respect of the failure both to meet the minimum performance guarantees and to meet the performance guarantees.

Commercial operation; minimum performance guarantees met; performance guarantees not met

This scenario will arise only where the performance tests demonstrate that the minimum performance guarantees have been met, but the performance guarantees have not been met and the Contractor elects to immediately pay PLDs in consideration of its failure to meet the performance guarantees. PLDs will become payable in this scenario as soon as the Contractor makes such an election.

¹⁵⁶ During this period, the Contractor is responsible for the cost of fuel, water and all other consumables necessary for the additional testing.

Final commercial operation: minimum performance guarantees met, performance guarantees not met.

This scenario will arise where the performance tests demonstrate that the minimum performance guarantees have been met, but the performance guarantees have not been met and the Contractor applies for commercial operation and elects to utilise the subsequent testing period.

In this scenario, the Contractor must secure its potential PLDs liability (as at commercial operation) by either:

- paying the PLDs that would be payable at commercial operation (for the failure to meet the performance guarantees)
- providing a bank guarantee to the Principal for the same amount.

At the point of Final Commercial Operation, PLDs will crystallise and:

- if the Contractor has met the performance guarantees, the money paid or security will be refunded or released, less an offset for the period of reduced performance between commercial operation and Final Commercial Operation
- if the Contractor has improved the performance of the facility, but has not met the performance guarantees, a portion of the money paid or security will be refunded or released, proportionate with the increase in performance, less an offset for the period of reduced performance between commercial operation and Final Commercial Operation
- if the performance of the facility is the same as or worse than it was at commercial operation, the Principal will retain the PLDs or cash the guarantee and the Contractor will be liable to pay to the Principal an amount equal to the difference between the PLDs now payable for the deficiency in performance and the money or guarantee already given by the Contractor.



Annexure 1

Simple regime clauses

Precommissioning and commissioning

Mechanical completion

- (a) As soon as the facility, in the opinion of the Contractor, reaches the stage of Mechanical Completion, the Contractor must give a notice to the Owner's representative.
- (b) The Owner's representative must, promptly, and no later than five business days after receipt of the Contractor's notice under clause 1.1(a), either issue a Certificate of Mechanical Completion stating that the facility has reached Mechanical Completion or notify the Contractor of any defects and/or deficiencies.
- (c) If the Owner's representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct those defects and/or deficiencies and the procedures described in clauses 1.1(a) and (b) must be repeated until the Owner's representative issues a Certificate of Mechanical Completion.

Precommissioning

The Contractor must comply with the Owner's requirements and procedures in relation to Precommissioning as set out in the schedule of technical specification.

Commissioning

As soon as all works in respect of Precommissioning are completed the Contractor must notify the Owner's representative in writing that the facility is ready for the commissioning tests.

Requirements and procedures

The Contractor must comply with the Owner's requirements and procedures in relation to Commissioning and the performance of the commissioning tests as set out in the schedule of technical specification.

Performance tests, commercial operation and final completion

- (a) After the initial testing is completed, and as soon as the facility, in the opinion of the Contractor, satisfies all the requirements for Commercial Operation (other than the passing of the Performance Tests), the Contractor must notify the Owner's representative in writing that the facility is ready for the Performance Tests.
- (b) Each Performance Test must be completed at the time and in accordance with the procedures specified in the schedule of tests.
- (c) The Contractor acknowledges and agrees that, despite any other provision of this contract, no partial or entire use or generation of electricity or occupancy of the site, the Works or the facility as a whole by the Owner, whether prior to, during or after the Performance Tests or otherwise, in any way constitutes an acknowledgment by the Owner that Commercial Operation has occurred, nor does it operate to release the Contractor from any of its warranties, obligations or liabilities under or in connection with this contract.

Commercial operation

- (a) As soon as the facility has passed the Performance Tests the Contractor must notify the Owner's representative in writing that the facility has, in the Contractor's opinion, reached Commercial Operation. That notice must, if applicable, also include the Contractor's list of minor outstanding items that in its view meet the requirements of paragraph (k) of the definition of Commercial Operation and a Programme for expeditiously completing those minor outstanding items.
- (b) The Owner's representative must promptly, and no later than five days after receipt of the Contractor's notice under clause 2.2(a), either issue a Certificate of Commercial Operation stating the date on which the facility has reached Commercial Operation or notify the Contractor in writing of any defects and/or deficiencies that prevent the facility from achieving Commercial Operation.
- (c) If the Owner's representative notifies the Contractor of any such defects and/or deficiencies, the Contractor must then remedy those defects and/or deficiencies and the procedures described in clauses 2.2(a) and (b) must be repeated until the Owner issues a Certificate of Commercial Operation.

- (d) Upon the issue of the Certificate of Commercial Operation, the Contractor must hand over care, custody and control of the facility to the Owner.
- (e) Notwithstanding that all the requirements for the issuing of a Certificate of Commercial Operation have not been met, the Owner may at any time, in its absolute, sole and unfettered discretion, issue a Certificate of Commercial Operation. The issue of a Certificate of Commercial Operation in accordance with this clause 2.2(e) will waive the requirement of paragraph (d) of the definition of Commercial Operation but will not operate as an admission that all the other requirements of Commercial Operation have been met, and does not prejudice any of the Owner's rights, including the right to require the Contractor to satisfy all these requirements, nor does it release the Contractor from any of its warranties, obligations or liabilities under or in connection with this contract.

Final completion

- (a) As soon as the facility, in the opinion of the Contractor, reaches the stage of Final Completion, the Contractor must give a written notice to the Owner's representative.
- (b) The Owner's representative must, promptly, and no later than five days after receipt of the Contractor's notice under clause 2.3(a), either issue a Certificate of Final Completion stating that the facility has reached Final Completion or notify the Contractor in writing of any defects and/or deficiencies that must be remedied before Final Completion can be achieved.
- (c) If the Owner's representative notifies the Contractor of any outstanding defects and/or deficiencies, the Contractor must then remedy those defects and/or deficiencies and the procedures described in clauses 2.3(a) and (b) must be repeated until the Owner issues a Certificate of Final Completion.

Performance guarantees

Performance guarantees

- (a) The Contractor guarantees that the facility as a whole and all sections thereof will meet the:
 - (i) Performance Guarantees
 - (ii) Environmental Guarantees
 - (iii) as specified in the schedule of performance guarantees and the schedule of tests.
- (b) The Contractor agrees that the Environmental Guarantees are absolute guarantees, the meeting of which is a condition precedent to achieving Commercial Operation.

Performance guarantees not met – Retesting

If for reasons not attributable to the Owner, either or both of the Performance Guarantees are not met during the same Performance Test, the Contractor must:

- (a) at its cost and expense make changes, modifications and/or additions to the facility or any part as may be necessary to meet the Performance Guarantees
- (b) notify the Owner upon completion of the necessary changes, modifications and/or additions
- (c) subject to the Owner's rights under clauses 2.2(e) and 3.5 and 3.14, continue to repeat the Performance Test until the Performance Guarantees have been met during the same Performance Test.

Minimum Performance Guarantees not met – PLDs

Subject to clause 2.2(e), if for reasons not attributable to the Owner, the Contractor does not meet one or more of the minimum performance guarantees by the date it has incurred or is liable for Delay Liquidated Damages up to the aggregate liability specified in the schedule of delay liquidated damages, the Owner may require the Contractor to pay:

- (a) if the Minimum Net Electrical Output Performance Guarantee has been met (but the net electrical output performance guarantee has not been met), Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages
- (b) if the Minimum Net Electrical Output Performance Guarantee has not been met:
 - (i) an amount equal to the amount the Contractor would have been liable for if the actual rated net output of the facility was equal to 95.0% of the net electrical output performance guarantee as specified in the schedule of performance liquidated damages
 - (ii) Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages.



- (c) if the Minimum Net Heat Rate Performance Guarantee has been met (but the net heat rate performance guarantee has not been met), Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages
- (d) if the Minimum Net Heat Rate Performance Guarantee has not been met:
 - (i) an amount equal to the amount the Contractor would have been liable for if the actual net heat rate of the facility was equal to 105.0% of the net heat rate performance guarantee as specified in the schedule of performance liquidated damages
 - (ii) Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages.

Performance guarantees not met – PLDs

If for reasons not attributable to the Owner, the Contractor has met the minimum performance guarantees but does not meet one or more of the Performance Guarantees by the date it has incurred or is liable for Delay Liquidated Damages up to the aggregate liability specified in the schedule of delay liquidated damages, the Contractor is liable to pay Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages.

Performance guarantees not met after date for commercial operation – Opt out

- (a) Despite clauses 3.3 and 3.4, the Contractor may at any time after the Date for Commercial Operation elect to pay Performance Liquidated Damages in respect of the failure to meet either or all of the Performance Guarantees (for reasons not attributable to the Owner), provided the minimum performance guarantees and the Environmental Guarantees have been met.
- (b) Despite clauses 3.3 and 3.4, the Owner may at any time after the Date for Commercial Operation require the Contractor to pay Performance Liquidated Damages in respect of the failure to meet any or all of the Performance Guarantees (for reasons not attributable to the Owner), provided the minimum performance guarantees and the Environmental Guarantees have been met.

Satisfaction of performance guarantees

The payment of Performance Liquidated Damages under clause 3 will be in satisfaction of the relevant Performance Guarantee or Performance Guarantees.

Environmental guarantees

If the Contractor has met the Performance Guarantees or the minimum performance guarantees, as the case may be, but does not, for reasons not attributable to the Owner, during the same Overall Performance Test, meet the Environmental Guarantees, the performance of the facility may, at the Contractor's option, be derated to a level not below the Minimum Performance Guarantee levels, to enable the Emissions Guarantees to be achieved. If the Contractor elects to derate the performance of the facility, the Contractor must pay Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages for such derated performance.

Availability guarantee

The Contractor guarantees that the facility either in whole or in part will operate at the guaranteed availability for a period of 12 months from not later than two months after the Date of Commercial Operation.

Availability – PLDs

If the Availability Guarantee is not achieved, the Contractor must pay Performance Liquidated Damages as specified in the schedule of performance liquidated damages.

Aggregate liability

The aggregate liability of the Contractor for Performance Liquidated Damages under clause 3 will not exceed the amount calculated in accordance with the schedule of performance liquidated damages.

Invoicing

Performance Liquidated Damages must be invoiced by the Owner and payment must be made by the Contractor within 15 days of the date of the invoice. At the expiration of those 15 days, the amount involved is, if not paid, a debt due and payable to the Owner by the Contractor.

Fair and reasonable pre-estimate

The parties agree that the Performance Liquidated Damages in the schedule of performance liquidated damages are a fair and reasonable pre-estimate of the damages likely to be sustained by the Owner as a result of the Contractor's failure to meet the minimum performance guarantees and/or the Performance Guarantees.

No relief

- (a) The payment of Performance Liquidated Damages does not in any way relieve the Contractor from any of its obligations to complete the Works or from any of its warranties, obligations or liabilities under or in connection with this contract.
- (b) Without prejudice to clause 3.13(a), the payment of Performance Liquidated Damages under this clause 3 is in addition to any liability of the Contractor for Delay Liquidated Damages.

Rights at law

If this clause 3 (or any part) is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Owner from claiming Performance Liquidated Damages, the Owner is entitled to claim against the Contractor for damages at law for the Contractor's failure to meet the Performance Guarantees. Such damages must not exceed the amounts specified in the schedule of damages at law.

No benefit

The Contractor is not entitled to the benefit of the exclusion of liability for consequential loss under this contract in any claim for damages at law by the Owner against the Contractor pursuant to clause 3.14.

Duplicate damages

Nothing in this clause 3 entitles the Owner to claim duplicate damages in respect of the failure of the Contractor to meet the Performance Guarantees, the minimum performance guarantees or the Availability Guarantee.

Definitions

Availability Guarantee means the guarantee specified as the 'Availability Guarantee' in the [schedule of performance guarantees].

Availability Test means the test described as the Availability Test in the [schedule of tests].

Certificate of Commercial Operation means the certificate issued by the Owner under clause 2.2 in the form set out in the [schedule of forms of certificates].

Certificate of Final Completion means the certificate issued under clause 2.3 in the form set out in the [schedule of forms of certificates].

Certificate of Mechanical Completion means the certificate issued under clause 1.1(b) in the form set out in the [schedule of forms of certificates].

Commercial Operation means the stage of the Works when the following has occurred:

- (a) the Contractor has provided copies of the draft operation and maintenance manual
- (b) the Emissions Guarantee Test has been passed
- (c) the Noise Guarantee has been met
- (d) the Minimum Performance Guarantees have been met
- (e) the Performance Guarantees have been met or, where applicable, Performance Liquidated Damages have been paid
- (f) the facility is capable of being operated reliably, safely and efficiently under all anticipated or likely operational conditions
- (g) the Contractor has provided the Spare Parts required to be provided by the Date for Commercial Operation
- (h) the facility is in a condition which allows the Owner to comply with all laws relating to its operation
- (i) all documents and other information in respect of the facility required under this contract have been supplied to the Owner or the Owner's representative
- (j) all government approvals to be obtained by the Contractor under the contract and which are necessary for the operation of the facility, and to the full extent permitted by law, have been transferred (to the extent necessary and/or permitted at law) to the Owner or the Owner's nominee
- (k) the facility is complete in all respects other than minor items that in the reasonable opinion of the Owner's representative will not prejudice (either by not being completed or as a result of the work needed to complete them), the ability of the Owner to operate the facility legally, safely, reliably and efficiently.

Commissioning means the operation of the facility, or any part, by the Contractor following Precommissioning in accordance with the schedule of project technical requirements [not included], which operation is to be carried out by the Contractor as provided in clause 1.4, for the purpose of preparing the facility for operation and the carrying out of the Performance Tests.

Date for Commercial Operation means, in respect of the facility, the date specified in the [schedule of guaranteed dates], as may be varied in accordance with the terms of the contract.

Date of Commercial Operation means the date specified in the Certificate of Commercial Operation.

Defects Liability Period means the period of 12 months from:

- (a) in relation to the facility as a whole, the Date of Commercial Operation
- (b) in relation only to where a part or parts of the facility are repaired, replaced or made good, the date of commencement in accordance with the contract as the case may be.

Delay Liquidated Damages means the liquidated damages for delay specified in the relevant section of the [schedule of delay liquidated damages].

Emissions Guarantee means the guarantee specified in the [schedule of performance guarantees], which is an absolute guarantee and the meeting of which is a condition precedent to achieving Commercial Operation.

Emissions Guarantee Tests means the tests specified as the emissions guarantee tests in the [schedule of tests].

Environmental Guarantees means the Emissions Guarantee and the Noise Guarantee as specified in the [schedule of performance guarantees].

Final Completion means the stage of the Works when:

- (a) Commercial Operation has been achieved
- (b) all defects and/or deficiencies have been satisfactorily remedied
- (c) the Defects Liability Period has expired.

Mechanical Completion means that the facility has been completed mechanically and structurally in accordance with the [schedule of project technical requirements] and the other requirements of the contract such that in the reasonable opinion of the Owner's representative the facility is substantially completed and able to operate safely, reliably and efficiently and the facility is ready for Precommissioning and Commissioning.

Minimum Net Electrical Output Performance

Guarantee means the minimum net output performance level specified in the schedule of performance guarantees.

Minimum Net Heat Rate Performance Guarantee means the minimum net heat rate performance level specified in the schedule of performance guarantees.

Minimum Performance Guarantees means the Minimum Net Heat Rate Performance Guarantee and the Minimum Net Electrical Output Performance Guarantee.

Noise Guarantee means the guarantee specified as the 'Noise Guarantee' in the [schedule of performance guarantees], which is an absolute guarantee and the meeting of which is a condition precedent to achieving Commercial Operation and Final Commercial Operation.

Noise Guarantee Tests means the tests specified as the noise guarantee tests in the [schedule of tests].

Overall Performance Test means a test in which the Performance Guarantees and the Environmental Guarantees are measured simultaneously.

Performance Guarantees means the performance guarantees to be met in relation to Commercial Operation as set out in the [schedule of performance guarantees] but does not include the Environmental Guarantees.

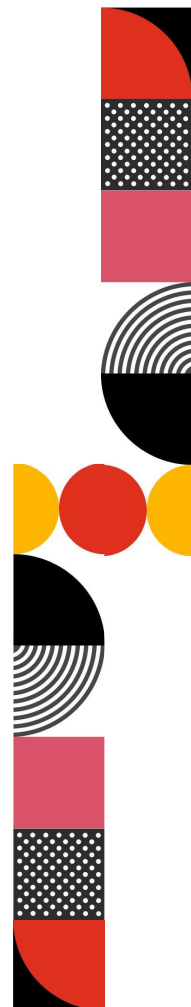
Performance Liquidated Damages means the liquidated damages for underperformance of the facility as specified in the [schedule of performance liquidated damages].

Performance Tests means the tests described as Performance Tests in the [schedule of tests].

Precommissioning means the testing, checking and other works specified in the [schedule of project technical requirements] to be performed by the Contractor in preparation for Commissioning.

Spare Parts means the spare parts the Contractor is obliged to provide pursuant to the contract that must, as a minimum, comprise the parts listed in the [schedule of project technical requirements].

Works means all the equipment to be supplied and the whole of the work and services to be performed by the Contractor under the contract in accordance with the contract documents and as further described in the schedule of project technical requirements and includes any variation.



Annexure 2

Detailed regime clauses

1. Precommissioning and commissioning

1.1 Mechanical completion

- (a) As soon as the facility, in the opinion of the Contractor, reaches the stage of Mechanical Completion, the Contractor must give a notice to the Owner's representative.
- (b) The Owner's representative must, promptly, and no later than five business days after receipt of the Contractor's notice under clause 1.1(a), either issue a Certificate of Mechanical Completion stating that the facility has reached Mechanical Completion or notify the Contractor of any defects and/or deficiencies.
- (c) If the Owner's representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct those defects and/or deficiencies and the procedures described in clauses 1.1(a) and (b) must be repeated until the Owner's representative issues a Certificate of Mechanical Completion.

1.2 Precommissioning

The Contractor must comply with the Owner's requirements and procedures in relation to Precommissioning as set out in the schedule of technical specification.

1.3 Commissioning

As soon as all works in respect of Precommissioning are completed, the Contractor must notify the Owner's representative in writing that the facility is ready for the Commissioning Tests.

1.4 Requirements and procedures

The Contractor must comply with the Owner's requirements and procedures in relation to Commissioning and the performance of the Commissioning Tests as set out in the schedule of technical specification.

2. Performance tests, commercial operation and final completion

2.1 Performance tests

- (a) After the initial testing is completed, and the Contractor is satisfied that all requirements for Commercial Operation (other than the passing of the Performance Tests) have been met, the Contractor must notify the Owner's representative in writing that the facility is ready for the Performance Tests.
- (b) Each Performance Test must be completed at the time and in accordance with the procedures specified in the schedule of tests.
- (c) The Contractor acknowledges and agrees that, despite any other provision of this contract, no partial or entire use or generation of electricity or occupancy of the site, the Works or the facility as a whole by the Owner, whether prior to, during or after the Performance Tests or otherwise, in any way constitutes an acknowledgment by the Owner that Commercial Operation has occurred, nor does it operate to release the Contractor from any of its warranties, obligations or liabilities under or in connection with this contract.

2.2 Commercial operation

- (a) After the Performance Tests are completed and the:
- (b) Performance Guarantees have been met.
- (c) Minimum Performance Guarantees have been met and the Contractor elects to pay the applicable Performance Liquidated Damages in accordance with clause 3.4.
- (d) Minimum Performance Guarantees have been met and provided the Contractor has not incurred Delay Liquidated Damages equal to or in excess of the amount specified in section 2 of the schedule of delay liquidated damages, the Contractor elects to exercise its rights under clause 2.3 and provide security or pay the applicable Performance Liquidated Damages in accordance with clause 3.4.

The Contractor must notify the Owner's representative in writing that the facility has, in the Contractor's opinion, reached Commercial Operation. That notice must, if applicable, also include the Contractor's list of minor outstanding items that in its view meet the requirements of paragraph (j) of the definition of Commercial Operation and a Programme for expeditiously completing those minor outstanding items.

- (e) The Owner's representative must promptly, and no later than five days after receipt of the Contractor's notice under clause 2.2(a), either issue a Certificate of Commercial Operation stating the date on which the facility has reached Commercial Operation or notify the Contractor in writing of any defects and/or deficiencies that prevent the facility from achieving Commercial Operation.
- (f) If the Owner's representative notifies the Contractor of any such defects and/or deficiencies, the Contractor must then remedy those defects and/or deficiencies and the procedures described in clauses 2.2(a) and (b) must be repeated until the Owner issues a Certificate of Commercial Operation.
- (g) Upon the issue of the Certificate of Commercial Operation, the Contractor must hand over care, custody and control of the facility to the Owner.
- (h) Notwithstanding that all the requirements for the issuing of a Certificate of Commercial Operation have not been met, the Owner may at any time, in its absolute, sole and unfettered discretion, issue a Certificate of Commercial Operation. The issue of a Certificate of Commercial Operation in accordance with this clause 2.2(e) will waive the requirement of paragraph (d) of the definition of Commercial Operation but will not operate as an admission that all the other requirements of Commercial Operation have been met, and does not prejudice any of the Owner's rights, including the right to require the Contractor to satisfy all these requirements, nor does it release the Contractor from any of its warranties, obligations or liabilities under or in connection with this contract.

2.3 Subsequent testing period

If the Contractor has elected under clause 2.2(a)(iii) to exercise its rights under this clause 2.3, the Contractor may, at any time during the Subsequent Testing Period:

- (a) request the facility or any part of the facility be taken out of Service
- (b) at its cost and expense make changes, modifications and/or additions to the facility or any part as may be necessary to meet the Performance Guarantees
- (c) notify the Owner upon completion of the necessary changes, modifications and/or additions
- (d) continue to repeat the Overall Performance Test, in order to meet the Performance Guarantees.

The Owner may in its absolute discretion refuse or reschedule the Contractor's request to take the facility or any part of the facility out of Service or otherwise modify or adapt the facility or any part of the facility as a result of operational requirements. The Contractor is solely and absolutely responsible for ensuring the facility or any part of the facility returns to Service and operates in accordance with the requirements of this contract after it is taken out of Service pursuant to this clause 2.3. In addition, the Contractor is responsible for the care, custody and control of the facility and bears the risk of loss or damage to the facility or part of the facility taken out of Service pursuant to this clause 2.3 until the facility or any such part is returned to Service.

During the Subsequent Testing Period, the Owner agrees that the Contractor is not liable for Delay Liquidated Damages during any scheduled outage.

2.4 Final commercial operation

- (a) The Contractor must notify the Owner's representative in writing that the facility has, in the Contractor's opinion, reached Final Commercial Operation, on:
 - (i) the date the Contractor has incurred liability for Delay Liquidated Damages equal to the amount specified in the Schedule of Delay Liquidated Damages
 - (ii) the expiration of the Subsequent Testing Period
 - (iii) at any other time during the Subsequent Testing Period.
- (b) The Owner's representative must promptly, and no later than five days after receipt of the Contractor's notice under clause 2.4(a), either issue a Certificate of Final Commercial Operation stating the date on which the facility has reached Final Commercial Operation or notify the Contractor in writing of any defects and/or deficiencies that prevent the facility from achieving Final Commercial Operation.
- (c) If the Owner's representative notifies the Contractor of any such defects and/or deficiencies, the Contractor must then remedy those defects and/or deficiencies and the procedures described in clauses 2.4(a) and (b) must be repeated until the Owner issues a Certificate of Final Commercial Operation.

2.5 Final completion

- (a) As soon as the facility, in the opinion of the Contractor, reaches the stage of Final Completion the Contractor must give a written notice to the Owner's representative.
- (b) The Owner's representative must, promptly, and no later than five days after receipt of the Contractor's notice under clause 2.5(a), either issue a Certificate of Final Completion stating that the facility has reached Final Completion or notify the Contractor in writing of any defects and/or deficiencies that must be remedied before Final Completion can be achieved.
- (c) If the Owner's representative notifies the Contractor of any outstanding defects and/or deficiencies, the Contractor must then remedy those defects and/or deficiencies and the procedures described in clauses 2.5(a) and (b) must be repeated until the Owner issues a Certificate of Final Completion.



3. Performance guarantees

3.1 Trial runs, performance guarantees, environmental guarantees

- (a) The Contractor guarantees that the facility as a whole and all parts will pass the trial runs and meet the:
 - (i) Performance Guarantees
 - (ii) Environmental Guarantees, as specified in the Schedule of Performance Guarantees and the Schedule of Tests.
- (b) The Contractor agrees that the meeting of the Environmental Guarantees and the passing of each trial run are absolute guarantees and requirements, the meeting and passing of which are conditions precedent to achieving Commercial Operation.

3.2 Minimum performance guarantees not met – Retesting

If, for reasons not attributable to the Owner, either or both of the Minimum Performance Guarantees are not met during the same Overall Performance Test, the Contractor must:

- (a) at its cost and expense make changes, modifications and/or additions to the facility or any part as may be necessary to meet the Minimum Performance Guarantees
- (b) notify the Owner upon completion of the necessary changes, modifications and/or additions
- (c) subject to the Owner's rights under clauses 2.2(e) and 3.3 and 3.13, continue to repeat the Overall Performance Test until the Minimum Performance Guarantees have been met during the same Overall Performance Test.

Subject to clause 3.3, nothing in this clause 3.2 derogates from the Contractor's obligation to meet the Performance Guarantees.

3.3 Minimum performance guarantees not met – PLDs

Subject to clause 2.2(e), if for reasons not attributable to the Owner, the Contractor does not meet one or more of the Minimum Performance Guarantees by the date it has incurred or is liable for Delay Liquidated Damages up to the aggregate liability specified in the schedule of delay liquidated damages, the Owner may require the Contractor to pay:

- (a) If the Minimum Net Electrical Output Performance Guarantee has been met (but the net electrical output performance guarantee has not been met): Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages.
- (b) If the Minimum Net Electrical Output Performance Guarantee has not been met:
 - (i) an amount equal to the amount the Contractor would have been liable for if the actual rated net output of the facility was equal to 95.0% of the net electrical output performance guarantee as specified in the schedule of performance liquidated damages

- (ii) Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages.
- (c) If the Minimum Net Heat Rate Performance Guarantee has been met but the net heat rate performance guarantee has not been met: Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages.
- (d) If the Minimum Net Heat Rate Performance Guarantee has not been met:
 - (i) an amount equal to the amount the Contractor would have been liable for if the actual net heat rate of the facility was equal to 105.0% of the net heat rate performance guarantee as specified in the schedule of performance liquidated damages
 - (ii) Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages.

3.4 PLDs – Commercial operation

If the Performance Guarantees have not been met, but the Minimum Performance Guarantees have been met, the Contractor may apply for Commercial Operation in accordance with clause 2.2 provided all the requirements for Commercial Operation have been satisfied and it:

- (a) pays to the Owner Performance Liquidated Damages calculated in accordance with the Schedule of Performance Liquidated Damages
- (b) elects under clause 2.2(a)(iii) to exercise its rights under clause 2.3 and:
 - (i) pays to the Owner Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages that would be payable if the Contractor's liability for Performance Liquidated Damages crystallised on the day the Contractor applied for Commercial Operation
 - (ii) provides the Owner with an irrevocable and unconditional bank guarantee in a form and from a financial institution approved by the Owner, in its absolute discretion, for an amount equal to the Performance Liquidated Damages that would be payable if the Contractor's liability for Performance Liquidated Damages crystallised on the day the Contractor applied for Commercial Operation.

If the Contractor has met the Performance Guarantees or the Minimum Performance Guarantees, as the case may be, but does not, for reasons not attributable to the Owner, during the same Overall Performance Test, meet the Environmental Guarantee, the performance of the facility may, at the Contractor's option, be derated to a level not below the Minimum Performance Guarantee levels, to enable the Emissions Guarantees to be met. If the Contractor elects to derate the performance of the facility, the Contractor must pay Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages for such derated performance.

3.5 PLDs – Final commercial operation

- (a) If the Contractor elects under clause 2.2(a)(iii) to exercise its rights under clause 2.3, on:
- (i) the date the Contractor has incurred liability for Delay Liquidated Damages equal to the amount specified in the schedule of delay liquidated damages
 - (ii) the expiration of the Subsequent Testing Period
 - (iii) the date nominated by the Contractor under clause 2.3(a)(iii), the Contractor's liability for Performance Liquidated Damages will crystallise and the Contractor is liable for Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages.
- the Contractor's liability for Performance Liquidated Damages pursuant to clause 3.5(a) is calculated by reference to the highest level at which the facility performed during the Overall Performance Test while still meeting the Environmental Guarantees.
- (b) If the amount calculated under clause 3.5(a) is greater than the security provided by, or the Performance Liquidated Damages paid by, the Contractor under clause 3.4(b)(i) or clause 3.4(b)(ii), as the case may be, then the Contractor must pay to the Owner the difference.
- (c) If the amount calculated under clause 3.5(a) is less than the security provided by, or the Performance Liquidated Damages paid by, the Contractor under clause 3.4(b)(i) or clause 3.4(b)(ii) as the case may be, the Owner must either:
- (i) refund the Contractor from the monies paid pursuant to clause 3.4(b)(i) so that the net amount retained by the Owner is equal to amount to Performance Liquidated Damages the Contractor is liable for under clause 3.5(a)
 - (ii) release the remainder of the bank guarantee provided pursuant to clause 3.4(b)(ii) after cashing the guarantee for an amount equal to the amount of Performance Liquidated Damages the Contractor is liable for under clause 3.5(a).
- (d) The Contractor must, in addition to its obligation to pay Performance Liquidated Damages under clauses 3.4(b)(i) and 3.5(c) or provide security under clause 3.4(b)(ii) as the case may be, pay Performance Liquidated Damages calculated in accordance with the schedule of performance liquidated damages for the reduced performance of the facility during the period between Commercial Operation and Final Commercial Operation, less the number of days the facility is out of Service.

3.6 Availability guarantee

The Contractor guarantees that the facility either in whole or in part will operate at the guaranteed availability for a period of 12 months from not later than two months after the Date of Commercial Operation.

3.7 Availability – PLDs

If the Availability Guarantee is not achieved, the Contractor must pay Performance Liquidated Damages as specified in the schedule of performance liquidated damages.

3.8 Aggregate liability

The aggregate liability of the Contractor for Performance Liquidated Damages under clause 3 will not exceed the amount calculated in accordance with the schedule of performance liquidated damages.

3.9 Satisfaction of performance guarantees

The payment of Performance Liquidated Damages under clause 3 will be in satisfaction of the relevant Performance Guarantee.

3.10 Invoicing

Performance Liquidated Damages must be invoiced by the Owner and payment must be made by the Contractor within 15 days of the date of the invoice. At the expiration of those 15 days, the amount involved is, if not paid, a debt due and payable to the Owner by the Contractor.

3.11 Fair and reasonable pre-estimate

The parties agreed that the Performance Liquidated Damages in the schedule of performance liquidated damages are a fair and reasonable pre-estimate of the damages likely to be sustained by the Owner as a result of the Contractor's failure to meet the Minimum Performance Guarantees and/or the Performance Guarantees.

3.12 No relief

- (a) The payment of Performance Liquidated Damages does not in any way relieve the Contractor from any of its obligations to complete the Works or from any of its warranties, obligations or liabilities under or in connection with this contract.
- (b) Without prejudice to clause 3.12(a), the payment of Performance Liquidated Damages under this clause 3 is in addition to any liability of the Contractor for Delay Liquidated Damages.

3.13 Rights at law

If this clause 3 (or any part) is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Owner from claiming Performance Liquidated Damages, the Owner is entitled to claim against the Contractor for damages at law for the Contractor's failure to meet the Performance Guarantees. Such damages must not exceed the amounts specified in the schedule of damages at law.

3.14 No benefit

The Contractor is not entitled to the benefit of the exclusion of liability for consequential loss under this contract in any claim for damages at law by the Owner against the Contractor pursuant to clause 3.13.

3.15 Duplicate damages

Nothing in this clause 3 entitles the Owner to claim duplicate damages at law or under this contract in respect of the failure of the Contractor to meet the Performance Guarantees, the Minimum Performance Guarantees or the Availability Guarantee.

4. Definitions

Availability Guarantee means the guarantee specified as the 'Availability Guarantee' in the [schedule of performance guarantees].

Availability Test means the test described as the availability test in the [schedule of tests].

Certificate of Commercial Operation means the certificate issued by the Owner under clause 2.2 in the form set out in the [schedule of forms of certificates].

Certificate of Final Commercial Operation means the certificate issued by the Owner under clause 2.4 in the form set out in the [schedule of forms of certificates].

Certificate of Final Completion means the certificate issued by the Owner under clause 2.5 in the form set out in the [schedule of forms of certificates].

Certificate of Mechanical Completion means the certificate issued under clause 1.1(b) in the form set out in the [schedule of forms of certificates].

Commercial Operation means the stage of the Works when the following has occurred:

- (a) the Contractor has provided copies of the draft operation and maintenance manual
- (b) the Emissions Guarantee Test has been passed
- (c) the Noise Guarantee has been met
- (d) one of the following has occurred:
 - (i) the Performance Guarantees have been met
 - (ii) the Minimum Performance Guarantees have been met and the Contractor has paid the applicable Performance Liquidated Damages
 - (iii) the Minimum Performance Guarantees have been met and the Contractor has elected under clause 2.2(a)(iii) to exercise its rights under clause 2.3
- (e) the facility is capable of being operated reliably, safely and efficiently under all anticipated or likely operational conditions
- (f) the Contractor has provided the Spare Parts required to be provided by the Date for Commercial Operation
- (g) the facility is in a condition which allows the Owner to comply with all laws relating to its operation
- (h) all documents and other information in respect of the facility required under this contract have been supplied to the Owner or the Owner's representative
- (i) all government approvals to be obtained by the Contractor under this contract and which are necessary for the operation of the facility, and to the full extent permitted by law, have been transferred (to the extent necessary and/or permitted at law) to the Owner or the Owner's nominee
- (j) the facility is complete in all respects other than minor items that in the reasonable opinion of the Owner's representative will not prejudice (either by not being completed or as a result of the work needed to complete them), the ability of the Owner to operate the facility legally, safely, reliably and efficiently.

Commissioning means the operation of the facility, or any part, by the Contractor following Precommissioning in accordance with the [schedule of technical specification], which operation is to be carried out by the Contractor as provided in clause 1.3, for the purpose of preparing the facility for operation and the carrying out of the Performance Tests.

Commissioning Tests means the tests specified as commissioning tests in the schedule of tests.

Date for Commercial Operation means, in respect of the facility, the date specified in the [schedule of guaranteed dates], as may be varied in accordance with this contract.

Date of Commercial Operation means the date specified in the Certificate of Commercial Operation.

Defects Liability Period means the period of 12 months from:

- (a) in relation to the facility as a whole, the Date of Commercial Operation
- (b) in relation only to where a part or parts of the facility are repaired, replaced or made good, the date of commencement in accordance with the contract.

as the case may be.

Delay Liquidated Damages means the liquidated damages for delay specified in the [schedule of delay liquidated damages].

Emissions Guarantee means the guarantee specified in the [schedule of performance guarantees], which is an absolute guarantee and the meeting of which is a condition precedent to achieving Commercial Operation.

Emissions Guarantee Tests means the tests specified as the emissions guarantee tests in the [schedule of tests].

Environmental Guarantees means the Emissions Guarantee and the Noise Guarantee as specified in the [schedule of performance guarantees].

Final Commercial Operation means, where paragraph (d)(iii) of the definition of Commercial Operation applies, the stage of the Works when the following has occurred:

- (a) Commercial Operation has been achieved
- (b) one of the following has occurred:
 - (i) the Performance Guarantees have been met
 - (ii) if applicable, the Contractor has paid Performance Liquidated Damages in accordance with clause 3.5
- (c) all other preconditions to Commercial Operation have been achieved, met or passed during the Subsequent Testing Period.

Final Completion means the stage of the Works when:

- (a) Commercial Operation has been achieved
- (b) if applicable, Final Commercial Operation has been achieved
- (c) all defects and/or deficiencies have been satisfactorily remedied
- (d) the Defects Liability Period has expired.

Mechanical Completion means that the facility has been completed mechanically and structurally in accordance with the [schedule of project technical requirements] and the other requirements of the contract such that in the reasonable opinion of the Owner's representative the facility is substantially completed and able to operate safely, reliably and efficiently and the facility is ready for Precommissioning and Commissioning.

Minimum Net Electrical Output Performance Guarantee means the minimum net output performance level specified in the [schedule of performance guarantees].

Minimum Net Heat Rate Performance Guarantee means the minimum net heat rate performance level specified in the [schedule of performance guarantees].

Minimum Performance Guarantees means the Minimum Net Heat Rate Performance Guarantee and the Minimum Net Electrical Output Performance Guarantee.

Noise Guarantee means the guarantee specified as the 'Noise Guarantee' in the [schedule of performance guarantees], which is an absolute guarantee and the meeting of which is a condition precedent to achieving Commercial Operation and Final Commercial Operation.

Overall Performance Test means a test in which the Performance Guarantees and the Environmental Guarantees are measured together.

Performance Guarantees means the performance guarantees to be met in relation to Commercial Operation and Final Commercial Operation as set out in the [schedule of performance guarantees] but does not include the Environmental Guarantees or the Availability Guarantee.

Performance Liquidated Damages means the liquidated damages for underperformance of the facility as specified in the schedule of performance liquidated damages.

Performance Tests means the tests specified as Performance Tests in the [schedule of tests].

Precommissioning means the testing, checking and other works specified in the schedule of technical specification to be performed by the Contractor in preparation for Commissioning.

Project means the development, design, financing, construction, commissioning, testing, delivery, operation and maintenance of the facility.

Service means the facility is available and is capable of meeting the Minimum Performance Guarantees, provided however that it is not in Service from the time ramp-down commences pursuant to a request from the Contractor under clause 2.4. If the facility is not generating electricity then the facility is not in Service from the time agreed between the parties following a request by the Contractor that it be taken out of Service pursuant to clause 2.3. If the parties cannot agree on the time then, provided that the Contractor has made a request pursuant to clause 2.3, the facility will be deemed to be out of Service for the time that the facility is not available.

Spare Parts means the spare parts the Contractor is obliged to provide pursuant to the contract that must, as a minimum, comprise the parts listed in the [schedule of project technical requirements].

Subsequent Testing Period means the 60-day period after the Date of Commercial Operation as described in clause 2.3.

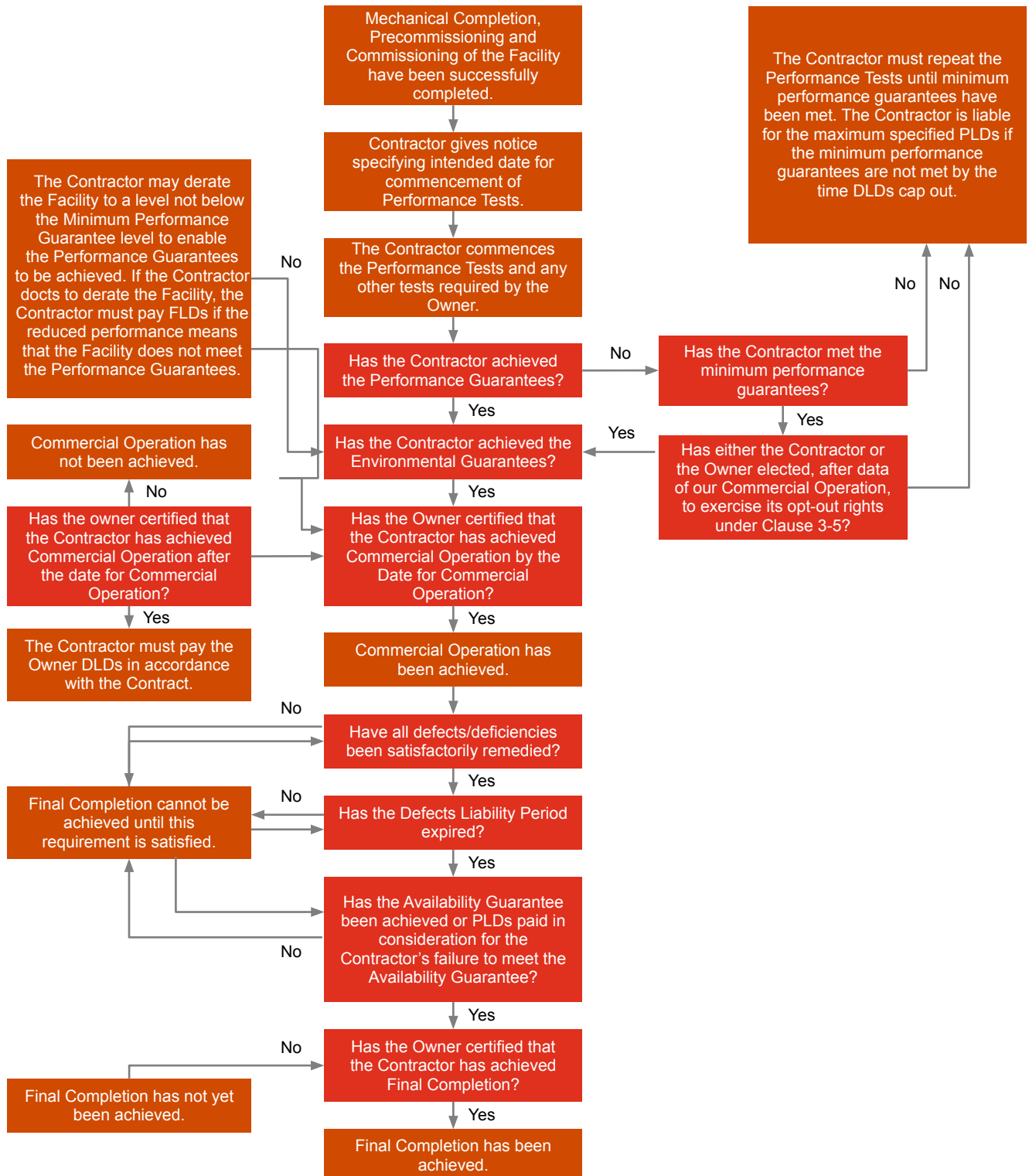
Works means all the equipment to be supplied and the whole of the work and services to be performed by the Contractor under this contract and as further described in the [schedule of technical specification] and includes any variation.



Appendix 3

Simple regime flowchart

Commercial operation, final completion and performance guarantees



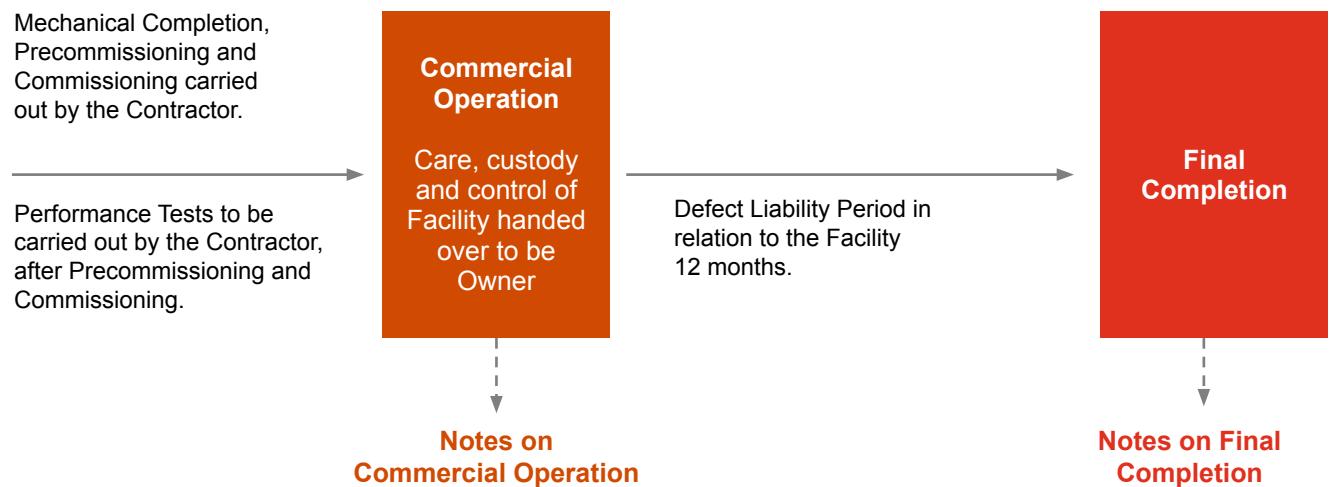
Appendix 4

Simple regime timeline

Simple regime completion

Notes on structure

The advantage of this regime is that the Owner does not assume care, custody and control of the plant (and thus does not assume responsibility or liability for it) until the Contractor has either met the Performance Guarantees or paid the appropriate Performance Liquidation Damages for its failure to meet the Performance Guarantees. This structure is more suitable where it is not viable to grant the Contractor any time after Commercial Operation in which to try and increase the Facility's performance.



In order to achieve Commercial Operation, the Contractor must fulfil the requirements set out in the definition of Commercial Operation, unless the Owner, in its absolute, sole and unfettered discretion, issues a Certificate of Commercial Operation, notwithstanding that all requirements have not been satisfied.

The Contractor may achieve Commercial Operation and be under no further obligation if the Performance Tests demonstrate that the minimum performance guarantees and the Performance Guarantees have been achieved, and all other preconditions have been met.

If either the Performance Guarantees have not been achieved but the minimum performance guarantees have, or both the Performance Guarantees and the minimum performance guarantees have not been achieved, the Contractor is obliged by Clause 3.2 to attempt to improve the performance of the Facility. Where this deferral means that Commercial Operation is not achieved by the Date for Commercial Operation, Delay Liquidated Damages will accrue; and the period in which this deferral and improvement will take place must end when the aggregate liability cap on Delay Liquidation Damages is reached.

Despite the fact that Clause 3.2 requires the Contractor to continue to improve the plant after the Date for Commercial Operation, provided that the minimum performance guarantees and the Environmental Guarantees have been met, at any time after the Date for Commercial Operation either the Contractor or the Owner may exercise their opt-out rights under Clause 3.5. meaning that further modifications will be halted and the Contractor's PLDs for any continuing failure to meet the Performance Guarantees will crystallise.

The Contractor is liable to pay Delay Liquidated Damages in any instance where it fails to achieve Commercial Operation by the Date for Commercial Operation.

In order to achieve Final Completion, the requirements set out in the definition of Final Completion must be satisfied. If the Contractor has failed to achieve the Guaranteed Availability set out in clause 3.8 following the Date of Commercial Operation, the Contractor must pay Performance Liquidation Damages.

Appendix 5

Detailed regime flowchart

Commercial operation, final commercial operation, final completion and performance guarantees



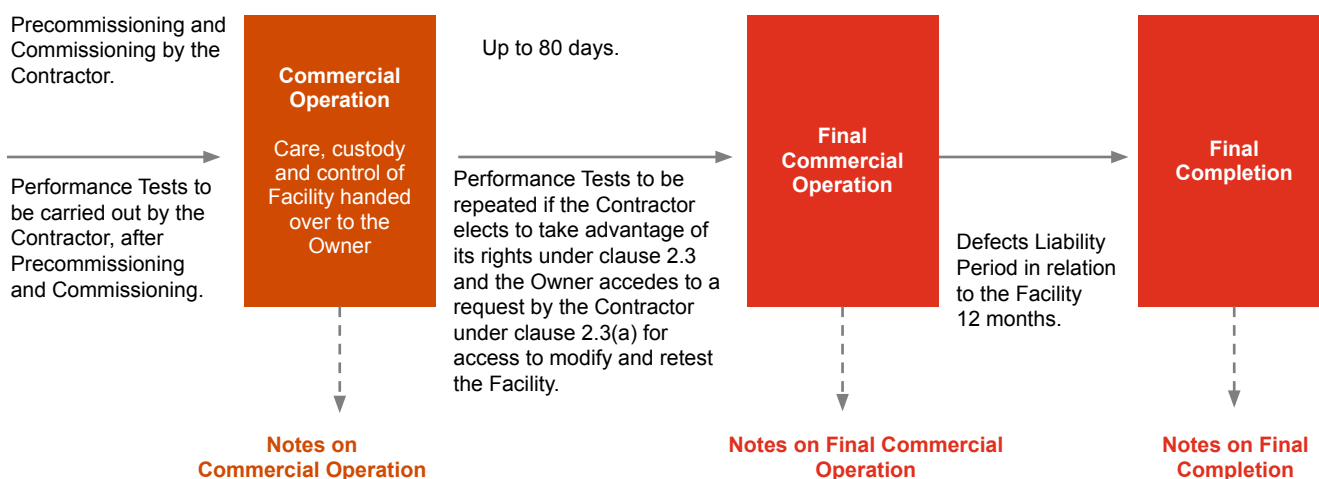
Appendix 6

Detailed regime timeline

Completion timeline

Notes on structure

The benefit of this process is that the Owner will be able to take possession of the Facility and begin generating electricity as soon as Commercial Operation is achieved (effectively, as soon as the minimum performance guarantees are met). This structure is most useful where it is viable to grant (in the Owner's discretion) the Contractor a Subsequent Testing Period in which to try and increase the Facility's performance, secured by advantage payment (or a guarantee) equivalent to the PLDs that would otherwise be payable.



In order to achieve Commercial Operation the Contractor must satisfy one of the three paragraphs in clause 2.2(a) unless the Owner, in its absolute, sole and unfettered discretion, issues a Certificate of Commercial Operation, notwithstanding that all requirements have not been satisfied.

The Contractor may achieve Commercial Operation and be under no further obligation if the Performance Guarantees have been achieved at the Performance Tests, and all other preconditions have been met.

If the Performance Guarantees have not been achieved but the minimum performance guarantees have, the Contractor may elect to exercise its rights under clause 2.3 and undertake further modifications during the Subsequent Testing Period. These rights are conditional on the payment of Performance Liquidated Damages or the granting of security, and may not be exercised once the Delay Liquidated Damages cap is reached.

If the Performance Guarantees have not been achieved but the minimum performance guarantees have, and the Contractor does not elect to take advantage of its rights under clause 2.3, it may pay Performance Liquidated Damages for its failure to achieve the Performance Guarantees and be released from further obligation.

The Contractor is liable to pay Delay Liquidated Damages for failure to achieve Commercial Operation by the Date for Commercial Operation.

The meeting of the Environmental Guarantees (Noise and Emissions) is an absolute requirements to achieving Commercial Operation).

In order to achieve Final Commercial Operation the requirements set out in the definition of Final Commercial Operation must be satisfied. If the Contractor has failed to meet one or more of the Performance Guarantees, the Contractor must pay Performance Liquidated Damages in satisfaction of the relevant Performance Guarantees.

The Contractor is liable to pay Delay Liquidated Damages for each day after the Date for Commercial Operation that the Facility or part of the Facility is not in Service as a result of the Contractor electing to take advantage of its right under clause 2.3.

The meeting of the Environmental Guarantees is an absolute requirement to achieving Final Commercial Operation.

In order to achieve Final Completion the requirements set out in the definition of Final Completion must be satisfied. If the Contractor has failed to achieve the Availability Guarantee over the 12 months following the Date of Commercial Operation, the Contractor must pay Performance Liquidated Damages.



Key project and
procurement concepts

06 Preparing the Principal's requirements for an infrastructure project

Investing in Energy Transition Projects
March 2023



Introduction

The Principal's requirements are project-specific components of the infrastructure contract that document the:

- fitness for purpose criteria for the project
- Contractor's scope of work and design and how it will fulfil those obligations
- technical criteria to be satisfied
- other project-specific obligations.

Preparing and putting into words the Principal's requirements for an infrastructure project is one of the most difficult tasks the Principal will undertake and is critical to the success of the project. It requires market research, a thorough analysis of the many commercial and legal influences and risks on the project, and expert technical and project management skills. Importantly, it also requires the Principal to have a clear understanding of the project purpose, goals and objectives from the outset of the contract procurement process.

Unfortunately, Principals often select a contract delivery method for a project and commence preparing the contract documents without identifying their goals and objectives at an early stage so that those responsible for developing the contract documents do not have a clear understanding of what the Principal wants from the final product. It is also not uncommon for lawyers acting for a Principal to prepare the general conditions in isolation from the Principal's technical consultants responsible for the Principal's requirements and other technical documents.

This leads to inconsistencies between the various components of the infrastructure contract and uncertainty as to the extent of the Contractor's obligations. It also increases the risk of important aspects of the Contractor's obligations not being comprehensively described in either the general conditions or the Principal's requirements and leads to a misalignment of the parties' expectations, which is a common cause of disputes and costly variations.

To avoid these risks, the process should be centrally managed by suitably qualified personnel with combined expertise in contract procurement, contract administration, project delivery and legal drafting.



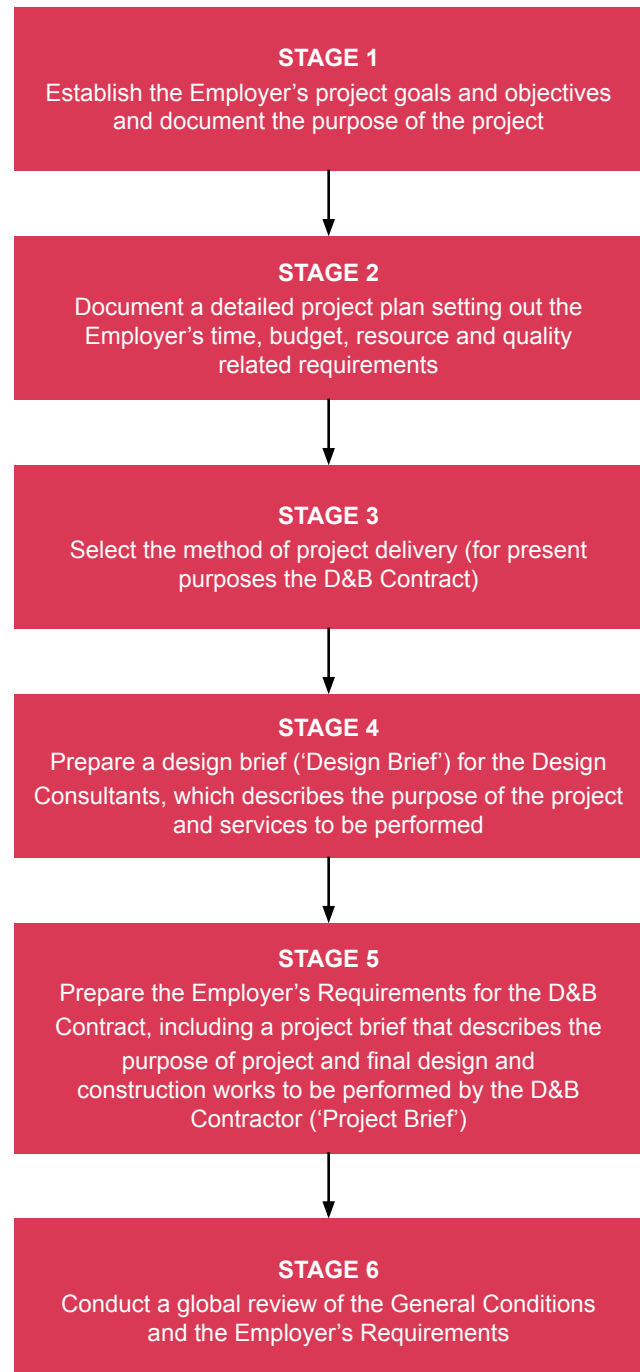
Key stages in preparing the Principal's requirements

There is no universally accepted process for preparing the Principal's requirements. The process will vary depending on the Principal's resources, commercial drivers and the nature of the project. However, irrespective of these variations, the guiding principles for a Principal when preparing the Principal's requirements and other contract documents must be to:

- allocate sufficient time and resources to conduct market research, gather information and identify its overall requirements for the project
- document the project goals, objectives and purpose at the outset, so that those responsible for developing the contract documents have a clear understanding of what the Principal wants from the final product and what it expects the Contractor to deliver
- document the Principal's requirements in a manner so that it articulates precisely and consistently what must be designed and/or constructed by the Contractor and who will be responsible for design and other prior works (if any) undertaken by the Principal
- undertake a global review of the contract documents, utilising the combined knowledge of the Principal's project management team, expert technical consultants and lawyers to ensure consistent and clear drafting throughout the contract and certainty in relation to the project goals, objectives and purpose.

In practice, the Principal's requirements will evolve in stages and will vary for different types of projects. To outline the key stages, we have chosen the design and build contract (**D&B Contract**) project delivery method. This is a useful basis for discussion because the Principal has to prepare Principal's requirements for design consultants responsible for the concept and preliminary design (**Design Consultants**) and ultimately for a design and build Contractor (**D&B Contractor**).

The key stages in developing the Principal's requirements for a D&B Contract are:



Each stage of this process will be described in further detail below.

Stage 1 – Establishing the project goals, objectives and purpose of the project

Prior to choosing the contract delivery method and attempting to articulate the Principal's requirements, the Principal must establish its goals and the purpose of the project. This forces the Principal to consider and prioritise its goals and objectives at an early stage and will ultimately form the basis of the Principal's requirements to be included in the D&B Contract.

This will include consideration of the impact the project will have on its resources and existing operations and the commercial, technical, quality and timing requirements. It does not matter if the requirements cannot be finalised at this point because these requirements will be updated as the design and planning progresses.

The factors that the Principal must consider at this early stage include:

- the overall timing of the project, including understanding the Principal's current business market, where the market will be when the Principal intends to sell the product generated by the project and at what point in the boom/bust cycle the construction industry is at the time of the project
- the specific timing requirements, including the critical stages and milestones for the project and when they must be completed
- budgetary restrictions and the Principal's economic and commercial drivers
- availability of both internal and external resources required to complete the project
- the external requirements of customers and other relevant parties and authorities.

Determining the target market and the requirements of customers and other external parties, in addition to the Principal's internal requirements, is critical during this stage. For example, in the property development sector, the external requirements of the residential and commercial sales contracts, tenancy agreements, relevant government authorities, Lenders (if any) and arrangements with utilities and services providers will all form the basis from which the Principal's requirements must be developed.

Analysing these external agreements and requirements is critical to the D&B Contract procurement process because they contain concessions which have been made by the Principal and which oblige the Principal to ensure that the project is designed and constructed in order to fulfil certain requirements. This will directly affect the D&B Contract and the Principal's requirements. Examples include:

- timing of construction
- approvals for commencement of the works
- labour, safety, environmental and development guidelines
- access restrictions
- design approval process
- construction methodology
- the standard and quality of materials and finishes
- performance requirements and outputs (if any)
- the pricing and approval of variations and extensions of time and Lender step-in rights
- interface requirements with utilities and service providers
- the requirements for completion and certification.

It is therefore essential that the Principal determines what its obligations are in order to meet these external requirements from the outset. It can then communicate them to those responsible for developing the contract documents and, in turn, build those specific obligations into the Principal's requirements and ultimately pass on those obligations to the Design Consultants and the D&B Contractor as required.

Stage 2 – Document a project plan

Once the Principal has established its internal and external requirements, it then needs to prepare a detailed plan for the delivery of the project that articulates those requirements. The plan should include:

- a clear statement of the purpose of the project
- the goals and objectives, including time, cost and quality and requirements of external parties, etc.
- a resources plan that identifies internal resources and where external resources are required to produce the contract documentation and deliver the project
- budgets
- an overall development Programme and milestones
- any other specific requirements of the Principal.

Generally, it is not until the completion of this stage that the Principal will be in a position to consider the appropriate method of project delivery.

Stage 3 – Selecting the method of project delivery

There are numerous project delivery options for the Principal to choose from including:

- design by the Principal and construction by a Contractor
- preliminary design by the Principal and final design and construction by a Contractor
- total design and construction by a Contractor
- design by Principal, construction by trade Contractors and management of project delivery by a construction manager
- design commenced by Principal
- design completion and construction by Contractor.

The selection of the most appropriate method (there is usually no right or wrong way to deliver the project) requires careful thought and consideration of many of the factors identified in stages 1 and 2.

This paper will not attempt to provide an analysis of the various project delivery methods. However, for the purposes of illustrating stages 4 and 5 of the process, we will identify some of the issues, by no means an exhaustive list, to be considered by the Principal when preparing the contract documents for the project delivery method referred to in item (b) above. This is where the Principal elects to commence preliminary design using the Design Consultants engaged under separate agreements (**Consultancy Agreements**) before engaging the D&B Contractor to perform the final design and construction.

Stages 4 and 5 below focus on developing the two key construction-related documents for this method of project delivery, which are:

- the design brief for the preliminary design to be carried out by the Design Consultants (**Design Brief**)
- the Principal's requirements for a D&B Contract.

Given that the scope and risk profiles will vary for each project and across construction sectors, it is not possible to provide a comprehensive list of all the issues the Principal should consider when preparing the Design Brief and the Principal's requirements. However, the following sections will highlight some of the important issues that should be considered when preparing those documents.

Again, it should be noted that regardless of the type of project or the specific risk profile, it is still essential for the Principal to clearly articulate the requirements it has developed during stages 1 to 3 in both the Design Brief and the Principal's requirements. This must be in a manner that is consistent with the general conditions and clearly describes the obligation of the respective parties.

Stage 4 – Prepare the Design Brief for the Consultancy Agreements

Using the information compiled during stages 1 to 4, the Principal should prepare and include a Design Brief in the Consultancy Agreements. This is in addition to the contract documents which specify the actual scope of services and deliverables for each of the Design Consultants.

It is in this Design Brief that the Principal articulates its goals and objectives, including its time, cost, quality and other requirements and how the Design Consultants are to comply with those requirements so that the Principal can measure and enforce the Design Consultant's obligations.

The Design Brief will develop as the design develops, but one must be included at the outset in all of the Consultancy Agreements. The ultimate goal in the D&B Contract project delivery method is to have the D&B Contractor assume an overall fitness for purpose obligation for the final design and construction of the project and for it to become responsible for the preliminary design prepared by the Design Consultants on execution of the D&B Contract. Therefore, it is critical that the Design Brief prepared for the Consultancy Agreements is consistent with the Principal's requirements to be provided to the D&B Contractor.

Examples of other important aspects to be considered by the Principal when preparing the contract documents which specify the actual scope of services and deliverables for each of the Design Consultants include:

- a clear description of the deliverables, coordination and interface obligations and the timing for the provisions of the services, for each of the Design Consultants, during each phase of the design
- the design Programme for the performance of the services which must be consistent with the Principal's overall development Programme and timing requirements described in stage 2 above
- administrative issues such as reporting and attendance at meetings and where applicable must be consistent with the D&B Contract
- a statement that each Design Consultant confirms that it understands the Principal's goals and objectives and the Design Brief.

Often these obligations would be documented in the schedule of scope of services.

Stage 5 – Prepare the Principal’s requirements for the D&B contract

It is fundamental to the success of the project to identify precisely what must be designed and then constructed by the D&B Contractor and the performance criteria that must be satisfied. The particulars of that essential element of the procurement process must be contained in the Principal’s requirements, including the requirements of external parties identified in stages 1 and 2.

The level of detail contained in the Principal’s requirements will vary depending on the timing of its preparation and the extent of design completed prior to the formation of the D&B Contract. Clearly, the later the Principal’s requirements are prepared the more detail that can be incorporated. The preparation of the Principal’s requirements during this stage is an excellent test to ascertain whether the Principal is in a position to sensibly articulate its requirements for the project. If it cannot describe its requirements with certainty in the Principal’s requirements, then logically the contract procurement process has not reached a point where the D&B Contract can sensibly be distributed to tenderers.

The contents of the Principal’s requirements will obviously vary depending on the nature of the project, the specific scope of work and the risk profile. The information compiled during stages 1 to 4 will form the basis from which the Principal’s requirements will be further developed and finally articulated. For instance, the Design Brief referred to in stage 4 will be further developed with the assistance of the Design Consultants and form an integral component of the Principal’s requirements for the D&B Contract.

Examples of key aspects to be considered by the Principal and articulated in the Principal’s requirements for any D&B Contract include:

- A list of the Principal’s goals and objectives for the project. The emphasis in this regard, and at this critical stage, is on providing detailed and measurable objectives, rather than general objectives or motherhood statements.
- The obligations that must be satisfied by the Principal under separate arrangements with external parties that are to be passed on to the D&B Contractor must be specified in detail. These obligations will include development and planning approvals, environmental approvals, agreements for lease, sale agreements, agreements with adjacent lands and the requirements of banks and Lenders. Fundamentally, in preparing the Principal’s requirements, the Principal must ask itself whether it has procured the D&B Contractor to fulfil all of the Principal’s own relevant obligations with external parties.
- The Principal’s future operational expenditure. The Principal must ensure that its requirements, in terms of operational expenditure once the project is taken over by it, including future concession or off-take agreements and arrangements with service and utility providers, are also specified. This is important, not only in relation to interface obligations, but also because reduced capital expenditure through design and selection of materials, which might be a source of savings for the D&B Contractor, will often only be achieved at the expense of increased future operating expenses. These are, of course, borne by the Principal.
- Relevant industry standards and criteria. However, considerable care must be taken before specifying a benchmark existing project or using an existing Principal’s requirements document for another project as the required standard to be achieved. It will be rare that any other project will encapsulate and be consistent with all of the Principal’s specific requirements of its project. The Principal must also consider the commercial implications of using an existing project to set a minimum benchmark. The D&B Contractor will inevitably assess the risk of uncertainty between the actual required standard and the minimum benchmark and pass this cost onto the Principal in the contract price.
- Quality of equipment and materials. For example, in a commercial or residential building project the standard of finishes, floor coverings and sound proofing should be specified, as should the telecommunications and security requirements and ecologically sustainable development requirements. However, particular care must be taken if the Principal intends to prescribe a product. Prescribing specific items can lead to difficulties in enforcing the D&B Contract in relation to fitness for purpose and design warranties. Rather than the Principal specifying a particular product, it may be preferable for it to describe the type, appearance and purpose of the product. The reason for this is, if the Principal prescribes a specific product and a defect is found in that product after it is installed, then it will have difficulty rejecting the product on a fitness for purpose basis.

The question should be which party is to be responsible if the material or equipment ultimately does not perform as required? If the Principal wants the answer to be the D&B Contractor, then it should not tell the D&B Contractor what specific product to use. The types of description that should be avoided include size, thickness, strength, supplier and model. Of course, if the Principal has a specific requirement and wishes to use a particular product and in turn take the risk of that product performing, then it must clearly set out that requirement. For a residential development project, for example, it will often be in the interests of both parties to carefully draft a mechanism in the D&B Contract providing for the construction of a prototype villa or apartment so that issues of specified finishes and design functionality can be worked through at an early point in the design and construction process.

- Separable portions, milestones, Programme and staging requirements for the project, particularly where the development is to occur adjacent to operating buildings and/or facilities, or the Principal's external obligations dictate staged completion.
- The scope and extent of the works to be clearly delineated. The Principal must consider whether some of the works will be carried out by others and then consider the critical issues of the interaction and interface between those parties. This is a common cause of disputes and variation claims for delay.
- The scope of the D&B Contractor's design obligations and the existing design prepared by the Design Consultants. An issue that is peculiar to this type of D&B Contract delivery method involving the novation of the Principal's Design Consultants to the D&B Contractor is the status of the design work completed by those Design Consultants on behalf of the Principal (**Existing Design**). The purpose of using a D&B Contract delivery process is that the D&B Contractor is solely responsible for the final design of the project under the D&B Contract. However, a key question is what happens to the Existing Design? If the Existing Design contains elements that the Principal absolutely must have included in the final design then these elements must be transferred to the Principal's requirements.

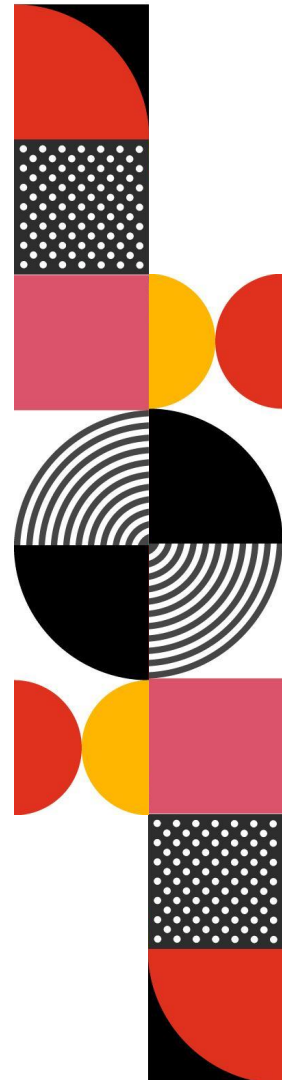
In our view, the Existing Design should be considered a work in progress that the D&B Contractor can develop and change as the final design development proceeds.

However, to avoid disputes over design responsibility, the general conditions and Principal's requirements must be consistent on this point. The general conditions should provide that the D&B Contractor warrants and takes responsibility for any Existing Design included in the Principal's requirements, so that the Principal can enforce the D&B Contractor's overall design obligations and fitness for purpose warranties. It is possible to place overall design responsibility on the D&B Contractor while still ensuring the Principal retains control of the design process by incorporating carefully drafted design review regimes.

Alternatively it is also possible to prohibit any changes by the D&B Contractor to the Existing Design, but this removes a fundamental commercial benefit to the D&B Contractor to value engineer its design and make allowance in its price for the cost savings it believes it can achieve by developing the design to suit its construction methods. It also potentially limits the design promises made by the D&B Contractor and must therefore be considered in that context. This balancing act between the requirements of the Principal to control the design and the commercial driver of the D&B Contractor is a very important dynamic to understand and should be foremost in the Principal's mind when selecting the project delivery method during stage 3 and then when deciding on the level of detail to be included in the Principal's requirements.

- Design documents and maintenance manuals to be provided by the D&B Contractor, including the form of the documents.
- Performance requirements for the works identified during stages 1 to 4. These are essential for a D&B Contract arrangement and they must be exhaustively specified. For example, the Principal's requirements for the construction of a high rise building may include detailed performance requirements for air conditioning, lifts and other services, net lettable areas, environmental ratings, apartment sizes and car park numbers. These performance requirements should be carefully and thoroughly described, along with how satisfaction of those requirements will be determined. Consideration must be given to:
 - designing for whole of life requirements and the method of design review and approval
 - specific fitness for purpose requirements and a description of how satisfaction will be determined by the Principal
 - compliance with technical standards and specifications
 - performance guarantees and performance liquidated damages (if any)
 - the completion, testing and commissioning requirements including Principal-supplied resources (both personnel and materials), responsibility for output (which can be blurred if the Principal provides resources), provision of input material (including quantity and quality) and provision for delayed testing if input material is not available
 - physical limits of the works including a description of the site boundaries and any connection points for services and access restrictions
 - a list of exclusions that have not been included in the D&B Contractor's scope of work
 - interface obligations with existing plant and/or auxiliary works

- interaction between the D&B Contractor and other Contractors
- interface obligations with adjoining property Principals
- plant or material to be supplied by the Principal
- training the D&B Contractor must provide to Principal's personnel
- future Operator/Principal access requirements for maintenance and repairs
- permits or approvals that the D&B Contractor is required to obtain
- an exclusive list of the Principal's responsibilities such as obtaining planning approvals and supplying facilities, equipment or materials
- project safety, quality and coordination policies, plans or procedures which the D&B Contractor is required to comply with or prepare
- approved working hours and any requirements or restrictions as to working hours
- defect rectification
- period and access requirements
- subcontractor and supplier warranties for specific works or materials or services for which the Principal wants a direct ongoing contractual relationship with the subcontractor, manufacturer or supplier in relation to performance and defect rectification.



Stage 6 – Global review of the D&B Contract documents

Ideally, the Principal's requirements and the general conditions should not be prepared in isolation. Unfortunately they often are, despite the significant costs to the Principal in procuring the commercial, technical and legal expertise required to perform this task. It is also not uncommon for the Principal's requirements or documents prepared by the D&B Contractor (**Contractor's Proposal**) to be simply attached to the general conditions and distributed as the tender documents without a thorough global review of all components of the D&B Contract.

In practice the contract documentation, including the Principal's requirements, will continue to evolve during the tender process and negotiations until the D&B Contract is executed. However, failing to undertake a review of the entire D&B Contract prior to going to tender increases the risk of ambiguity and uncertainty existing between the Principal's requirements and the general conditions and various components of the Principal's requirements. This will inevitably lead to disputes and costly variations.

The Principal cannot rely on inconsistencies or ambiguities being identified or raised by the D&B Contractor during the negotiation process. In fact, often Contractors will specifically look for ambiguity in contract documents during the tender process and internally identify ways to take advantage of any uncertainty during the performance of the works. For the same reason, the Principal should not include documents in the D&B Contract which have been prepared by the D&B Contractor without a thorough review for consistency with the Principal's requirements and general conditions.

Another common cause of uncertainty is the use of unclear and inconsistent language in the Principal's requirements. The drafting must definitively articulate the Principal's requirements and the obligations of the parties. Using general motherhood statements or legalistic wording, rather than simple plain English drafting, will not only lead to uncertainty, costly disputes and/or variations, but also makes it more difficult and time consuming for the Principal's project delivery team to determine what is to be constructed and to administer and enforce the D&B Contract.

The following paragraph, taken from an existing D&B Contract used on an actual project, provides an example of drafting that fails to definitively describe the required scope, standard or duration of the D&B Contractor's design obligations in relation to designing temporary facilities and services:

The Contractor shall provide good quality design services and the like for temporary facilities necessary which may be in use for a few years pending completion of final permanent building works or infrastructure/roads to the project and which will need to be compatible with the buildings in normal use for that time.

The D&B Contractor's obligations under the above paragraph are uncertain. An alternative drafting style that more definitively describes the D&B Contractor's obligations might be:

The Contractor must design all temporary facilities required at the site to ensure that all services to existing buildings are maintained for the duration of the project and for a period not less than three years after the completion of the project. The temporary facilities must be compatible and fully interface with all existing buildings at the site.

While it is acknowledged that there are usually ambitious deadlines and budget restrictions imposed by Principals in relation to the contract procurement process, the global review, irrespective of the contract value, is critical. The review must combine input from the Principal's project management team, technical consultants and legal advisors. It must also be centrally managed by personnel with the requisite skills set and combined expertise in contract procurement, contract administration, project delivery and legal drafting.



Key project and
procurement concepts

07 Project Principal checklist

Investing in Energy Transition Projects
March 2023



pwc

Purpose

The purpose of this paper is to set out a general checklist of construction and commissioning issues to be considered by Principals in relation to core performance issues.

It is intended as a general guide only and must be considered in light of the specific circumstances of each project, including the project agreements and the goals required to be achieved in order for the project to be successful.

While checklists and contracts are invaluable in the development process, they cannot remedy poor contract or consultant selection or the setting of project goals that are not feasible.



Performance checklist

Performance checklist items	Complete?
Who has prepared the performance requirements and on the basis of what instructions?	<input type="checkbox"/>
Are the performance requirements consistent with the requirements for project success?	<input type="checkbox"/>
Have the performance requirements been accurately and unambiguously set out in the brief and specifications?	<input type="checkbox"/>
Are the performance requirements feasible?	<input type="checkbox"/>
Have areas of scope uncertainty been considered?	<input type="checkbox"/>
Do the performance requirements satisfy all lawful requirements and the requirements of all stakeholders?	<input type="checkbox"/>
Are the performance requirements consistent with the financial model?	<input type="checkbox"/>
Is there a testing and commissioning regime that progressively assesses achievement of the performance requirements?	<input type="checkbox"/>
If performance is to be measured over time, are there technical and contractual measures in place to facilitate ongoing measurement?	<input type="checkbox"/>
If there are performance liquidated damages, are the rates and caps adequate?	<input type="checkbox"/>
What scope must the Principal or those for whom it is responsible provide?	<input type="checkbox"/>



Quality checklist

Quality checklist items	Complete?
Have the quality requirements been accurately and unambiguously set out in the brief and the specifications?	<input type="checkbox"/>
Are the quality requirements feasible?	<input type="checkbox"/>
If national standards are referred to, are they the correct standard and is the nominated country appropriate?	<input type="checkbox"/>
If the project involves areas of complex or novel work, are there adequate supervision/quality assurance measures in place?	<input type="checkbox"/>
Are progressive defects reports appropriate, especially in specialised areas or areas requiring off-site fabrication?	<input type="checkbox"/>
Are the O&M manuals adequate?	<input type="checkbox"/>
Is spare parts provisioning adequate?	<input type="checkbox"/>
Do progress claims and payments take account of defects, especially material defects?	<input type="checkbox"/>
Is the defects liability period adequate and sufficiently bonded?	<input type="checkbox"/>
How are interfaces dealt with?	<input type="checkbox"/>
If there is a handover between Contractors in a disaggregated project, is there an adequate process for defect identification and rectification?	<input type="checkbox"/>



Time checklist

Time checklist items	Complete?
Are the completion dates consistent with the project goals?	<input type="checkbox"/>
Are the completion dates realistic?	<input type="checkbox"/>
What actions are required from the Principal and third parties to achieve the completion dates?	<input type="checkbox"/>
Does the extension of time clause permit extensions of time for acts of prevention?	<input type="checkbox"/>
Have the grounds for extensions of time and the extension of time process been carefully considered?	<input type="checkbox"/>
Is there a process for acceleration?	<input type="checkbox"/>
Is there an adequate Programme that has been reviewed in its notice form with all logic and links transparent?	<input type="checkbox"/>
Are liquidated damages and the applicable caps adequate?	<input type="checkbox"/>
Is reaching the liquidated damages cap a ground for termination?	<input type="checkbox"/>
Can liquidated damages be set off and is the clause consistent with SOPA requirements?	<input type="checkbox"/>
Is there a sensible look-forward regime?	<input type="checkbox"/>



Financial checklist

Price checklist items	Complete?
Is the contract sum consistent with the financial model?	<input type="checkbox"/>
Is the contract sum realistic?	<input type="checkbox"/>
Has the contract sum been tested in a robust tender process?	<input type="checkbox"/>
What are the bases for adjusting the contract sum?	<input type="checkbox"/>
If rates are to be used, are they appropriate and comprehensive?	<input type="checkbox"/>
How are variations, delay costs and provisional sums assessed?	<input type="checkbox"/>
Are any elements of the contract sum uncertain or subject to revision?	<input type="checkbox"/>
How is rise and fall managed?	<input type="checkbox"/>
What are the provisions in relation to exchange rates?	<input type="checkbox"/>



Security checklist

Security checklist items	Complete?
Is bonding unconditional?	<input type="checkbox"/>
Does the contract adequately stipulate the type and source of bonds?	<input type="checkbox"/>
Does the contract adequately deal with the requirements for calling on the security?	<input type="checkbox"/>
Does the contract provide for termination if the bonds are not replaced or topped up as required?	<input type="checkbox"/>



Third party and financier

Third-party checklist items	Complete?
Does the contract address the requirements of stakeholders and financiers?	<input type="checkbox"/>
If the contract is to produce things or products that are to be sold to offtakers or buyers, is it consistent with those contracts?	<input type="checkbox"/>
If notices are to be provided to third parties, are they provided for and are adequate buffer periods allowed?	<input type="checkbox"/>





Delivery
models

08 Delivery models

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Contracting delivery models

Purpose

The purpose of the first section of this paper is to outline a range of delivery models commonly used in the delivery of complex infrastructure projects, including:

- Engineering, Procure and Construct (**EPC**)
- Novated EPC
- Engineering and Procurement and Construction Management (**EPCM**)
- Project Management Contractor (**PCM**)
- Early Contractor Involvement (**ECI**)
- Front End Engineering Design (**FEED**).

The choice of the delivery model involves balancing a number of considerations, including:

- the degree of complexity of the engineering of the project
- how much control the Principal wants to retain or be involved in overall design
- budget constraints
- time constraints
- the experience and capability of the Principal, including the Principal's degree of knowledge of design and construction and the extent and nature of the Principal's resources (including the skills and expertise of the Principal's team)
- the depth of the Contractor/consultant market
- the size of the project
- requirements of external stakeholders such as Financiers and offtakers.

Ancillary documents

The following documents are useful to Principals when considering the appropriate delivery model and determining their appetite for risk alongside balancing the proceeding factors:

- a contracting and procurement plan (**Appendix 1**)
- a risk register and action plan (**Appendix 2**)
- a traceability matrix.

A contracting and procurement plan analyses and recommends a chosen project delivery model and contracting and procurement approach. This is done with a view to providing best value and risk outcome for the project. This is to be achieved through least capital and operational expenditure and taking into account the Lenders' bankability requirements in respect of time and cost certainty and quality and volume of output. This plan typically provides for a base case scenario for formulating the detailed contracting and procurement procedures for the execution phase of a project.

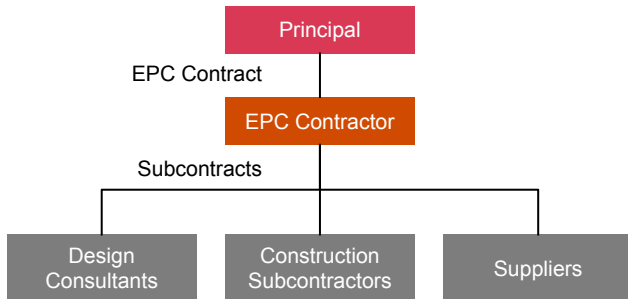
A risk register records details of all the risks identified for the project. Risks associated with activities and strategies are identified, then graded in terms of likelihood of occurring and seriousness of impact. Risk registers typically contain the following information:

- a description of each risk and its potential consequences (operational and strategic)
- factors that may impact upon the likelihood and consequence of the risk
- an assessed risk grade – Low, Medium, High or Extreme and whether this risk grade is acceptable
- actions and controls that currently exist to mitigate risks
- early warning factors and upward reporting thresholds.



The process of identifying and analysing risks should be a part of tactical decision making and be dealt with in the initial planning of the project.

The traceability matrix is then used to trace how the plan and the risk assessment has been implemented through the contracts.



EPC

Under an EPC structure, the Principal enters into a contract with the EPC Contractor to carry out all aspects of the design, construction and commissioning of the project. The EPC Contractor will then enter into various subcontracts with subcontractors, Consultants and suppliers for performance of discrete portions of work. The EPC Contractor might self-perform some aspects of the scope of work.

The **advantages** of the EPC structure for a Principal include:

- the EPC Contractor is the sole source of responsibility for the performance of the key promises, usually performing the scope of work so that it fulfils the Principal's requirement for the contract sum and by the agreed date for completion
- procurement is easier (there is only one contract to procure)
- the Principal requires fewer resources
- the Principal obtains a warranty of overall fitness for purpose from the EPC Contractor
- bankability is enhanced due to the clarity of the major promises and the single source of responsibility
- interfaces are minimised.

The **disadvantages** of the EPC delivery structure include:

- the Principal loses control over project delivery
- the checks and balances that are usually present when design and construction are separate do not usually exist, as the design and construction are performed through one entity
- under-design is more difficult to detect and may result in latent recurrent operational or maintenance problems and costs in the completed project
- it is more difficult to compare tenders where the designs, assumptions or the construction methodologies differ
- the price can be higher, and the time allowances can be more generous to take account of the additional risk assumed by the EPC Contractor

- variations can be expensive
- a Principal must rely solely on one organisation for recovery of compensation if something goes wrong with the project.

Novated EPC

Under a novated EPC approach, the Principal engages design consultants (under contracts obliging them to agree to being novated at the Principal's direction to a construction Contractor). The design consultants carry out the design to an appropriate stage. Generally speaking, the design stage is sufficiently advanced for the Principal to feel comfortable that it will receive the type and standard of facility it is seeking, but not so advanced that the benefits of an experienced construction Contractor's buildability and other time-saving practical input will be lost. The Principal then engages a Contractor who agrees to accept the novation of, and responsibility for the work of, the design consultants who enter into new (novated) contractual arrangements with the Contractor.

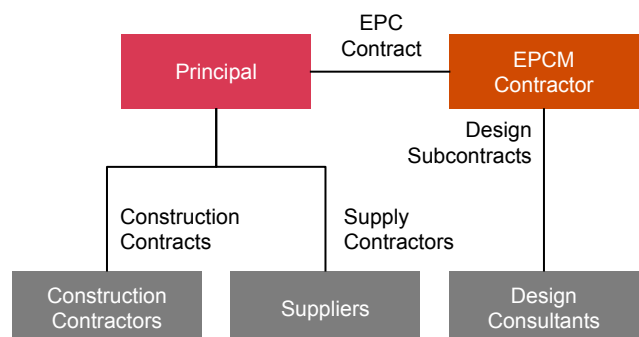
The **advantages** of the novated EPC approach for the Principal include:

- the close relationship between the Principal and the design consultants at the early stages of design retains for the Principal the opportunity to monitor and provide direct input into the design process
- a closer relationship between the Contractor and the design consultants in the later stages of the design process so that the design can take account of constructability issues and methods of working of the Contractor
- the scope is further defined, permitting more accurate pricing and programming
- the Principal retains the benefits of an EPC delivery model (including obtaining a warranty for fitness for purpose from and single point of responsibility in the Contractor, and a higher degree of certainty in the design process compared to the standard EPC structure).

The novated EPC delivery structure has two primary disadvantages.

Firstly, if the consultants retained are not experts, the EPC Contractor might refuse to accept the novation.

Secondly, the Principal must ensure that the design briefs and contractual terms applicable to the consultants who are to be novated are consistent with the EPC contract and its technical requirements.



EPCM

Under an EPCM structure, the Principal engages an EPCM Contractor to carry out the engineering design and to manage the procurement and construction of the project. The Principal enters into direct contracts with suppliers and construction Contractors for the project. EPCM structures may be used in the delivery of large projects where a Principal is keen to take a 'hands on' approach throughout the project, often with an expectation that getting things right will take 'fine tuning' to design.

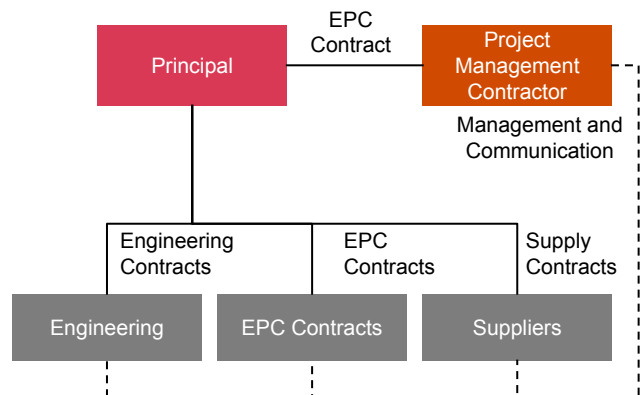
The **advantages** of the EPCM delivery structure include:

- it allows fast track construction due to phased design and construction. Project delivery can be competitive in overall design-construction time as compared with an EPC approach
- the Principal retains more control over design development (than in an EPC approach) while at the same time, the design can take into account constructability issues (such as access, construction problems and particular methods of working employed by the Contractor) by using the construction management skills of the EPCM Contractor.

The **disadvantages** of the EPCM structure include:

- there is usually no firm project cost established until construction is well underway
- security is fragmented and more difficult to access
- a larger and more expert Principal team is required
- neither the EPCM Contractor nor the construction Contractors warrant that the project, when completed, will achieve all of the operational requirements of the project (that is, no warranty of fitness for purpose)
- there is the risk that the overall quality and performance of the project may be subordinated to the EPCM Contractor's desire to maximise cost and time performance-based incentives incorporated into its remuneration. For example, because of the inability to fix project costs, various techniques are adopted such as awarding a larger portion of the project early in the project or setting targets for each portion of the project work and then trying to maintain the targets. The techniques used to minimise cost overruns can sometimes compromise the quality of the project. In addition, the opportunity for the EPCM Contractor to cover up its own design deficiencies by the way it manages or procures construction packages is greater
- the successful integration of design and construction functions and avoidance of changes/modifications to the design are largely left to the EPCM Contractor. The Principal may not be aware of potential conflicts of interest or weaknesses in the EPCM Contractor structure that may interfere with economical and timely project completion.

The features that distinguish EPCM from the Managing Contractor model are discussed under section 3 of this paper 'Collaborative Contracting'.



PCM

Under a PCM structure, the Principal engages a Contractor to project/contract manage, or a project manager to contract/project manage to assist the Principal in the management aspects of the project delivery process. The Principal enters into direct contracts (supervised on its behalf by the PCM) with design Contractors, construction Contractors and suppliers.

Under the PCM structure the manager/Contractor is nominated as the Principal's agent to manage the direct contracts with designers, Contractors and suppliers.

The **advantages** of the PCM structure for the Principal include:

- the construction management skills of the PCM can be utilised without the inherent conflict of interest of it also being the designer. The PCM can play an active role in evaluating design tendered by design Contractors, so as to effect value engineering to reduce costs and to make suggestions as to how to improve the performance outcome of the design
- individual project components are performed by the most expert specialists in those fields, so that each risk is spread to those best equipped to take it and is thus minimised for the overall project
- there can be independent evaluation of cost, schedule and construction performance (including evaluation for changes/modifications in design) by the PCM as it is not the designer or Contractor
- full time, objective co-ordination between the design and construction Contractors (both horizontally, between different designers or between different construction Contractors, and vertically, between designers and construction Contractors) is available by dedicated resources
- if the management function is well executed, project delivery can be competitive in overall design-construction time as compared with the EPC and EPCM structures.

The **disadvantages** from a Principal's perspective include:

- in using a phased construction approach, the Principal begins the project before the total project price is established. The issue is whether the possibility of early completion is a sufficient trade-off for this cost risk
- security is fragmented and more difficult to access
- the Principal has certain responsibilities and obligations under the infrastructure contracts that must be met in a timely manner – for example, delays in the design development or supply of Principal-supplied materials and equipment can have serious time and cost consequences for the Principal. The Principal heavily relies upon the PCM to manage the Principal's performance of these responsibilities and obligations
- similar to an EPCM delivery structure, it would be difficult to procure a warranty for fitness for purpose for the Project from either of the PCM, the design Contractors or the construction Contractors as the PCM is not performing either design or construction and neither the engineering designers or the construction Contractors are solely responsible for both the design and construction of the project
- the success of project implementation depends on the planning, estimating and project management skills and resources of the PCM
- the PCM does not usually give a guarantee either in terms of overall price or the quality of the work (this contrasts with the corporate 'wrap' or guarantee of the design and construction of the whole project given under an EPC structure).

ECI

ECI involves Contractors in the preliminary design and procurement processes without being guaranteed the award of the main contract.

This procurement method comprises a two-stage process:

Stage 1

The Contractor proceeds with the design development; works with the Principal on identifying, mitigating and apportioning engineering and constructability issues and risks; prepares a preliminary design and submits a detailed design for pricing for stage 2 (which proceeds at the discretion of the Principal).

Stage 2

Construction commences, usually pursuant to a design and construct model, with key construction risks and issues already identified and defined in stage 1, allowing for a guaranteed contract price for the project. Stage 2 typically includes KPI incentivisation procedures or other ways of sharing risks and rewards to continue the collaborative and cooperative themes of the ECI procurement method.

At the end of Stage 1, the ECI Contractor makes an offer to complete the design and construction of the project. If the offer is accepted, it will enter into the main contract with the Principal. If the offer is not accepted, the Principal may use the materials generated during the ECI phase to conduct a conventional tender process.

A competitive ECI process might be conducted in complex projects, where two or more ECI Contractors compete for the main contract.

FEED

Under a FEED contract, the FEED Contractor prepares the front-end engineering design. The FEED design will be completed to the point of establishing design feasibility and an overall process design. It will sometimes deal with specialised plant and equipment selection.

The objective of the FEED contract is to develop and document the front-end engineering and design processes so that the Principal can obtain final project approvals. It also involves submitting required applications to authorities whereby the resulting documents can form a basis for the EPC contract.

The **advantages** of the ECI and FEED structures for a Principal include:

- identification, mitigation and/or proper allocation and pricing of risks in the initial stage, allowing for a number of initial risk uncertainties to be removed so that the parties can agree to a more realistic risk-adjusted price
- reduces the costs of tendering as only one design process is undertaken
- enhanced value for money outcomes through early Contractor involvement in design and pricing
- encouraging a deeper understanding of project requirements
- optimising construction efficiencies and improving profitability by reducing operating costs and ensuring more efficient delivery.



Alliancing

Alliancing is a co-operative form of contracting where the participants enter into a relationship (the alliance) which is designed to align the interests, resources and skills of the participants through shared management responsibilities, risk sharing and restricted legal liability.

This section of the paper considers the nature and features of alliancing and when alliancing should be used.

It is important to understand the decision whether to use alliancing as the framework for delivery of a project is dependent on the size, nature and complexity of the project as well as the participants involved. This is extremely important as there are significant dangers if alliancing is used as the framework for delivery of a project without appropriate consideration of these factors and the other issues identified in this paper.

Core features

There are five features which differentiate alliances from conventional construction procurement.

- The first is the **remuneration regime**. Alliances fundamentally alter the remuneration arrangements and risk allocation found in conventional fixed-price contracts, by replacing the fixed price with a performance based remuneration regime that better aligns the commercial interests of the participants.
- Second is the creation of a **virtual organisation** – the integrated project team or ‘alliance’ – comprised of the individual team members provided by the project Principal and each non-Principal participant.
- Third is the **continuous involvement** of all non-Principal participants from the moment the contractual relationship is formed – usually very early in the project scoping and design process until project completion.
- Fourth is the requirement for all decisions regarding the project to be made by way of **unanimous agreement** between the Principal and all of the other participants in the integrated project team.
- Fifth is the **no blame, no disputes** clause, under which each party agrees that it will have no right to bring any legal claims (including liquidated damages) against any of the other participants in the integrated project team, except in the very limited circumstance of a wilful default by another participant.

Some alliance contracts don't fully embrace all of these features, however, these are the essential elements of alliancing that should form the basis of initial negotiations.

It is important that the parties understand the nature and the limitations of the particular alliancing model that they are adopting. It is critical that the parties are aware of the reasons why they are considering alliances as opposed to traditional procurement methods and to appreciate the effects of their decisions on the achievement of the goals they are seeking to achieve.

Remuneration and risk allocation

Under conventional infrastructure contracts, the Contractor is typically remunerated on a fixed price or rates basis, subject to increases (or decreases) for events detailed in the contract. As explained above, this conventional approach sets the interests of the Principal and the Contractor in fundamental opposition to each other.

Dissatisfaction and disputes are frequent, especially where the scope is uncertain at the time of contracting or when risk and remuneration are not aligned.

The alliance model discards the traditional fixed price method of remuneration in favour of a project outcome based remuneration regime.

Under the typical alliance model, the remuneration of each non-Principal participant essentially comprises three discrete components:

- **limb 1 – direct costs:** the reimbursement of the non-Principal participant's project costs on a 100 per cent open book basis
- **limb 2 – fee:** a fee to cover normal profit and (non-project specific) corporate overheads
- **limb 3 – gainshare/painshare:** a gainshare/painshare regime where the rewards of outstanding performance and the pain of poor performance are shared equitably among the Principal and the non-Principal participants.

The compensation under limbs 2 and 3 usually relates to the concept of the target outturn cost (**TOC**), which is the jointly estimated cost of carrying out the project works to completion and achieving the minimum outcomes in the major project objectives as negotiated. It includes a contingency for risks that may arise and often includes the project Principal's own costs of participating in the integrated project team.

The TOC is the end product of the initial phase of the alliance relationship, during which the participants firm up the scope of works and agree the other key project benchmarks. These are usually negotiated and often an independent validation that the TOC represents a reasonable estimate.



Limb 1 – Direct costs

Direct costs are all specific costs and expenses directly incurred by the non-Principal participants (**NPPs**) in performing the project works, excluding profit and overheads. The Principal pays the NPPs 100 per cent of these costs, regardless of whether they exceed the TOC and, usually, irrespective of defects and delays.

There are usually a number of agreed principles for the calculation of these including the demarcation between what are direct costs, and what are corporate overheads and the business as usual treatment of a number of specific costs, such as wages and salaries and plant hire. For consultants, there is often an agreed multiplier which is applied to the salaries of fee earners to determine the consultant's direct costs.

Limb 2 – Fee (to cover normal profit and contribution to overheads)

Before the alliance contract is signed, agreement must be reached as to the percentage fee the NPPs will be entitled to. The fee is intended to cover the profit margin and contribution to overheads which the NPPs would expect to derive for business as usual performance.

The fee may either be calculated on a fixed or variable basis. For constructors, the fixed model is generally used, which is the multiplication of the pre-agreed percentage by that part of the TOC which is attributable to the constructor's work. This avoids the situation where a constructor can earn a greater fee by incurring more direct costs. For designers, the fee is often calculated on the variable model, by applying the agreed percentage to the actual direct costs which the designer incurs. This avoids the designer being reluctant to take on additional scope after the TOC is set because it will not receive an equivalent increase in fee.

Limb 3 – Gainshare/Painshare

The object of the gainshare/painshare regime is to share with the NPPs the additional benefits or detriment to the Principal as a result of exceptional or sub-standard project outcomes and, by so doing, align the commercial objectives of the NPPs with those of the Principal.

It does this by setting out gainshare entitlements or painshare liabilities of the NPPs by reference to the performance of the project against the Principal's project objectives. The Principal's project objectives almost always include time and cost, and usually include a range of other non-time or cost key result areas (**KRAs**) such as quality, sustainability, aesthetics, functionality, operational efficiency, whole of life costs, safety outcomes, community satisfaction and local industry participation. These are commonly referred to as performance KRAs.

Gainshare for the cost objective is usually the simplest with the NPPs sharing a proportion of cost overruns or underruns against the TOC. Variations on this include varying the percentage for early cost underruns (to minimise the opportunity for the NPPs to make windfall gains by picking low lying fruit) or setting aside part of the cost overruns as a top-up to the pool available for gainshare for successful outcomes in time and performance KRAs.

Time is dealt with on a project specific basis as there is often significantly different value outcomes for early or late completion on different projects. For example, if an asset is needed to link into an existing network and cannot be used before a particular date, there may be little value in early completion but significant loss in late completion.

Outcomes in the performance KRAs are often more difficult to measure. Often a points system is devised to measure the project's performance against these KRAs. There may be clear objective project outcomes that can be measured (such as road ride quality, in the case of a road project) or outcomes may be more subjective such as community satisfaction with the project, which can often be measured by survey.

The total amount payable by each NPP as painshare is usually capped at the NPP's fee entitlement. This way, each NPP effectively puts 'at risk' its profit and contribution to overheads, but not its direct costs. Components of painshare are often capped at lower amounts than the overall cap, although cost overrun painshare is usually capped at the full amount of the fee.

TOC gainshare is usually self-funded in that it is simply a share of cost underruns. The pool available for distribution of schedule and performance gainshare is made up of a seed amount provided by the Principal, sometimes topped up by a proportion of cost underruns.

Importantly, the risk/reward regime is set up to cost or benefit each NPP according to project outcomes, rather than individual contributions of the relevant NPP. This aligns the decision making incentives – a decision that is best for the project will benefit all of the participants ('we all win'), and one that attempts to benefit one participant at the expense of the project will reduce profitability for all participants ('we all lose').

Sharing of risks

At first, the requirement for the project Principal to pay all the costs incurred by the NPPs – regardless of whether the project comes in over or under the TOC – suggests that the Principal solely bears the risk of increased or unforeseen costs. However, the risk is in fact shared between the Principal and the NPPs, as any cost overruns will cause the actual outturn cost to exceed the TOC, thereby reducing the gainshare payment or increasing the painshare liability, and hence reducing the profit derived by the NPPs. In effect, the at risk component of the NPP's limb 2 fee provides the Principal with a buffer against cost overruns.

This sharing of risks, by which all participants benefit or suffer together, incentivises all of them to prevent and solve problems, rather than seek to allocate blame.

Potential cost savings for Principals

Alliances can deliver projects at a lower cost and better outcomes than would have been possible under conventional contracts. How is this possible? The potential for cost savings is attributable to the following features of Alliances:

- Firstly, the fixed price under a conventional contract will typically include an amount to cover costs which the NPP may incur if risks which it bears under the contract eventuate (commonly referred to as the 'contingency'). Under a fixed price contract, the Principal pays this contingency amount, regardless of whether the risks which it is intended to cover materialise. Under an Alliance contract, the NPPs are always reimbursed their direct costs, so there is no need to charge the Principal a contingency on account of the risk of incurring unexpected direct costs. Although the TOC will typically include a contingency for business-as-usual unexpected direct costs, the Principal only pays these direct costs if the risk eventuates and the costs are incurred. Further, the total contingency amount included in the TOC can be less than the aggregate of the contingency amounts that each NPP would include in its fixed price under a conventional procurement model, for reasons explained below.
- Secondly, there is a potential for a reduction in the direct costs due to the no blame, no disputes clause. This clause is discussed in more detail below, but essentially the no blame, no dispute clause allows the participants to innovate and take risks in the pursuit of cost savings and enhanced project performance without fear of legal claims if they fail. This no blame culture, coupled with each NPP's entitlement to share cost savings under the gainshare regime, should result in increased innovation and resultant cost savings which would simply not be achievable in a traditional, adversarial contracting environment.
- Thirdly, the collective sharing of all project risks, together with the no blame regime, creates an environment which facilitates good risk management practices. Everyone can talk openly without the need to protect their respective legal positions. In this environment, risks are more likely to be identified, and appropriate strategies put in place to mitigate and manage them. As a consequence, the financial impact of risks which do eventuate are likely to be less. This may (or may not) result in a lower outturn cost for the Principal depending on the following: Whether such risks would have been allocated to a NPP under a conventional contract; the additional payments the Principal would have been required to make to the Contractor under a traditional contract as a result of the risk (or the additional internal costs the Principal would incur in defending claims arising from the risk); and the contingency amount which the Contractor would have included in its lump sum price on account of the risk.

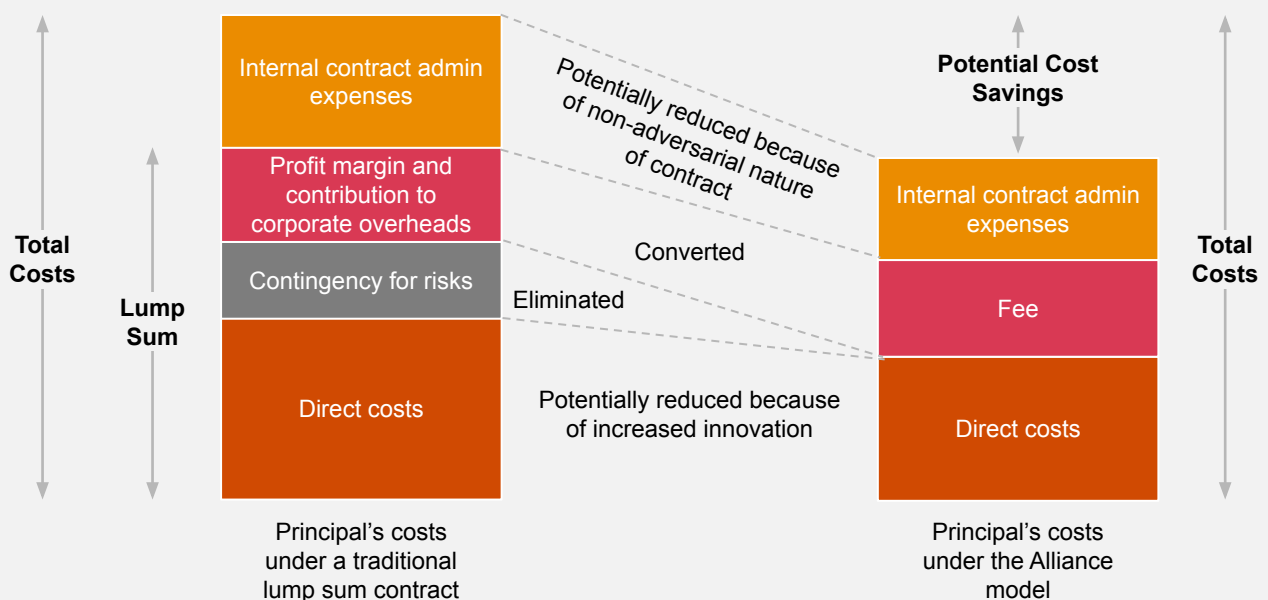


Diagram not to scale.

- Fourthly, the Principal's internal contract administration expenses may be less on account of the non-adversarial nature of the relationship which reduces the resources required for managing and defending claims and disputes. However, alliances contracts typically involve higher tender and contract establishment expenses, which may outweigh these cost savings.
- Fifthly, if there are variations to the scope of the project (particularly variations which would not justify an adjustment to TOC or performance targets), the cost of such variations is likely to be less under an alliances contract than under a conventional infrastructure contract.
- Finally, because the liability of the NPPs to the Principal is capped at loss of its fee, the Principal may consider that the fee should be set at a level lower than the amount of profit and contribution to overhead. That is, a level lower than which the Contractor would expect to receive under a traditional lump sum contract where the risks borne by the Contractor are much greater.

No guarantee of a lower project cost

Although there is potential for the Principal to derive cost savings, there is no guarantee that the adoption of alliances will result in the delivery of the project at a lower cost than would have been achievable under a conventional procurement approach. Indeed, given that the Principal is obliged to pay all of the direct costs incurred by the NPPs, the Principal's cost exposure is potentially unlimited (subject to its right to terminate the contract). It is for this reason that the adoption of alliances by the Principal can be said to require a 'leap of faith' on the part of the Principal that the potential efficiencies available under an alliances model will be realised and result in a lower outturn cost or better project performance.

Principal pays for mistakes of NPPs

Compounding the above issue is the fact that under an alliances contract, the Principal is obliged to pay the costs incurred by the NPPs in redoing work which they fail to do properly the first time. Whilst such additional costs will be at the expense of each NPP's fee and gainshare entitlement, the direct costs of the NPPs are guaranteed. This is a feature of the alliances model which some Principals have found to be a difficult pill to swallow and which has caused them to explore some of the variants to the no blame regime discussed below.

Need for care in structuring gainshare/painshare regime

In structuring the gainshare/painshare regime, it is important to try to avoid a situation in which poor performance against any single KRA will wipe out the entire fee; otherwise, having fallen behind in one area, the NPPs may have no financial motivation to achieve any of the Principal's other project objectives. Of course, even in these circumstances, the NPPs would not be free to 'walk away' from the project, as to do so would be a wilful default (discussed below) to which liability would attach.

No blame, no disputes – but consider the ramifications

Under the no blame, no disputes clause found in the full alliances model, each participant (including the project Principal) agrees that it will have no legal claims against any of the other participants, except in the case of narrowly defined wilful default.

This creates a commercial framework in which there is no point in seeking to allocate blame for problems. Rather, the commercial interests of each participant are best served by helping to solve the problem in a way that maximises the performance of the project against the KRAs.

The no blame, no disputes clause also encourages the participants to come out of their comfort zone, to take risks and to accept stretch targets in the pursuit of extraordinary results, without fear of legal claims if they fail.

However, the ramifications when things go wrong can be far reaching.

No blame may mean no claim and no remedy

For example, because the entitlement of each NPP to its fee and potential gainshare payment depends on the performance of the other participants, if any one of them fails to perform adequately then all of them will suffer – but none of them will have any claims against the non-performing participant.

Furthermore, the inclusion of this clause also means that the Principal will have no remedy against any NPP for losses suffered by the Principal as a result of the negligence, or inefficient or defective work practices, of the NPP.

Whilst the no blame, no disputes clause applies to both the Principal and the NPPs, it generally involves a greater concession on the part of the Principal given that on many alliances projects it is the NPPs that carry out most of the work, with the Principal's main obligation being that of payment (a breach of which is usually defined to constitute a wilful default).

Difficulties with traditional insurance policies

Issues may also arise under typical insurance policies as a result of the no blame, no disputes regime. Consider the example of standard material damage policies: typically when an insurer pays a claim, it has a right of subrogation such that it can step into the shoes of the insured party and seek recovery of that part of the claim that came about as a result of the negligence of another participant. However, because of the no blame, no disputes clause, a participant that suffers loss will have no legal recourse against the participant causing that loss.

There is one school of thought that the result may be that the insurer is entitled to reduce the claim payment to the insured participant to the extent that the insurer has lost its expected right of recourse against the negligent participant. However, this can be readily overcome by requiring the insurer to confirm that the material damage policy will respond notwithstanding the no blame regime.

The no blame, no disputes clause can also give rise to problems in relation to design insurance (and other forms of professional indemnity insurance). This is because most insurances available to designers are liability-based insurances under which the insurer will not pay unless the designer is liable. Under a no blame, no dispute clause, the designer (like all participants) will only be liable for wilful default, which most design insurances specifically refuse to cover. As a consequence, it may be that even though loss is suffered by the participants as a result of a design defect, there is no 'trigger' for a claim against the design insurance policy.¹

Accordingly, if the Principal is to have any comfort in this area, it will require some tailored form of insurance. Insurance products specifically designed to respond to the unique structure of an alliances contract are available. However, these tailored policies tend to be (comparatively) expensive; the exact cost will of course depend on size and complexity of the project, together with the insurer's assessment of the allocation of risk.

Collaborative contracting without a no blame, no disputes clause

Given these ramifications, some Principals have adopted collaborative contract models without the no blame, no disputes clause, or with a no blame, no dispute clause providing for broader exceptions than those allowed for under the definition of wilful default.

Some will argue that the no blame, no disputes concept is an essential ingredient of the alliances approach. Certainly, if the Principal wants to achieve a high level of innovation from the NPPs (which necessarily involves risk taking), then the inclusion of a no blame, no disputes clause will assist in achieving this objective.

However, there does not seem to be any reason why some of the benefits of the alliances model, such as the ability of a carefully structured gainshare/painshare regime to align commercial interests and drive desired behaviour, cannot be obtained (at least in part) without such a clause.

Limits of the no blame, no disputes clause

Even if a no blame, no disputes clause regime is incorporated into the contract structure, it will not have the effect of preventing any and all liability from being incurred by the participants.

Most obviously, the no blame, no disputes clause only has effect between the participants, and cannot limit any rights which third parties might have to bring a claim against one or more participants arising out of the conduct of a participant. As with any contract, an alliances contract will only bind the parties to it. However, many alliances contracts provide that uninsured liabilities to third parties will be treated as direct costs which the Principal must reimburse.

Even as between the alliances participants, there are some matters for which it is not legally possible to exclude or limit liability. An example of this is liability which a project participant might incur to another project participant under section 18 of the Australian Consumer Law, which prohibits corporations from engaging in misleading or deceptive conduct. Liability under section 18 cannot be excluded or limited by contract. Nor could one participant enforce a promise by another participant to waive any rights to commence proceedings arising out of a contravention of section 18.

How is alliancing different to traditional contracting?

Alliancing is often described as a 'risk embrace' culture under which the parties seek to better manage risks by embracing them (rather than trying to transfer them) and then work together to manage them within a flexible project delivery environment. It is an agreement between two or more entities who undertake to work cooperatively, on the basis of a sharing of project risk and reward, for the purpose of achieving agreed outcomes based on principles of good faith and trust and an open-book approach towards costs.

In contrast, traditional contracting is often described as 'risk transfer' where the parties seek to transfer as much risk as possible to others under a range of separate contracts. Under a traditional contracting arrangement, the Principal and the main Contractor would enter into a master/servant style contract for the performance of the works and the main Contractor would then flow down as many risks as possible by using a series of master/servant style subcontracts.

In traditional contracts this is manifested by:

- the method of calculating payment to the Contractor, such as lump sum contracting
- fixed dates for completion subject to extensions of time
- no payment of costs for defective work and its rectification
- full legal liability, subject to liability caps and exclusions, such as for consequential loss.

¹ Note, however, that this concern only arises in terms of the operation of the insurance as between the participants. As discussed below, a no disputes regime does not prevent liability arising to third parties. Therefore the trigger of legal liability remains appropriate in respect of losses incurred as a result of damage caused to third parties by the professional negligence of alliance participants.

When should alliancing be used?

The drivers for establishing an alliance as the framework for delivery of a project include the:

- ability to deliver the project free from the spectre of liability if the project is late, defective or has cost overruns
- ability to efficiently pool together knowledge, skills and resources from across a number of parties with differing skill sets
- ability to select the best team for delivery of the works and services
- alignment of objectives
- ability to develop the design and construction techniques over time, rather than at the outset of the project.

In summary, alliances can be effective where scale, technical uncertainty or design immaturity make it impractical or unduly expensive to use traditional contracting methods.

Alliances may also be appropriate when there is likely to be a long term relationship. An alliance environment may better equip the parties to deal with inevitable problems that arise over the course of the relationship than a more traditional contract. This is because the parties will have the freedom and ability, and indeed the obligation, to develop proactive solutions to those problems. A more traditional structure may lead to disputes and the breakdown of the relationship.

When should alliancing not be used?

If a project is straightforward an alliance is probably inappropriate. Similarly, if there is any concern that the parties involved will not be able to adopt an alliance 'mindset', an alliance should not be used because the integration and motivation of the parties will determine the success or failure of the alliance.

Requirements for a successful alliance

Alliances are successful when:

- all participants allocate adequate resources with the required expertise
- the alliance objectives and benchmarks are carefully set so that they reflect a sensible set of goals and measurement criteria at all levels of management
- the alliance participants understand the operation of the alliance at all levels of management
- the alliance participants act consistently with the alliance values and principles.

Conversely, where all of the above elements are not present, there is a high chance that the alliance will fail.

Conclusion on alliances

The commercial, bankability, financial, taxation and practical issues must be considered, in their entirety, before any decision is made as to the most appropriate and effective contracting structure for the delivery of a project.

For the reasons outlined in this update, alliancing is a project delivery arrangement which can be considered for complex projects or for long term relationships.



Collaborative contracting

Conventional procurement models have long been preferred by most project Principals for their simplicity, and for the certainty and risk transfer that they provide to Principals. However, traditional models cannot always be utilised, especially where scope uncertainty prevents the parties from genuinely agreeing key issues in relation to price and time. In those circumstances, the artificial imposition of certainty can lead to project failure and disputes.

It was from a desire to overcome this misalignment of interests that collaborative contracting was developed. The expression embraces a wide and flexible range of approaches to managing the relationship between project Principals and other project participants, based on the recognition that there can be a mutual benefit in a more collaborative and cooperative relationship between them and a more realistic allocation of risks and responsibilities.

The problems with conventional contracting

Scope certainty must be understood

Conventional delivery systems are based on the assumption that price, time and the allocation of risk can be pre-determined because the things that have to be done by the parties and the context of contractual performance is known at the time of entry into the contract. In other words, there is a high level of scope certainty.

Frequently however, such scope certainty is absent and accordingly that fundamental assumption is made in error. This can lead to price and time overruns, technical failure and claims.

Conversely, if scope uncertainty is recognised, but ignored by the terms of the contract, the Principal might enter into an agreement that has an artificially high price or unduly long programme.

Accordingly, the first task that must always be undertaken is for the parties to understand the level of scope certainty at the date of the contract, the pathway to certainty and the terms that are best suited to that situation.

When money goes out the door, love goes out the window

Conventional procurement models allocate specific project responsibilities and risks to each participant.

Under this arrangement, and variants of it, each project participant has strong financial incentives to perform well the responsibilities that are allocated to it, but is far less invested in how other project participants perform their responsibilities. The project essentially becomes a collection of sub-projects, where each non-Principal participant is rewarded by reference to the performance of the sub-project for which it is responsible, rather than the performance of the entire project.

Indeed, late or poor performance by another participant will typically excuse a project participant from the need to strictly fulfil its own obligations as originally proposed. Accordingly, when things start to go wrong, the financial interests of participants are usually best served by demonstrating that another participant is to blame for the problem, rather than working cooperatively with the other participants to overcome the problem.

Fixed prices motivate participants to do the minimum required, even if doing more would result in better project outcomes

When a project participant is engaged under a conventional fixed price contract, it is financially motivated to minimise the cost of performing its obligations, in order to maximise its profit margin. Accordingly, when the project Principal separately engages the designer and the main Contractor under fixed-price contracts, each of them is financially motivated to do no more than the minimum required of them, even if doing more would reduce the costs incurred by the other, or result in better outcomes for the project Principals.

For instance, having agreed to produce a design for a fixed price, there is little if any incentive for the designer to do extra work to produce a design that will reduce the cost of constructing the asset, or minimise operation and maintenance costs, unless the design brief requires this.

Likewise, if the main Contractor encounters unexpected ground conditions, there is no incentive for the designer to change the design to overcome the unexpected conditions, unless the Principal agrees to pay the additional costs incurred by the designer in adjusting the design. Conversely, if a deficiency in the design is discovered during the construction of the works, there is no incentive for the main Contractor to develop a construction solution that overcomes the deficiency, if doing so will increase its costs without a corresponding increase in the fixed construction price.

If the project Principal wants a project participant to do more than the bare minimum required of it, to overcome a problem and achieve a better outcome for the project, the project Principal will usually have to compensate the participant for the additional costs, to restore the participant's profit margin.

No incentive on other participants to contain the cost impacts of changes

Conventional procurement models provide no incentive for project participants to minimise the cost impacts of changes to the project. Rather, they provide an opportunity for the incumbent project participants to charge 'monopoly' prices for the additional work, as it is usually impractical for the Principal to competitively tender the extra work.

Obligations to co-operate in practice

It's easy for the participants to say they will cooperate and collaborate with one another at the commencement of a project. Indeed, undertakings to cooperate and collaborate can be given contractual force by including them in the contracts.

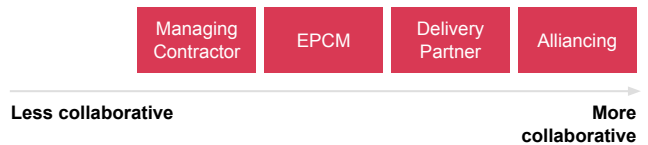
But when a project runs into trouble, the benefits to a participant of blaming others, and putting its own interests ahead of the interests of the project or other participants, can soon outweigh the potential downsides of breaching an obligation to cooperate. It's at this point that the commercial incentives built into conventional contracts render useless commitments by project participants to work cooperatively to jointly solve problems. Commencing legal proceedings to recover losses arising from a breach of an obligation to cooperate is rarely an attractive or effective remedy.

The collaborative contracting spectrum

Collaborative contracts are contracts that incorporate features that are specifically designed to recognise the level of scope certainty and mitigate the misalignment of commercial incentives associated with conventional fixed price contracts. These features can range from:

- contractual commitments to co-operate and act in good faith
- early warning mechanisms, designed to alert other participants to emerging issues, so that solutions can be developed and agreed before the issue escalates
- early involvement of the main-Contractor and key specialist subcontractors in the design process
- governance arrangements that facilitate collective problem solving and decision making
- payment arrangements that financially motivate each participant to act in a manner that is best for the project, rather than best for the participant
- the agreement of each participant to waive its right to sue any other participant for mistakes, breach or negligence by another participant (except in the case of wilful default).

Collaborative contracts take different forms.



This paper provides an overview of the main collaborative contracting models. A table that summarises how key risks are allocated across the models is included in [Appendix 3](#).

Managing Contractor

The Managing Contractor is an innovative structure that shares some of its characteristics with 'Design and Construct' (D&C) or EPC contracts and others with the agency relationships and project management roles seen in the construction management models.

The model originated in Australia and has been used extensively by the Australian Department of Defence as well as a variety of private-sector Principals. The Managing Contractor is responsible for the design and construction of the project from feasibility right through to the commissioning stage. The arrangement usually involves the Principal entering into one contract with the managing Contractor, who then subcontracts out all of its design and construction obligations.

This differs from the construction or project manager model where the Principal contracts with a manager to provide project management services only, and then contracts directly with each of the other project participants. Under the Managing Contractor model, the Managing Contractor is legally accountable to the Principal for the delivery of the project, not just for managing its delivery.

The Managing Contractor can be distinguished from a conventional fixed price D&C Contractor in two key aspects: role and risk.

Role

Although the Managing Contractor accepts legal responsibility for the design and construction of the project, its key role is project management, as it is usually obliged to subcontract out all of its design and construction obligations. The only services carried out by the Managing Contractor itself, using its own in-house resources, are the management and advice services provided throughout the project, and also the provision of on-site preliminaries such as hoarding, plant and sheds.

A key difference between this model and a conventional D&C contract lies in the degree of control that a Principal retains over the selection of subcontractors. While a D&C Contractor has autonomy to appoint subcontractors of its choosing, a Managing Contractor must undertake subcontracting in close consultation with the Principal, who will retain the ultimate authority to approve or reject tenderers. This right is consistent with the Principal's obligation to reimburse the Managing Contractor for costs incurred in the design and construction.

Another important difference between a Managing Contractor and a conventional D&C Contractor is the point in the project development process at which they are engaged by the Principal – the Managing Contractor is appointed much earlier.

The project would normally proceed as follows. First, the Principal invites tenders from potential Contractors for management services and defined common site facilities. Once a successful tenderer has been chosen as Managing Contractor, it will coordinate the feasibility stage of the project, including hiring any consultants required and providing advice to the Principal where needed. If the project does not progress past the feasibility stage, the contract may be terminated.

The next stage is the design phase; this will be carried out by the Managing Contractor, from design brief through to detailed documentation. Throughout this process, the Managing Contractor will consult closely with the Principal, who has the final say as to all decisions made. First, the Managing Contractor will prepare a design brief that must be approved by the Principal. Then, tenders for the design subcontract will be invited. Although the Managing Contractor can recommend a candidate, once again, the final decision is subject to the Principal's approval. When the successful tenderer has completed the design, this must again be approved by the Principal before construction can begin. This procedure differs from a conventional D&C arrangement, under which the Principal minimises its involvement in the design phase to avoid diluting the D&C Contractor's design liability and affecting any warranty for fitness for purpose.

During the construction phase, the Managing Contractor has a variety of responsibilities. These will include:

- advising on the appropriate contract strategy for each package
- managing the tender process and award of packages
- engaging subcontractors to execute the construction work
- programming and timetabling the construction work
- supervising the construction to ensure it accords with design specifications
- managing and administering the subcontracts
- instituting a system of cost control
- managing community relations
- managing industrial relations on the project.

The process of selecting construction subcontractors is performed by the Managing Contractor in close consultation with the Principal. Again, the Principal exercises significant control over the decision through its right to finally approve a nominated candidate; this procedure is identical to that used in the selection of a design subcontractor.

The final stage of the project in which the Managing Contractor is involved is the commissioning phase. During this phase, the Managing Contractor coordinates the handover of the project and ensures any defects that become apparent during the defects liability period are rectified.

Risk

The other feature distinguishing the Managing Contractor from a D&C Contractor is the risk it bears. The Managing Contractor is exposed to lower risks in terms of both cost and time than a conventional D&C Contractor.

In respect of cost, while a D&C Contractor is normally remunerated on a fixed price basis, a Managing Contractor is generally remunerated on the basis of a combination of a fixed price and reimbursable components. The fixed price component is designed to pay for management services and site facilities, and allows the Contractor to extract a profit. The Principal separately reimburses the Managing Contractor for all amounts paid by the Managing Contractor to subcontractors and consultants. This remuneration arrangement shifts all of the project cost risks onto the Principal, except those for management services and site facilities. The Managing Contractor is only reimbursed for costs that it incurs reasonably. Costs incurred from unauthorised variations, rectification of defects, breaches of contract or wrongful acts by the Managing Contractor that give rise to liability to third parties are usually excluded from the reimbursement regime.

Time-delay risk is often also borne by the Principal. The Managing Contractor will only have a 'soft' time for completion obligation in the sense that it will be required only to use its 'best endeavours' to achieve a target date. Accordingly, a failure to achieve timely completion will not expose the Managing Contractor to liability for liquidated or general damages, so long as it tries its best to achieve the target date. However, because the Managing Contractor is paid a fixed lump sum for its management services, it is clearly in its own commercial interest to achieve completion as early as possible so as to preserve its profit margin. The incentive for timely completion is achieved not through the threat of damages claims but instead through the alignment of commercial interests.

Benefits

The Managing Contractor model allows for early involvement of the Contractor in the project, with close collaboration throughout. This means that the Principal is able to achieve completion of the project in the manner it desires, using a spread of industry involvement and expertise but without the need for high-level management commitment. The Principal can share some of the risks associated with a major construction project with a Contractor and can achieve maximum flexibility in determining the elements to be included in a project and the design of those elements. At the same time, it provides the Principal with the management expertise of a Contractor organisation to assist and advise upon the design and construction of the project while planning for and remaining within a target time and cost for delivery of the project.

EPCM

The role of an EPCM Contractor is often very similar to the role of a Managing Contractor, as described above. The EPCM Contractor is typically appointed by the Principal early in the project development process, to coordinate the feasibility stage of the project, before progressing to manage the design/engineering, procurement and construction phases of the project. But as with the Managing Contractor model, the Principal retains control over the design brief, the selection of design/engineering consultants, the scope of each construction contract and the selection of subcontractors and equipment suppliers.

The feature that distinguishes EPCM from the Managing Contractor model, is the lower level of risk that an EPCM Contractor is exposed to in terms of the quality of the work.

Cost and time risk is usually treated similarly to the Managing Contractor model, for example:

- the EPCM Contractor is usually remunerated on the basis of a combination of a fixed price and reimbursable components. The fixed price component usually covers the management services and site facilities, and allows the EPCM Contractor to extract a profit. The Principal separately reimburses the EPCM Contractor for all amounts reasonably incurred to subcontractors and consultants. Again, costs incurred from unauthorised variations, or wrongful acts by the EPCM Contractor that give rise to liability to third parties, are excluded from the reimbursement regime. Sometimes the remuneration model will also include a gainshare/painshare regime, to better align the Contractor commercial interests with those of the Principal, particularly in relation to quality and fitness for purpose
- the EPCM Contractor will only have a 'soft' or 'best endeavours' time obligation, as per a Managing Contractor. Again, because the EPCM Contractor is paid a fixed lump sum for its management services, it is financially motivated to achieve completion as early as possible to preserve its profit margin.

The EPCM model typically departs from the Managing Contractor model in terms of how it allocates the risk of design and construction defects: whereas a Managing Contractor typically accepts responsibility for ensuring that the design is fit for purpose and the works are constructed free of any defects. This is the same as a D&C Contractor. Whereas the EPCM Contractor usually only accepts an obligation to exercise due care and skill in the performance of the design and management services that it provides. In these cases, so long as the EPCM Contractor exercises due care and skill in the performance of these services, it will not be liable to the Principal if the works are not fit for their intended purpose, or are otherwise defective.

However, because the EPCM Contractor typically engages the designer, the construction Contractors and the equipment suppliers as the agents of the Principal (or the Principal engages such parties directly), the Principal will have a contractual remedy against the relevant project participant if it has breached its contractual obligations. That said, it is most unusual for a Principal to obtain a fit for purpose warranty from the designer or a construction Contractor. And any fitness for purpose warranty from an equipment supplier will be limited to the item supplied, and not the entire project.

If the Principal wants an FFP warranty for the entire project, it typically needs to engage a Contractor under a D&C/EPC model or a Managing Contractor model.

Like the Managing Contractor model, EPCM allows for early involvement of the EPCM Contractor in the project, with close collaboration throughout. The Principal can progress the development of the project in the manner it desires, using a spread of industry involvement and expertise but without significant high-level management commitment on its part. The Principal can utilise the management expertise of the EPCM Contractor to assist it to manage some of the risks associated with a major construction project.

Delivery partner model

The Delivery Partner procurement model is a recent emanation of collaborative contracting that combines elements of the Managing Contractor, IPD and EPCM models. The Delivery Partner model enables a client to supplement its internal project management capabilities by engaging one or more Delivery Partners to assist the client with project planning, programming, design management and construction management services.

By engaging this expertise, the client is able, with the assistance of its Delivery Partners, to adopt a 'sophisticated-client' procurement strategy involving direct engagement of suppliers and subcontractors, as opposed to engaging a major Contractor to manage this process. This can result in significant cost savings and other benefits for the project Principal.

The remuneration regime for the Delivery Partner is similar to the three-limb remuneration model for IPD which includes:

- reimbursement of actual costs
- a fixed fee covering profit and contribution to corporate overheads
- a gainshare or painshare payment.

As with IPD, better than business-as-usual project outcomes (measured against pre-agreed KPIs) will result in a gainshare payment from the Principal to the Delivery Partners, and poor outcomes will result in a painshare payment by the Delivery Partners to the Principal. Again, the maximum potential painshare payment is usually capped at the amount of the limb 2 fee, or a significant portion of it.

Like the Managing Contractor model, the Delivery Partners are precluded from performing design and construction services, which must be competitively tendered (unless the Principal specifically agrees otherwise). The Principal retains control over the appointment of suppliers and subcontractors, similar to the Managing Contractor model. But the Delivery Partners bear less risk in relation to poor performance by subcontractors and suppliers than a Managing Contractor. The Delivery Partner's liability to the Principal for poor performance by subcontractors and suppliers is limited to any reduction in the gainshare payment (or the increase in the painshare payment) that occurs as a result of reduced performance against a KPI. The Principal has the contractual relationship with each subcontractor and supplier, and looks to them directly if they breach their contractual obligations.

The model has been employed successfully in the context of publicly funded infrastructure projects and was first used by the UK government in the construction of infrastructure for the London Olympic Games, where the complexity of the project and time-critical date for completion meant a more traditional delivery model was considered unsuitable. A Delivery Partner enabled the Olympic Delivery Authority (ODA) to acquire the necessary expertise where the ODA did not have the time to find and engage personnel of the required calibre to meet the time requirements. A wide range of infrastructure was required – key Olympic venues such as the velodrome, aquatics centre, media centre and Olympic village, as well as 2km of new sewers and 265km of ducts for new utilities. The project was ultimately a success, being delivered three months early and under budget.

Since then, the Delivery Partner model has received attention in Australia as a potential delivery method for government infrastructure projects and was used to deliver the Woolgoolga to Ballina Pacific Highway Upgrade (W2B). Like the London Olympic venues, the W2B project was a time-critical major project involving the duplication of approximately 155km of the Pacific Highway to a four-lane divided road at an estimated construction cost of AUD\$4.36 billion.

The Delivery Partner model was chosen for the W2B project because it avoided the need for Roads and Maritime Services (RMS) to procure and deliver five separate packages of works sequentially. RMS's business-as-usual procurement models and internal resources would have necessitated the works being divided into five packages, which could be procured and delivered sequentially. It was considered that aggregating the works into a smaller number of larger packages would have resulted in a small field of potential tenderers and sub-optimal competition.

By adopting the Delivery Partner model, RMS expected, with the assistance of its Delivery Partners, to achieve significant time and cost savings through repackaging the works and tendering packages on a trade or activity basis, responding to a logical sequencing of work across the entire project, unconstrained by package boundaries. Essentially, with the assistance of its Delivery Partners, RMS was able to implement the sort of sophisticated-client procurement strategy that a major tier-one Contractor would implement, without having to first engage such a Contractor under a traditional D&C contract and pay the associated risk premium that such a Contractor would build into its fixed contract price for the management of the procurement and integration risks.

The associated downside of this model, of course, is less cost and time certainty at the time the Principal contractually commits to the project. The Principal ultimately bears these risks without the protection that a traditional D&C contract with a tier-one Contractor would provide. This risk is mitigated, however, by the model's IPD style gainshare/painshare regime, which financially motivates the Delivery Partners to help the Principal manage these risks effectively. The margin paid to the Delivery Partners for their services is also less than what would have been charged by a tier-one Contractor for wrapping the delivery risks, on account of the lower level of risk borne by the Delivery Partners.

The Delivery Partner model is in its early years and it remains to be seen whether the model will gain broad acceptance. A more extensive and defensible analysis of the model and its potential uses and shortfalls will only be possible after the model has been more widely used.

That said, it seems well suited to major infrastructure projects where the client wishes to achieve time and cost outcomes that cannot be achieved via traditional procurement models, and is prepared to embrace and manage integration and other risks to achieve these outcomes, with the assistance of capable Delivery Partners.

Bankability of collaborative contracts

Collaborative contracting is generally considered an unsuitable delivery model if the Principal wishes to raise finance on a project finance basis, for example, where the financiers may only look to the cash flows and assets of the project to secure repayment, and not to the balance sheet of the Principal. Traditionally, project financiers have required the project Principal/borrower to transfer the risk of cost overruns, delays to completion and quality to a creditworthy head Contractor via a conventional fixed price, fixed time contract.

However, it is not impossible to raise project finance for a project delivered under a collaborative contract. To address the greater risks assumed by a project Principal under collaborative contracting models, project financiers may require:

- the equity investors in the special project vehicle/borrower to provide more equity upfront, together with binding commitments to provide additional equity in the event of delays or cost overruns. Completion guarantees from the sponsor equity investors may also be required
- the establishment of separate cost overrun facilities with higher margins
- that the contract itself includes certain features such as a well-structured gainshare/painshare regime, a prescriptive subcontracting regime, and the reserve power and deadlock breaking mechanisms discussed above
- more extensive due diligence in relation to technical issues, project risks and the capabilities of the participants
- tailored insurance policies – see above.

Which model is best?

There is no 'one size fits all' when it comes to contracting strategies. The model which will best suit a particular project will depend upon a range of factors including the project Principal's objectives, the characteristics of the project and the state of the construction market. What's important is that those who advise on or decide the contracting strategy for a project fully understand the characteristics of the different contracting models, and how they can be tailored to create a model that best meets the project Principal's objectives.

Appendix 1

Sample contracting and procurement plan

1 Executive summary

This Plan has been prepared by the Principal and contains an overview of the recommended approach for committing and managing major works packages in order to provide a best value, least risk outcome for the Project, through least capital and operational expenditure and considering the Project's Financiers' requirements in respect of time and cost certainty.

The recommended project delivery model is an [insert recommended contracting model and reasons for this recommendation].

2 Introduction

2.1 Purpose

This Contracting and Procurement Plan (**Plan**) has been developed to describe the basis for the contracting and procurement plan going forward into the Implementation Phase of the Project.

This Plan has also been developed to provide guidance and support to the Capital Cost Estimate for the Definitive Feasibility Study (**DFS**).

This Plan is based upon certain key principles and assumptions set out in Section 2 and Section 3 of this Plan.

This Plan is an integral part of the Project Execution Plan (**PEP**) and should be read in conjunction with the PEP. This Plan provides a 'base case scenario' for formulating the contracting and procurement plan for the execution phase of the Project. This Plan will therefore be subject to modification particularly where key assumptions made during the DFS change going forward. Key assumptions of this Plan include:

- the perceived corporate structure adopted for operating the Project (refer to the PEP)
- the perceived Project business and contracting risk profile to be adopted (refer to the PEP)
- perceived market conditions during the Implementation Phase assessed at the time of Plan preparation
- all land access, environmental, heritage and other regulatory approvals will be obtained in accordance with the Project schedule
- input from the Principal's Lenders (including Export Credit Agencies) will influence the contract forms (including pricing) and the numbers of the contracts finally proposed for each work package
- the Project will proceed in accordance with the current Project schedule.

2.2 The project

[insert description of project]

2.3 Overview

This Contracting and Procurement Plan considers three phases of works to be implemented. These are:

- **Early Works:** Works to be undertaken with preliminary funding through equity raising prior to the scheduled Project finance approval date.
- **Construction Implementation Phase:** Works undertaken after the Project finance approval date to construct the facility and all associated infrastructure.
- **Ramp Up to Operations Phase:** Initial operations contracts specified to facilitate the commencement of commercial operation by the Principal.

The areas covered by this Plan are:

- Early Works Packages (prior to Project finance approval date)
- Site Construction and Installation Packages
- Plant and Equipment Procurement (including from offshore suppliers and manufacturers)
- Service Contracts
- Purchase Orders
- the Principal's Initial Operations Phase Packages.

2.4 Contract procurement and management procedures

Contract management procedures will be based upon proven delivery and management systems from the selected Contractor, Principal and its other consultants. These procedures will be developed in conjunction with the Principal during the Project Implementation Phase and cover the following functions:

- develop and utilise a suite of short-form model contracts, with their purpose written in general terms and conditions and associated contract documentation
- pre-qualify suitable Contractors, suppliers and consultants for bid lists or sole source negotiation by exception
- competitively tender and award contract packages, or in appropriate circumstances, sole source and negotiate contract packages
- administer contracts after their award, including initial contract obligations, variations, claims management, warranty claims and contract closeouts
- proscribe internal signing authorities and authorisations to commit capital expenditure.

3 Key principles

This Plan has been developed based on the following key underlying principles:

- safety, value and cost efficiency are key drivers for the Project
- engineering and design are to be progressed to an advanced stage so that the scopes of works can be defined in sufficient detail to:
 - enable Contractors to provide firm lump sum prices where possible
 - enable the Principal to accurately assess and include overrun contingency in the Capital Cost Estimate for DFS if lump sum pricing is not achievable because the market dictates the schedule of rates payment terms.
- multidiscipline vertical packages will be awarded on a fixed time and cost basis when possible. Awarding such packages will generally contribute to the best value, least risk outcome for the Project, the Principal and the Project's Financiers
- 'best fit' construction companies, suppliers and manufacturers (including international companies and joint ventures) will be engaged when possible, to accord with the size and complexity of the scope of work to be performed
- individual package values will be assessed to avoid or minimise the financial risk to acceptable levels as a single risk exposure to the Project
- a proven and reliable set of project management and delivery systems will be utilised for Project delivery
- quality standards will be established, communicated to Contractors and managed to attain the required quality in all areas
- no 'new' technology will be introduced, and only proven, reliable equipment will be used
- this Plan takes into account Project Financiers' requirements, such as time and cost certainty, the transfer of design, interface and cost overrun risk to Contractors, insurers, end-users, suppliers and Contractors nominated by any Export Credit Agencies providing funding to the Project
- detailed contracting plans will be separately completed for each of the work package summaries in the Contracts and Procurement Strategy Package Plan Matrix (not provided).

4 Key assumptions

4.1 [Insert contracting model chosen] Project Delivery Model

The review process to determine the most appropriate delivery model for the Project has taken into account various factors, including:

- the degree of complexity associated with the Project engineering and the level of control and input the Principal wishes to retain for the overall design
- fast-track schedule time constraints are not currently being imposed on project delivery

- the internal experience and capability of the Principal, including the Principal's degree of knowledge of design and construction and the extent and nature of the Principal's resources (including the skills and expertise of the Principal's team)
- the experience and capability of the designers and construction Contractors to be engaged to deliver the Project
- the availability of local and international Contractors
- the size of the Project (in terms of the dollar value and physical complexity)
- the requirements of equity and Lenders.

The expected 'boom' in the number of energy, resources and infrastructure projects to be delivered across Australia and globally increased the pressure to fast-track delivery. Nevertheless, limitations on Principals' resources and rising prices of commodities, materials and labour are redefining how projects are being delivered. **[Insert contracting model]** contracting is only one of several alternative models becoming more widely used.

The key recommendation in this Plan is that the proposed contracting structure for the Project is **[Insert contracting model]** structure, whereby the **[Insert details of contracting model]**.

It is anticipated that the Contractor will be appointed by means of a competitive tender initiated through an expression of interest process. However, there are potential benefits in utilising single-source negotiations with the existing DFS service provider, which should be analysed before the Principal commits expenditure to a tender process for the appointment of the Contractor. These benefits include:

- time and cost savings to the Principal through using the existing DFS services provider to achieve continuity of knowledge and resources
- liabilities for pre-FEED and FEED performed by the existing DFS services provider could be wrapped in **[Insert contracting model]**
- time and cost savings to the Principal through using existing DFS services provider needing less time to validate existing engineering and design
- time and tender costs savings in avoiding committing to a tender process where third party Contractors are unwilling to compete with existing DFS service provider, resulting in a level of engagement inadequate to create a competitive environment.

The apparent risks in pursuing a single-source negotiation process include:

- the Principal may not receive the most competitive terms and price for this major package as it does not create a competitive environment
- the Principal may not be able to assess the best available resources, personnel and systems in the market
- the existing DFS services provider may push for a significant risk premium in its price to take design liability for the entire Project.

Recommendations will be made separately with the Principal's project team after a cost-benefit analysis of the Principal has been completed, using single-source negotiations with the existing DFS service provider for the **[Insert contracting model]**.

4.2 Project timing

It is assumed that:

- detail design works funding (through equity raising) will be available to enable the Principal to commence design
- early procurement activity funding (through equity raising) will be available to facilitate the Principal's procurement of long-lead-time items
- early works funding (through equity raising) will be available and the Principal may commence early works on site
- the Principal will give project finance approval
- prior to the Principal's finance approval, an estimated [insert]% of the total value of the works packages will be locked in/awarded (subject to financial close)
- the Principal will appoint the EPCM Contractor to provide tendering and procurement services prior to finance approval
- site construction other than early works will commence.

4.3 General risk assumptions

It is assumed that:

- whenever possible, contract packages will be constructed to reduce interfaces between construction Contractors, engineering disciplines and the Principal. This will reduce cost overruns and gaps in liability
- the Principal will transfer construction risks to Contractors where the cost of doing so is not prohibitive
- wherever possible, the engineering and scopes of work for construction packages will contain sufficient details for firm lump sum pricing
- Contractors will be responsible for their own procurement, inspection, expediting, transport and storage of necessary plant, equipment and materials to avoid interface risks. The Principal will minimise its direct procurement of plant, equipment and bulk materials. The Principal will only procure such items for issue to construction Contractors if this is required to maintain the Project schedule, reduce sequencing interface (though stockpiling of critical long-lead material) or would result in a substantial cost saving to the Project
- the Principal will only supply common facilities, utilities and consumables to Contractors where there is a clear cost and/or strategic benefit, otherwise, Contractors are required to be 'self-sufficient'
- local resources will be utilised whenever possible with Indigenous participation levels actively encouraged
- overseas procurement may be utilised if there are local resource constraints, such procurement is necessary to maintain the Project schedule, or it offers the opportunity to significantly reduce Project costs (for example, through Export Credit Agency Funding or cheaper procurement)

- during the Project Implementation Phase, the resources and oil and gas construction market in Australia will be very active, resulting in the Principal having to compete for key Contractors and skilled resources. (Note, many of the Principal's competitors already have strategic relationships with major Contractors and suppliers. The Principal is also competing with project Principals who are able to fund their projects off-balance sheet and therefore are not restricted by the requirements of Lender and commonly offer attractive schedule of rates or cost reimbursable terms to Contractors).

4.4 Engineering risk assumptions

It is assumed that:

- engineering design for the core infrastructure, including [insert details], will be sufficiently advanced (approximately [insert]% complete) at the time of tendering major construction packages to allow for firm lump sum pricing
- the Principal will only detail design where necessary for non-core infrastructure construction packages (such as [insert details]), transferring detail design risks to Contractors via novated design and construct packages where the additional cost is considered acceptable and the Principal can provide sufficient detail in respect of its engineering and performance requirements
- preferred equipment suppliers will be specified to Contractors where proven suppliers and equipment specifications are required for particular works packages. These suppliers may have previously negotiated pricing agreements with the Principal
- sufficient geotechnical information will be available and design sufficiently advanced to enable Contractors to provide firm lump sum prices where possible. If lump sum pricing is not achievable because the market dictates the schedule of rates payment terms, the information and design will enable the Principal to accurately assess and include overrun contingency in the Capital Cost Estimate for the DFS
- wherever possible, the Project will utilise proven and tested designs and pre-engineered products (for example, non-process buildings) to reduce design costs and interfaces between design, supply and install components of certain works packages
- for plant and equipment, proven designs will be selected and component suppliers specified only if they provide a practical commonality of spares holdings and minimises spares inventories.

4.5 Construction risk assumptions

It is assumed that:

- key contracting companies will be consulted for constructability reviews during the design phase to obtain best value in design, cost and/or schedule
- whenever possible, process facilities contracts will be lump sum vertical multidiscipline packages, where the scope will cover detailed earthworks, concrete foundations, structural, mechanical, piping, electrical and instrumentation

- construction Contractors will be responsible for the establishment of their temporary facilities and services where that Contractor (including subcontractors) has sole use of such facilities (excluding common facilities across the Project which the Principal will provide)
- the Principal will provide and manage construction camps and Principal and construction Contractors will pay a person/day rate for the use of these facilities
- railway infrastructure contracts will be lump sum vertical multidiscipline packages including earthworks, drainage, bridges, track laying and some signalling backbone infrastructure
- earthworks for railway formation and bulk earthworks at the mine sites and port will be undertaken on a predominantly lump sum basis:
 - site preparation works at the mines and the port that also involve large scale bulk earthworks will be contracted as single discipline, 'horizontal' packages of work
 - at the mine sites, the advantages of including site preparation earthworks and drainage works in the scope of the railway Contractor or the mine pre-strip Contractor will be considered to enable the realisation of economies of scale due to the size of equipment fleets that will need to be mobilised to carry out this work
 - to better manage the mass balance of earthworks, it may be advantageous to include the rail loop earthworks to a defined battery limit in the port site preparation scope.
- major machine items such as stackers, reclaimers, ship loaders and train unloaders will be contracted on a design, supply, erect and commission basis using proven technology and suppliers
- non-process buildings such as workshops, warehouses, offices and workforce accommodation will be tendered on a detailed design and erect basis with only floor plans, functional descriptions, level of fit-out, nominated equipment and material and other Principal quality and performance requirements being provided to tenderers. This will maximise the use of standardised, pre-engineered buildings and will minimise indirect (design) costs and interface/gap in liability between designers and Contractors.

The Principal will progress Railway rolling stock maintenance workshop and facilitate design to an advanced stage before tendering due to their specialist nature and the need for the Principal to articulate its functional and performance requirements clearly.

5 Strategy

5.1 Objective

As outlined above, the objective is to obtain the best value, least risk outcome for the Project within risk limits acceptable to the Principal and the Lenders. Strategies to achieve this objective are:

- award consolidated fixed time and cost vertical multidiscipline contract packages wherever possible
- transfer risk to Contractors and insurers when value is represented
- leverage known Contractor expertise
- progress design and scope of work to an advanced stage before tendering, rather than adopting a 'fast track' procurement approach
- ensure an appropriately resourced internal Principal project team and maintain the Contractor for the duration of the Project.

5.2 Market conditions

The current market principle remains very strong with sustained high demand for Contractor resources, construction materials and key labour skills across all levels. Whilst the impact of the global economic downturn has tempered construction activity over the past 12-month period, there is now a significant potential for an upturn in market activity. Several major resource and oil and gas projects are now committed or likely to be committed within the Project Implementation Phase. Increased market activity increases the risk of price escalation in both labour and materials and exacerbates the skills shortage.

Since it is difficult to predict market events and direction, the Project must be ready to adjust to a market environment that is rapidly changing and competitive. Therefore, contract packaging and the timing of packages to enter the market need to retain some flexibility in order to respond to market forces. Such flexibility in contract package refinement and contracting approach will assist the Project in responding positively to market forces.

This Project contains long lead time commodities such as the procurement of rail rolling stock, marine piling, stacker/reclaimers and heavy mining equipment where the schedule risk must be managed. The Project must also consider long lead and specialist infrastructure contract performance, such as the marine dredging works.

Market conditions will also influence the final Project content about Australian and foreign labour and/or overseas fabrication and component supply. Depending on the 'tightness' of the labour market, this may necessitate adjustments to the final package plan.

5.3 Project delivery systems and procedures

Selected Contractor will provide the project delivery systems and procedures used during the Project Implementation Phase (refer to Section 4 – Proposed Project Delivery Model), and they will be further developed in conjunction with the Principal and the Principal's other consultants.

The systems, procedures and project execution documentation provided by the Contractor will be based on proven systems and specifically tailored to meet the Project requirements, including this Plan. As outlined above, the Principal will develop a suite of Principal Model Contracts in conjunction with the Contractor and the Principal's legal advisors.

The Principal will review and approve the project delivery systems and model contracts recommended by the Principal, the Contractor and the Principal's legal advisors. This shall include reviews to ensure the satisfaction of the Project and the Principal's safety, legal, commercial, environmental, community, engineering, technical, logistical and operational needs.



5.4 Contracting approach

The vertically integrated multidisciplinary packages include civil work, structural steelwork, electrical, instrumentation, all services reticulation and, where appropriate, fit-out and material procurement. Where appropriate, some site preparation earthworks may be structured based on suitably scoped horizontal packages to obtain economies of scale for such works.

The contracting approach seeks to provide the Principal with the benefit of 'price and time certainty' at the time of contract award. It is anticipated that Contractors will build into their contract price an upfront 'construction risk allowance' of between 5% and 10% of the contract price, to provide 'price and time certainty' in terms of a firm lump sum, or design and construct price. However, off-setting this upfront 'fixed price and time certainty premium', it is anticipated that the Project will benefit from:

- a reduction in the Principal's direct construction management and site supervision costs
- a reduction in contractual claims risk due to contract awards being made on advanced design, firm pricing and reduced Principal-Contractor interfaces
- a built-in profit incentive for Contractors to deliver contracts on or ahead of schedule where the Principal's and the Contractor's interests can be aligned through appropriate drafter KPI incentive regimes in the Model Form Contract
- securing limited recourse project financing
- being able to leverage off Contractor's expertise to enhance value-adding opportunities.

The contracting approach provides Contractors with a high degree of freedom, allowing Contractors to control the performance of construction works with minimal Principal intervention. Each construct only and design and construct works package will require the Contractor to assume full construction and schedule risks. Contractors must be able to price these risks reasonably and the Project must be able to assess if the cost to assume these risks are reasonable and practical. The Principal must also be confident that Contractors can manage the construction risk to deliver a quality product on time before awarding contracts. Therefore, packages will only be committed on a lump sum or design and construct basis if cost and overall value can be clearly demonstrated. Individual package plans will be adjusted if necessary to provide a best value, least risk outcome in response to either changing market conditions or commercial and construction risk factors.

The contracting approach requires a substantial up-front effort in the tender and contract negotiation period. Careful preparation of tender and contract documentation, including scope of work, defined battery limits between packages, technical standards and commercial terms, is critical to maximising the benefits of this approach. Therefore, it is recommended that the appointment of the Contractor and the preparation process should both take place as soon as practically possible.

It must be recognised that the use of large, vertically integrated lump sum contracts limits the Principal's ability to vary design, scope or schedule following the award of contracts without incurring the risk of significant additional cost increase. This is also the case with respect to design and construct contracts.

Proposed tenderers for contract and procurement packages will be subject to a comprehensive prequalification process to verify their suitability prior to being invited to tender. Therefore, selected Contractors will have demonstrated a clear understanding of project scope, schedule and capability of delivering scope of work to the relevant quality requirement safely, timely and within budget.

Wherever possible, all contract and procurement packages will be competitively tendered in the marketplace. This will include, where deemed advantageous, requesting tenders from overseas Contractors, fabricators and suppliers. It may be necessary to negotiate contracts from a sole source provider in certain instances. This will be undertaken based on a formal negotiation plan where sole sourcing is required.

The Contracting and Procurement Strategy Package Plan (not provided) will be used as the controlling document for the Project and will be revision controlled.

5.5 Commissioning strategy

Generally, except for bulk earthworks packages, all major contract packages will obligate Contractors to undertake precommissioning activities to effect specified 'no-load testing' requirements. Manufacturers and equipment suppliers will also be required where appropriate, to provide installation engineers to assist Contractors undertaking precommissioning activities. Contractors will allow for precommissioning work in their contract pricing sufficient to complete such preparation and make it ready for the Principal to fully commission the works.

Upon the completion of precommissioning activities, but except to the extent that it relates to an EPC or other supply and install works package where the Contractor or supplier is solely responsible for commissioning, Contractors and equipment suppliers will be required to assist the Principal to fully commission the mines and port process plants, mining, marine and rail plant and equipment and all other systems ready for sustained production use by the Principal's Operators. Such commissioning assistance will include achieving full 'load commissioning' and completing performance testing requirements. Contractors and suppliers will provide commissioning assistance on an 'as required basis', with costs being charged on a schedule of rates basis. Contracts will therefore include a schedule of rates to provide such commissioning assistance to the Principal.

5.6 Risk mitigation

Project risks will be minimised and/or managed to utilise measures that include:

- award of contracts based on completed design (except for EPC and D&C packages as described above) and sufficient geotechnical information
- formal prequalification processes for tenderer assessment and selection
- use of Model Form Contracts and tender documents for all contract and procurement activities, including tailored general conditions of the contract
- use of pre-prepared and approved Project technical standards
- extensive use of lump sum pricing to minimise the risk of capital expenditure growth
- where appropriate, use of contract mechanisms such as milestone payments, bonus incentives and/or liquidated damages to drive outcomes that are consistent with all of the Principal's time, cost, safety and quality/performance objectives for the Project
- use of comprehensive contract administration procedures
- use of both in-house and third-party expediting and inspection personnel to monitor conformance to specifications and schedule
- use of international design personnel where appropriate
- when appropriate, sourcing materials, equipment and prefabricated modules from offshore (including from Export Credit Agencies)
- requiring Contractors to manage their own productivity risks
- consideration of modularisation of plant and facility components so as to minimise the site based labour content.

Other risks that may affect the Project for which appropriate contingency will be required include:

- Government Work Place Legislation amendments and subsequent industrial relations issues in the resources industry
- increase in fuel prices and/or foreign currency fluctuations which could cause cost increases in delivery of materials and services
- ability to access labour in the event of either labour or skills shortages.

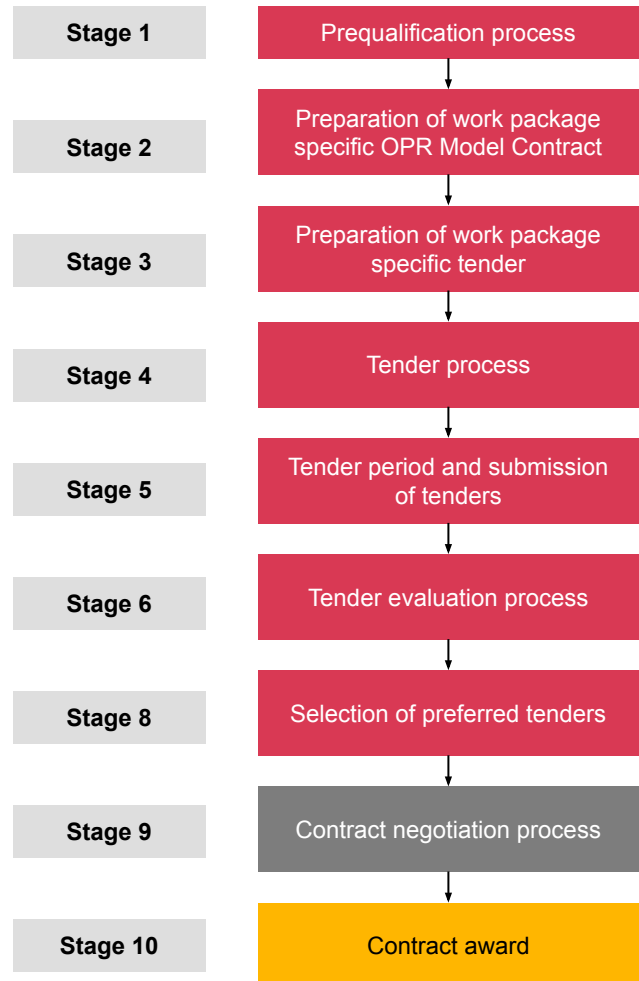
6 Project scope included

[insert scope of project]

7 Tender process

7.1 Tender and award process

In general, competitive tenders will be sought with local Contractors, suppliers and manufacturers for a full, fair and reasonable opportunity. Principal must approve a sole source justification where sole sourcing is proposed by exception for items not listed in this Plan prior to initiating negotiations. The approval must be in accordance with authority levels to be established by the Project.



Note on the diagram: There are various 'toll gates' in the contracting process that will require the Principal's prior approval before they can proceed to the following stage.

Prior to formal tenders being called, all proposed tenderers will be formally prequalified by the Project. The prequalification process will ensure that any organisation given the opportunity to submit a formal tender for the Project will be:

- capable of providing a substantive tender
- financially capable of undertaking the proposed scope of work
- will have the resources and technical capability to perform the works.

The prequalification process will ensure that no tenderers are included on approved tender lists that are not capable of meeting the above criteria.

The tender selection process will address the following key areas:

- Health and Safety
- Technical Evaluation
- Contractor Capabilities
- Resources Capabilities Availability
- Schedule Requirements
- Pricing
- Financial Capacity
- Key Personnel
- Environmental Impacts
- Commitment to Indigenous employment opportunities
- Local (Australian) Content.

Compliance will be required with the following developed Project standards:

- Environmental
- Health and Safety
- Industrial Relations
- Cultural Heritage
- Community Relations
- Ethics and Governance.

Where deemed appropriate following initial tender evaluations, tenderers may be shortlisted for further detailed negotiations, or re-pricing.

Specific emphasis during tender evaluations will be placed on Contractor safety records, systems and previous industry experience. In particular, tenderers will be required to demonstrate a thorough understanding of the safety requirements for the Project. Shortlisted tenderers will be required to submit further details of their proposed management process for the safe implementation and management of the contract.

Tenderers will also be required to demonstrate their ability to meet key milestone dates applicable in the contract schedule.

A recommendation for an award addressing all of the above with a capital appropriation request will be raised for approval and signing by the relevant Project personnel, in accordance with levels of authority to be established by the Project.

Prior to contract award, the recommended tenderer will attend site visits to become familiarised with specific site conditions, the scope of work, safety requirements and potential interface issues.

Wherever possible, all contracts will be awarded based on a fully conformed contract document. Notices of Award or other forms of written commitment will only be used by exception where schedule demands on the Project's critical path outweigh this principle. Such commitment will only be after it has been approved in accordance with the levels of authority to be established by the Project.

Following the contract award, a kick-off meeting will be held to discuss key items and information requirements, including contract close out issues.

7.2 Confidentiality

Tenders will be submitted in sealed packages and be delivered to a locked tender box in a secured area by the nominated tender closing date.

Tenders will be opened in accordance with a formal procedure as part of the contract procedures which will be developed for the Project.

The lead engineers will only use unpriced tenders to evaluate technical aspects of the tender submissions.

7.3 Sole sourcing policy

Contracts or supply packages may be sole sourced by exception where:

- there is proven price competitiveness
- it is necessary or significantly advantageous to the Project schedule
- it provides for a commonality of spares throughout the Principal's operations
- commercial terms and conditions are advantageous
- it is for specialist works or Contractors with proprietary equipment or technology are required
- Contractors or suppliers are suitably prequalified.

7.4 Customs duty and Australian participation

The Project contracts and procurement team shall assist in identifying and minimising any exposure to customs duties. The procurement process will maximise Australian participation in accordance with the Australian Industry Participation Plan. This will involve considering existing Australian capabilities to provide local personnel, suppliers, fabricators and Contractors. Australian capabilities will also be given a full, fair and reasonable opportunity to supply equipment, bulk materials, specialised materials and services to the Project. This commitment maximises Australian participation and advances Australian talents, skills and economic regards. Therefore:

- preference will be given to Australian suppliers, fabricators and Contractors where technical, schedule and commercial aspects are equal to or superior to offshore providers
- project design will be based on industry requirements that incorporate Australian standards and engineering practices to ensure maximum participation of Australian maintenance Contractors during the lifetime of the facilities
- the Contracts and Procurement Plan developed for each package will identify Australian content opportunities.

Appendix 2

Sample risk register and action plan

Risk matrix						
		Consequences				
		1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Likelihood	5 Almost certain	M	H	H	VH	VH
	4 Likely	M	M	H	H	VH
	3 Possible	L	M	H	H	H
	2 Unlikely	L	L	M	M	H
	1 Rare	L	L	M	M	H

Consequences

Consequence types								
	Financial (including impacts of delays)	Health and safety	Natural environment	Social/cultural heritage	Community/ reputation/ media	Legal/govt.	Variance from business performance objectives	
Severity level	Catastrophic	>AUD\$50M	Multiple fatalities, or significant irreversible effects	Very serious, long-term environmental impairment of ecosystem functions	Extreme social issues. Catastrophic damage to structures/items of cultural significance	Significant prosecution and fines. Very serious litigation including class action	>30% variance from business objectives/ KPIs	
	Major	AUD\$10M – AUD\$50M	Single fatality and/or severe irreversible disability (>30%) to one or more persons	Significant harm with local effect		Serious public or media outcry (international coverage)	Major breach of regulation. Major litigation	10% – 30% variance from business objectives/ KPIs
	Moderate	AUD\$2M – AUD\$10M	Serious injury/disabling injury	Serious medium-term environmental effects	Ongoing serious social issues. Significant damage to structures/items of cultural significance	Significant adverse national media/public/ NGO attention	Serious breach of regulation with investigation or report to authority with the prosecution and/or moderate fine possible	5% – 10% variance from business objectives/ KPIs
	Minor	AUD\$50,000 – AUD\$2M	Minor injury/medical treatment	Moderate, short-term effects but not affecting ecosystem functions	Ongoing social issues. Permanent damage to items of cultural significance	Attention from media and/or heightened concern by the local community, Criticism by NGOs	Minor legal issues, non-compliances and breaches of regulations	2% – 5% variance from business objectives/ KPIs
	Insignificant	<AUD\$50,000	First aid/minor health impact	Minor effects on biological or physical environment	Minor medium-term social impacts on the local population. Mostly repairable	Minor adverse local public or media attention or complaints		<2% variance from business objectives/ KPIs



Likelihood

	Description	Frequency	Probability
Almost certain	The event will occur on an annual basis	Once a year	>95%
Likely	The event has occurred several times in your career	Once every 1 – 5 years	60% – 95%
Possible	The event might occur once in your career	Once every 5 – 10 years	30% – 60%
Unlikely	The event does occur somewhere from time to time	Once every 10 – 30 years	5% – 30%
Rare	Heard of the event (or something alike) occurring elsewhere	Once every 30 years	<5%

Risk levels and actions

Actions required	
Risk levels	VH Very high risk – CEO/Board attention needed, action plans and management responsibility specified
	H High risk – senior executive management attention needed, action plans and management responsibility specified
	M Medium risk – manage by specific monitoring or response procedures, with management responsibility specified
	L Low risk – manage by routine procedures, unlikely to require the specific application of resources

Risk register and action plan: Marketing and offtake workstream

Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment			
1	Significant changes in product quality demands (for example, less flake graphite demanded)														
2	Material default and termination of cornerstone/ foundation customer offtake agreement (for example, take or pay obligations cannot be enforced)														

Risk register and action plan: Geology, mining, processing and O&M workstream

Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment			
1	The operating and realisation expenditure cost estimates for each of the mining, process, tailings and overhead activities have been categorised into labour, Contractors, storage, power, water, distribution, and overheads included in the DFS are excessive														
3	Significant increase in production costs, for example, concrete, steel, engineering costs, salaries, equipment prices, etc.														
4	Insufficient electrical and/or diesel power for mining and processing														
5	Insufficient water for mining and the processing plants														
6	Lack of availability of competent personnel for plant operation and maintenance														
7	Unsuitable ground conditions for haulage, due to the dust and reduced viability associated with the lack of maintenance and increased traffic. Scarcity of water may hamper water spraying														
8	Errors in the structural model, including the dip and dip direction of faults and discontinuity sets														



Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment			
9	Errors in the geotechnical model based on the RQD data from limited geotechnical logged boreholes, with the remaining parameters subject to many assumptions														
10	The hydrogeological model is unavailable. Errors in the assumptions made of the location of the pre-mining water table and the drawdown, affecting slope stability														
11	Security concerns including the lack of security and theft of diesel and equipment storage areas may lead to production delays														
12	Lack of experienced mechanical fitters onsite to maintain mobile and fixed mining equipment and plant														



Risk register and action plan: Marketing and offtake workstream

Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment			
1	Significant changes in product quality demands (for example, lower demand for flake graphite)														
2	Material default and termination of cornerstone/ foundation customer offtake agreement (for example, take or pay obligations cannot be enforced)														



Risk register and action plan: Port access, transport and logistics workstream

Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment			
1	Insufficient marine and landside infrastructure, stockpiling areas and/or operating capability at the port to meet the mine short and mid-term capacity requirements														
2	Insufficient marine and landside infrastructure, stockpiling areas and/or operating capability at the port to meet the mine expansion capacity requirements														
3	Inadequate mine to port road and drainage infrastructure to meet initial and expansions capacity during all seasons														
4	Blockades at the port by workers/ dissatisfied local community														
5	Default by Port Operator under Port Access Agreement (for example, unable to provide capacity)														
6	Port Operator seeks to renegotiate terms of Port Access Agreement once substantial mine capital expenditure has been made														
7	Port Operators at inbound ports refuse to unload product due to the movement of product during shipping														



Risk register and action plan: Land tenure and approvals workstream

Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment			
1	Expropriation of assets by government once mine infrastructure has been completed – see also Government Stability Workstream														
2	Government seeks to renegotiate more favourable terms of Lease and/or Royalty Agreement once substantial mine capital expenditure has been made – see also Government Stability Workstream														
3	Key project permits and approvals on the project critical path are delayed resulting in significant overall project delays and [INSERT] not being able to meet commitments to off-takers														
4	Breach of environmental approvals during construction or operations results in fines and critical path delays to the overall project Programme and [INSERT] not being able to meet commitments to off-takers														



Risk register and action plan: Government Stability Workstream

Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment			
1	Change in government results in withdrawal of tenure, mining licences and/or expropriation of assets once mine infrastructure has been completed – see also Tenure and Approvals Workstream														



Risk register and action plan: Contracting, procurement and Project implementation workstream

Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment				Rank	Risk treatment plan	Risk severity after treatment				Rank	Responsible person	Status of the risk treatment plan		
					Consequence	Likelihood	Risk level before treatment	Consequence			Likelihood	Risk level after treatment							
1	The capital expenditure cost estimates for the mine and associated permanent and temporary infrastructure included in the DFS are exceeded by >30%, resulting in [INSERT] needing to raise significant additional equity and debt.	Financial and Schedule	Post Financial Close – Implementation	<ol style="list-style-type: none"> Project Scope (and all associated infrastructure) upon which DFS cost estimates will be based is currently being defined in parallel with further geology, geotechnical and processing studies DFS Study Scope currently being prepared to include clear cost estimates 	4	Major	3	Possible	12	High	<ol style="list-style-type: none"> Final Project Scope (and all associated infrastructure) to be locked down before DFS cost estimates are finalised Cost estimate sign-offs and peer reviews to be completed in line with the final approved DFS Study Scope Confirmation to be provided 	4	Major	2	Unlikely	8	Medium		
2	The Lenders' requirements in respect of time and cost certainty and transferring design and construction risk to Contractors, result in a sub-optimal project delivery model under current market conditions and unacceptable risk contingency included in the Lender requirements.	Financial and Schedule	Pre-Financial Close – Study	<ol style="list-style-type: none"> Financial and legal advisors have been engaged to advise on Lender requirements; Contracting and Procurement Plan initiated that will identify how the Lender requirements will be met Market sounding/ informal discussions with Contractors on what 	4	Major	3	Possible	12	High	<ol style="list-style-type: none"> Complete the Contracting and Procurement Plan with input from financial advisors on Lender requirements and what is achievable in the current finance market Works packages are currently to be structured (bundled) under an EPC Contract to minimise unacceptable risks contingency 	4	Major	2	Unlikely	6	Medium		
3	EPC Contractor does not ultimately demonstrate to [INSERT] or the Lenders during the DFS that it has the capacity or resources to deliver all of the Works Packages, leading to a re-examination of the DFS estimate and delays in achieving estimated deadlines.	Financial and schedule	Pre-Financial Close – Study	<ol style="list-style-type: none"> Market sounding and selection of major Chinese Contractor with a proven track record to participate in DFS study Initial due diligence carried out on balance sheet and capability 	4	Major	3	Possible	12	High	<ol style="list-style-type: none"> Further due diligence on EPC Contractor's capability and balance sheet (and that of its parent companies) to be carried out as early as possible in the DFS Ongoing senior management engagement with shortlisted EPC Contractor Market sounding to be carried out 	4	Major	2	Unlikely	8	Medium		



Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan				
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment							
4	EPC Contractor will not accept full lump sum/ fixed time, and cost risk for all of the Works Packages resulting in [INSERT] not being able to get accurate or competitive prices for the DFS and/or prices include unacceptable risk contingency.	Financial and Schedule	Pre-Financial Close – Study	16. Contracting and Procurement Plan initiated that will identify the limited scope of work to be let on a SOR basis 17. Market sounding/informal discussions with Contractors on what is achievable in the market 18. Existing consultants and internal advice	4	Major	4	Likely	16	High	19. Complete the Contracting and Procurement Plan 20. Ongoing senior management engagement with shortlisted EPC Contractor 21. Market sounding to be carried out to identify the fallback position and alternative EPC Contractors 22. Seek ongoing advice from existing consultants.	4	Major	2	Unlikely	8	Medium		
5	EPC study Contractor and other Contractors are not prepared to invest in tendering, early works, etc., on an unapproved project, or they refuse to accept commercial conditions associated with the tender validity period, resulting in [INSERT] not getting a suitable level of engagement to create a truly competitive environment.		Pre-Financial Close – Study	23. Market sounding/informal discussions with Contractors on interest in the market 24. [INSERT] has identified and interested EPC Contractor who is participating in the DFS 25. Engineering and design is being progressed to an advanced stage so that the commercial conditions associated with works can be identified with sufficient details, enabling EPC study Contractor and other Contractors to prepare to accept them	3	Moderate	3	Possible	9	High	26. [INSERT] senior management to continue engagement with EPC study Contractor and engage with other major Contractors and suppliers to build strategic relationships as early as possible 27. Utilise PCM Contractor's strategic relationships with Contractor	4	Moderate	2	Unlikely	6	Medium		
6	Inability to prepare work packages with sufficient scope for the DFS estimate, resulting in unacceptable risk contingency being included in the DFS estimate and leading to a re-examination of the estimate to ensure project viability and delays in achieving estimated deadlines.	Financial and schedule	Pre-Financial Close – Study	28. Time has been allocated to progress engineering and design to an advanced stage (rather than the fast-tracked design and procurement model) so that the scope of work can be defined in sufficient detail to enable Contractors to provide firm prices whenever possible	3	Moderate	3	Possible	9	High	Continue to allow sufficient time (as opposed to fast-track delivery) to progress engineering and design to an advanced stage so that the scopes of works and [INSERT] requirements for the packages can be defined in sufficient detail to enable the Contractor to provide firm prices whenever possible	3	Moderate	2	Unlikely	6	Medium		



Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Risk level before treatment	Rank	Risk treatment plan	Risk severity after treatment			Risk level after treatment	Rank	Responsible person	Status of the risk treatment plan		
					Consequence	Likelihood					Consequence	Likelihood							
7	Despite due diligence being carried out on the shortlisted EPC Contractor during the DFS, given the size of the Works Package, the EPC Contractor does not ultimately have the capacity or resources to deliver all of the Works Packages on time, leading to a delay in achieving the estimated deadline.	Financial and Schedule	Post Financial Close – Construction	Refer to actions listed in Risk 3 above.	4	Major	4	Likely	16	High	29. PCM to be engaged to supervise and closely monitor the performance of the EPC Contractor 30. Robust security package to be included in EPC Contract with parent company guarantee and the appropriate amount of performance security in the form of enforceable on-demand assistance (financial or otherwise), enabling the EPC Contractor to deliver all of the Works Packages on time or at a minimal delay	4	Major	2	Unlikely	8	Medium		
8	Not having fully documented EPC Contract scope of work and performance specification at the time of awarding the EPC Contract, leading to uncertainty and [INSERT] paying unacceptable Contractor claims.	Financial and schedule	Post Financial Close – Construction	31. Time has been allocated to progress engineering and design to an advanced stage (rather than the fast-tracked design and procurement model) so that the scope of work can be defined in sufficient detail to enable Contractors to provide firm prices when preparing working packages	3	Moderate	3	Possible	9	High	Allow sufficient time for the tender packages to be advanced and the scope of work and contractual terms for the packages to be defined in sufficient detail to enable Contractors to provide firm prices where possible before going to the market	3	Moderate	2	Unlikely	6	Medium		
9	[INSERT] may not be able to transfer all existing designs prepared in the DFS and responsibility for timely delivery of all designs going forward to the EPC Contract, resulting in gaps in design liability and delays in delivering the design.	Financial and schedule	Post Financial Close – Construction	32. Gap analysis of design risk has been initiated 33. Using proven technology where possible 34. Shortlisted EPC Contractor has been engaged to prepare a concept design for the DFS	3	Moderate	3	Possible	9	High	35. PCM model whereby the PCM Contractor/ other engineering specialists will peer-review critical design prepared by EPC Contractor 36. Starting point in EPC Contract is that EPC Contractor accepts responsibility for all design on a full turnkey basis	3	Moderate	2	Unlikely	6	Medium		



Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment				Rank	Risk treatment plan	Risk severity after treatment				Rank	Responsible person	Status of the risk treatment plan		
					Consequence	Likelihood	Risk level before treatment	Consequence			Likelihood	Risk level after treatment							
10	The interests of [INSERT] and the PCM Contractor are not sufficiently aligned to drive Project outcomes that are consistent with [INSERT] objectives in respect of cost, time, quality, safety, etc.	Financial and Schedule	Post-Financial Close – Construction	37. Incentivised PCM contract model is being proposed 38. [INSERT] existing consultant and internal advice is being sought on the achievable KPI incentive regimes on past projects and in the current market	4	Major	3	Possible	12	High	Allow sufficient time so that [INSERT] requirements and objectives for the PCM contract can be defined in sufficient detail to enable [INSERT] and the PCM Contractor to agree on a target man hour schedule and estimated target cost so the PCM Contractor can achieve all Project outcomes	3	Moderate	2	Unlikely	6	Medium		
11	Inefficiencies and difficulties arising from [INSERT] appointing multiple PCM Contractors, including having different management systems, agreeing on standard form contracts, quality of services, approach to KPIs, etc.	Financial and Schedule	Post-Financial Close – Construction	Single PCM contract model is being proposed.	2	Minor	4	Likely	8	Medium	39. Single PCM Contractor is to be appointed 40. [INSERT] to engage internal resources to match PCM structure and systems	2	Minor	2	Unlikely	4	Low		
12	DFS estimate will include duplication of overheads and contingencies, causing a re-examination of the estimate and delays in achieving a robust DFS estimate by the deadlines.	Schedule	Pre-Financial Close – Study	41. [INSERT] have engaged internal and external technical, legal, commercial and insurance resources 42. External peer reviews are being conducted 43. Engineering and design is being progressed to an advanced stage so that the scope of work and [INSERT] responsibilities are being defined in sufficient detail	2	Minor	3	Possible	6	Medium	44. Further value engineering analysis to be completed 45. Estimated figures are not to be released until the value engineering process is complete 46. Allow sufficient time to complete the value engineering process 47. External peer review is to be completed	2	Minor	2	Unlikely	4	Low		
13	Industrial Relations implications and renegotiation of labour agreements have adverse impacts on contracting and procurement.	Financial and schedule	Post-Financial Close – Construction	[INSERT] considering engaging an external IR consultant with specific regional expertise.	2	Minor	3	Possible	6	Medium	48. IR Strategy document to be prepared 49. Establish project-wide minimum IR requirements 50. Include status of the Contractor's IR agreements and consider renegotiation cycles in the tender evaluation process 51. IR risk to be assumed by Contractors under construction and procurement	2	Minor	2	Unlikely	4	Low		



Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment				Rank	Risk treatment plan	Risk severity after treatment				Rank	Responsible person	Status of the risk treatment plan		
					Consequence	Likelihood	Risk level before treatment	Consequence			Likelihood	Risk level after treatment							
14	Difficulty procuring suitably priced project-wide insurance to meet Lenders requirements.	Financial	Post Financial Close – Construction	52. [INSERT] have engaged an insurance broker to advise on insurance available in the market	2	Minor	2	Unlikely	4	Low	53. Insurance strategy to be prepared including an assessment of the benefits and risks of [INSERT] contrasting against Contractor procured insurance strategy 54. Gap analysis on Contractor insurances to establish residual project insurance cover required	2	Minor	1	Rare	3	Low		
15	Contractors are not prepared to tender because of the nature of the [INSERT] SPV set up for the project entering into the Works Packages, resulting in [INSERT] not getting a suitable level of engagement to create a truly competitive environment and leading to a price that is not accurate or competitive.	Financial and schedule	Pre-Financial Close – Study	62. Market sounding and selection of major Chinese Contractor with a proven track record to participate in DFS study 53. Initial due diligence carried out on balance sheet and capability	4	Major	3	Possible	12	High	57. Ongoing senior management engagement with shortlisted EPC Contractor 58. Explanation given to EPC Contractor regarding financing arrangements to provide further security about getting paid 59. Consider advance payments for mobilisation and long lead procurement	4	Major	2	Unlikely	12	Medium		
16	Single PCM Contractor is not able to provide adequate resources or suitably experienced personnel.	Financial and schedule	Post Financial Close – Construction	60. [INSERT] existing consultant and internal advice is being sought on what is available in the current market.	4	Major	3	Possible	12	High	61. Market testing and sounding through the EOJ process 62. Resources and key personnel will be key criteria in the EOJ and tender evaluation processes 63. LDs and/or KPI incentive payments for resourcing and key personnel to be incorporated into the PCM contract	4	Major	2	Unlikely	8	Medium		
17	Delay and disruption caused by loss of continuity in progress, knowledge and resource if [INSERT] does not appoint the current lead and other study Contractors during the Implementation Phase.	Financial and Schedule	Post Financial Close – Construction	64. Market sounding and selection of a team of DFS Contractors with a proven track record to participate in DFS study 65. Initial due diligence carried out on balance sheet and capability	4	Major	3	Possible	12	High	66. Further due diligence on EPC Contractor's capability and balance sheet (and that of its parent companies) to be carried out as early as possible in the DFS 67. Ongoing senior management engagement with shortlisted EPC Contractor 68. Market sounding to be carried out	4	Major	2	Unlikely	6	Medium		




Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment				Rank	Risk treatment plan	Risk severity after treatment				Rank	Responsible person	Status of the risk treatment plan		
					Consequence	Likelihood	Risk level before treatment	Consequence			Likelihood	Risk level after treatment							
18	[INSERT] is not able to source adequate resources or suitably experienced personnel.	Financial and Schedule	Post Financial Close – Construction		4	Major	3	Possible	12	High	69. [INSERT] internal resourcing/ employment strategy to be prepared 70. Ongoing market testing of availability of key personnel 71. Engage HR resource to prepare a strategy and locate key personnel.	3	Major	2	Unlikely	6	Medium		
19	EPC Contractor unable to fund start-up working capital on such a large scope of work, resulting in [INSERT] having to fund significant advance payments.	Financial	Post Financial Close – Construction	72. Financial and legal advisors have been engaged to advise on Lender requirements 73. Market sounding/ informal discussions with Contractors on market expectations 74. [INSERT] existing consultants and internal advice is being sought on the required level of start-up working capital	3	Moderate	3	Possible	9	High	75. Complete the Contracting and Procurement Plan with input from financial advisors on Lender requirements and what is achievable in the current finance market (for example, debt funding for the advance payment) 76. Ongoing engagement with shortlisted EPC Contractors	3	Moderate	2	Unlikely	8	Medium		
20	Contractors do not finish on time, causing [INSERT] to incur additional accommodation and overheads associated with [INSERT] workers' accommodation camps.	Financial	Post Financial Close – Construction	77. [INSERT] existing consultants and internal team are analysing potential risk and cost implications.	4	Major	4	Likely	16	High	78. Prepare Accommodation Plan 79. Pass on costs to Contractors in infrastructure contracts through LDs and indemnities 80. Allow contingency in DFS estimate to fund additional costs until recovered from Contractors.	2	Minor	3	Possible	6	Medium		



Risk register and action plan: Financing workstream

Number	Risk description (event and consequence)	Assessed category	Project phase	Existing controls	Risk severity before treatment			Rank	Risk treatment plan	Risk severity after treatment			Rank	Responsible person	Status of the risk treatment plan
					Consequence	Likelihood	Risk level before treatment			Consequence	Likelihood	Risk level after treatment			
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															



Appendix 3

Overview of collaborative contracting models

	Partnering	D&C Contract with cooperation obligations	Managing Contractor	EPCM	Delivery Partner	IPD
Contract structure	Principal engages partnering Contractor. Partnering Contractor may subcontract work to others	Principal engages D&C Contractor. D&C Contractor may subcontract work to others	Principal engages Managing Contractor. Managing Contractor must subcontract all design and construction work to others (with close Principal control)	Principal engages EPCM Contractor. Principal separately engages design and construction Contractors (or EPCM Contractor engages as agent for Principal)	Principal engages Delivery Partner. Principal separately engages design and construction Contractors (or Delivery Partner engages as agent for Principal)	Principal, designer and key contractors and suppliers enter into a single multi-party agreement
Time	Hard obligation to complete on time	Hard obligation to complete on time	Soft (best endeavours) obligation to complete on time	Soft (best endeavours) obligation to complete on time	Soft (best endeavours) obligation to complete on time, supported by gainshare/painshare payment linked to time KPI	Target date for completion is supported by gainshare/painshare payment linked to time KPI
Cost	Generally fixed price lump sum	Generally fixed price lump sum	Reimbursement of subcontract costs + fixed price fee	Reimbursement of subcontract costs + fixed price fee (sometimes with an incentive payment linked to KPIs)	Reimbursement of direct costs + fixed price fee + gainshare/painshare payment linked to KPIs	Reimbursement of direct costs + fixed price fee + gainshare/painshare payment linked to KPIs
Quality	Partnering Contractor responsible for defects	D&C Contractor responsible for defects	Managing Contractor responsible for defects	Each separate Contractor responsible for their own defects	Each separate Contractor responsible for their own defects (but defects may mean more time + cost-affecting DP gainshare payment)	All participants collectively responsible for defects. The cost and time pain of defect rectification is shared via gainshare/painshare regime
Fit for purpose warranty	Fit for purpose warranty	Fit for purpose warranty	Fit for purpose warranty	Warranty to exercise due care and skill	Warranty to exercise due care and skill	No warranty from participants, but the pain of defects is shared via gainshare/painshare regime
Liability	Traditional liability framework	Traditional liability framework	Traditional liability framework	Traditional liability framework	Traditional liability framework. Painshare of Delivery Partners is usually capped at loss of fee	No blame no disputes. Painshare is usually capped at loss of fee
Self-performance	Partnering Contractor can self-perform construction work	D&C Contractor can self-perform construction work	No self-performance of construction work	No self-performance of construction work	No self-performance of construction work	Participants may self-perform construction work
Project control	Principal controls most project decisions	Principal controls most project decisions	Principal controls most project decisions, including selection of subcontractors	Principal controls most project decisions, including selection of subcontractors	Principal controls most project decisions, including selection of subcontractors	Joint control of all decisions





Delivery
models

09 Designing a delivery model for a disaggregated giga project in the context of project finance

Investing in Energy Transition Projects
March 2023



Introduction



An increasing number of projects, including large scale energy transition projects, are now of such a scale that it is not feasible for them to be delivered pursuant to a single Engineering, Procurement and Construction (**EPC**) contract to achieve a turnkey solution.

Such projects are complex, novel, in terms of their extensive scale and cost, have numerous interfaces and, in some cases, are multi-jurisdictional. They are '**Giga Projects**'.

A Giga Project is not a traditional project – with a single asset, single revenue stream and single turnkey solution – which we have seen project financed by commercial debt providers or undertaken on balance sheet over the last few decades (**Traditional Projects**).

Giga Projects are characterised by a number of features:

- a capital cost in the (many) billions of dollars
- they are comprised of a number of facilities that form part of an overall system, for example, a hydro, geothermal, solar or wind facility providing energy to an electrolyser creating green hydrogen, which is then used to produce green steel
- one head contractor or contractor joint venture cannot or will not:
 - design and construct the entire system
 - bring all of the required technical expertise
 - carry the contingent liability of the capital cost on their balance sheet
 - raise the required security
 - procure the required insurance
 - provide adequate liability caps
 - satisfy the requirements of multiple equity investors and the debt syndicate
- they are delivered by an Owner via an Engineering and Procurement and Construction Management (**EPCM**) or Project Delivery Partner delivery model so as to leverage a wider range of industry expertise from engineering consulting and management partners
- to secure pricing and maintain schedule, the Owner may contract directly with suppliers and original equipment manufacturers of crucial equipment or long lead items, as opposed to relying on indirect relationships through a Works Contractor

- they utilise varied sources of finance made up of institutional and non-institutional equity, Export Credit Agencies (**ECAs**) and commercial banks (all **Financial Stakeholders**)
- a suite of other advisers necessary to bring the Project to Financial Close working collaboratively, appointed at an early stage and whose roles may change throughout the lifecycle of the Project.

Market considerations are a significant constraint in the delivery of Giga Projects. Contractor, designer and supply markets' appetites for accepting risk has been dampened by adverse project outcomes (sometimes involving the acceptance of extreme risks), COVID-19 and the Ukraine War related complications and rapid unforeseen cost escalations.

The combination of the above features is leading to the use of disaggregated package structures.

Disaggregation can be used as a means of making participation in Giga Projects more palatable by:

- reducing scope size and diversity
- reducing programme durations for each disaggregated package
- making financial exposure more commensurate with risk and profitability.

As discussed below, disaggregated structures present different risks to all stakeholders; however, the risks inherent in the departure from traditional EPC contracting models can be managed to maximise the prospects of Giga Project success, provided that the risks are understood and strategies are developed to mitigate them.

The purpose of this paper is to explain some of those measures, particularly in the context of the concerns of Financial Stakeholders.

This paper deals with the following topics.

- What are the key risks in disaggregation?
- How do these risks affect investment and bankability?
- What steps can be taken to mitigate risks and enhance bankability?

It is recommended that this paper be read along with several other PwC papers, including the suite of EPC and EPCM papers and the Export Credit Agency Financing paper, all contained in the publication 'Investing in Energy Transition Projects'.

Executive summary

Disaggregation can increase project risk by unwinding the EPC single point of responsibility that is a feature of Traditional Projects, replacing it with a delivery system that, in the absence of careful preparation and management, can lead to the proliferation of interfaces, the diminution of delivery certainty and the exacerbation of Owner risk.

Financial Stakeholders are resistant to committing to Giga Projects with such heightened risks because of:

- the issues associated with the elimination of the single point of responsibility principle
- the increased possibility of project failure
- the commercial complexities arising out dispersed liability caps, liquidated damages and insurance
- the practical and legal problems associated with completing the Giga Project in the event of default.

The risks of disaggregation and the unwillingness of Financial Stakeholders to participate in disaggregated Giga Projects can be materially mitigated by:

- engagement of an Integrated Management Team (**IMT**) from an early point
- the preparation of specifications and Front End Engineering Designs (**FEED**) that take interfaces into account
- the development of a tendering and contracting strategy that recognises the characteristics of disaggregation and takes steps to manage them
- proactive Owner action based on an issues notification and resolution system that is directed to identifying and solving problems quickly.

Disaggregation risks

The EPC contracting model brings the advantages of contracting with a single, expert, well capitalised counterparty, which, with the exception of limited Owner-retained risks, accepts all delivery risks and responsibilities.

Further, Works Contractors or EPC Contractors are usually international organisations with deep relationships with the finance community, including Financial Stakeholders, and with suppliers and subcontractors.

EPC contracts:

- provide a single point of responsibility for delivery
- are entered into with expert, well capitalised, reputable contractors
- are less complicated to administer than a suite of disaggregated contracts
- minimise Owner interface risks by allocating the entire scope of works, spanning design to commissioning, to the EPC Contractor
- centralise liability for delay and performance liquidated damages
- maximise the availability of security and liability caps.

Disaggregation unwinds that single point of responsibility and the associated advantages.

As a consequence, the Owner and Financial Stakeholders are exposed to increased risks, some of which are:

- system failure arising out of the management of interfaces between logistics, designers, suppliers, and contractors and the integration of technologies, products, and designs to produce an end to end system that fulfils its requirements
- the lack of adequate competent resources to perform the functions usually undertaken by an EPC Contractor
- performance guarantees are difficult to define and are dispersed among the contracts that are entered into to deliver the Project (**Delivery Contracts**)
- delay and performance liquidated damages are more difficult to calculate and administer
- the securities and liability caps are lower in absolute value and are dispersed among a number of Delivery Contracts
- liability for failure is more difficult to establish where the root cause of that failure cannot be clearly traced to one Delivery Contract, or multiple Delivery Contractors are implicated (and for this reason, it is important that each Delivery Contract deals with the implications of default, force majeure, delays and other critical items under and across other Delivery Contracts to help ascertain whether a particular issue has been caused by the Owner and/or other Contractors)
- disputes are more complex and expensive and often directly involve the Owner.

From an engineering perspective, the absence of a single point of responsibility leads to the erosion of control over the end to end design and construction of the system.

From a legal perspective, the absence of a single point of responsibility leads to difficulty in identifying responsibility, and allocating it fully, where either defects arise in the end to end system, or the system underperforms, as gaps in defects and performance regimes between interfaces can be leveraged by contractors. As discussed below, this makes the resolution of disputes more complex, uncertain, costly and time consuming.



Effect of disaggregation on bankability and investment

Limited recourse project financing and equity investment prior to completion and well established operation of a Project expose Financial Stakeholders to the risk of non-repayment or realisation of returns where the Project fails to such an extent that the revenue generated by the Project is insufficient to cover debt repayment and/or dividends. In such a situation, the Financial Stakeholders are left to take over the Project, attempt to finish it (if it is incomplete) or rectify performance problems (if operating) and then sell it, if possible. That will often result in substantial loss.

The EPC contracting model reduces that risk both financially and from the point of view of practical design and construction. To put it simply, if things don't go as planned, there is a reasonable prospect that the downside can be reduced by having recourse to and being able to work with, a single, well capitalised contractor that has provided substantial security.

In contrast, where there is substantial disaggregation in the contracting of the delivery of a Project, there is no such single source of accountability in circumstances where critical claims or disputes arise in that Project. Financial Stakeholders are confronted with:

- a complex web of design, supply and construction contracts
- dispersed securities and individual liability caps
- contractors with diverse levels of financial capacity
- complex contract administration with contracts at various stages
- no single influential relationship to call on
- a complicated (and possibly futile) exercise to determine the cause of the problem or the Project's failure.

In other words, there is a substantial chance that they will inherit a mess.

Financial Stakeholders are therefore wary of complex, interfacing disaggregated Projects and measures must be taken to increase their level of comfort.

This paper examines how that comfort level can be raised. In particular, it addresses issues that are likely to be raised through the credit/investment committee approval processes undertaken by Financial Stakeholders. In doing so, this paper outlines:

- an appropriate overall contract structure
- the role of an IMT
- the role of a Project Design Partner
- the role of a Project Delivery Partner
- the role of the Risk Management Partner
- the role of the Project Advisory Partner
- key provisions to augment the Delivery Contracts
- the role of the Financial Stakeholder Technical Advisor (**FSTA**)
- the role of the Independent Certifier (**IC**)
- a suitable dispute resolution system.

Contract structure

Due to the necessary tailoring of the structure to the particular Project, disaggregated delivery systems will vary but will likely feature several of the contractual arrangements listed below. This list excludes a detailed breakdown of the agreements with Financial Stakeholders and inter-financier arrangements, such as priority agreements.

- 1. Facility Documents:** the various financing agreements between the Owner and its guarantors and the Financial Stakeholders
- 2. FSTA Contract:** between the Financial Stakeholders (or their representative), the Owner and the FSTA
- 3. Integrated Management Team Contracts:** between the external members of the IMT (Project Design Partner, Project Delivery Partner, Risk Management Partner and Project Advisory Partner: **External Team Members**) and the Owner (where applicable – see section 6 of this paper)
- 4. Bank Side Deeds:** between the Owner, the IC, the External Team Members (respectively) and the representative of the Financial Stakeholders, primarily to deal with the rights and obligations of the parties in the event of termination of those contracts and the insolvency of the Owner
- 5. Delivery Design Contracts:** FEED, design consultancies and supply contracts
- 6. Delivery Supply Contracts:** supply arrangements, including Free Issue Material (**FIM**)
- 7. Delivery Design and Construction Contracts:** contracts pertaining to the construction of the Project, including EPC contracts and ECI contracts
- 8. Bank Side Deeds:** between the Owner, the relevant Delivery Contractors and the representative of the Financial Stakeholders primarily to deal with the rights and obligations of the parties in the event of termination of those contracts and the insolvency of the Owner
- 9. Deeds of Novation:** between the consultants, suppliers originally engaged by the Owner (where required to secure pricing or schedule) and the Works Contractors to which the relationship is novated
- 10. Interface and Integration Deeds:** between the Owner and the Works Contractors with interfacing Works Contractors (and possibly consultants, logistics providers and suppliers)
- 11. Independent Certifier Deeds:** between the Owner, the IC and the Works Contractors
- 12. Key Subcontracts:** between the Works Contractors and Key Subcontractors
- 13. Key Subcontract Step In Deeds:** between the Works Contractors, Key Subcontractors and the Owner
- 14. Key Subcontractor Bank Side Deeds:** between the Works Contractors and Key Subcontractors and the representative of the Financial Stakeholders, primarily to deal with the rights and obligations of the parties in the event of termination of those contracts
- 15. Expert Determination Agreements** and
- 16. Arbitration Agreements.**

A structure diagram is set out in **Schedule 1**.



Owner and Integrated Management Team

Financial Stakeholders will require demonstration that the Owner is capable of managing the Project.

The first step to enable Financial Stakeholders to become comfortable with the Project is to establish an Owner team that is well resourced, has the expertise and experience and can handle the engineering, logistical and commercial challenges presented by the Project.

The approach that is ultimately taken for a particular Project will depend on the extent to which the Owner:

- wants to and has the capacity to be an active project developer using its own resources
- prefers to, or must, utilise external resources. In this circumstance, an IMT, comprised of the Owner and the External Team Members, can be used to supplement the Owner's resources.

The Owner's approach can be determined by reference to the following criteria.

Drivers	Context
Limited Owner resources	<ul style="list-style-type: none"> • Delivery of projects is not the Owner's core business or the Owner otherwise wants to retain a thin organisational structure and outsource the majority of the project delivery functions. • Owner does not see value in investing in developing its own project delivery systems and processes for a stand-alone project and wants to leverage an IMT's expertise and purpose built project delivery systems and processes.
Owner-side resource constraints in heated market	<ul style="list-style-type: none"> • Booming market conditions with a large number of competing existing projects and project in the pipeline. • Owner needs rapid access to an additional pool of client-side resources to properly staff its project and wants to leverage an IMT's established network of existing resources and expertise.
Larger more complex projects with greater disaggregation required	<ul style="list-style-type: none"> • Owner is forced to split the project scope into a number of packages in response to specialised technology needed and/or contracting market constraints and competition issues.
Project delivery in foreign country or different industry sector or asset type	<ul style="list-style-type: none"> • Owner is expanding its business into new markets and needs to develop infrastructure assets in those countries/sectors to support the business' expansion. • Owner has significant internal domestic project delivery experience but limited experience in those countries or access to resources on the ground in those locations. • Alternatively, the Owner may have delivered projects in the country but not the type of assets needed.
Criticality of achieving project objectives and on time project delivery	<ul style="list-style-type: none"> • Owner is embarking on the delivery of a major strategic infrastructure asset that is critical to the overall business strategy. • The ramifications to the business if the project is not delivered on time and in accordance with other objectives are such that it requires an additional level of project assurance and the Owner is prepared to pay a premium to secure the necessary resources. • Owner engages an IMT to gain access to additional 'best in class' global project delivery experience to enhance its existing project delivery capability with experience and lessons learned from delivering projects under similar brownfield conditions and levels of public scrutiny, with the aim of delivering a world class project that might well exceed existing domestic standards. The aim is not to achieve gold standard, the aim is to create an even higher tier.

Membership of the IMT might change over time and its functions will vary according to the stage of the Project.

The critical advantage of utilising an IMT is that it provides the Owner with access to high levels of expertise from disparate organisations, each of which will bring differing, objective perspectives to the Project. Impartiality is a key benefit of utilising an IMT with appropriate External Team Members.

The External Team Members might be comprised of:

- a Design Delivery Partner
- a Project Delivery Partner
- a Risk Management Partner
- a Project Advisory Partner.

Each of the External Team Members must contribute their expertise and work collaboratively with the Owner and the other External Team Members to:

- review the Owner's assumptions about and expectations of the Project
- prepare and review the preliminary feasibility study
- develop the bankable feasibility study, including:
 - risk assessment, monitoring and mitigation, including insurance
 - HR/IR
 - government relations
- establish and review budgets
- establish and review programmes
- identify and assess Project risks
- develop the Project delivery system
- liaise with the contractor and supplier markets
- develop tender processes
- make threshold design decisions
- develop a logistics strategy
- consider arranging early procurement, especially for long lead items.

Continuity

Financial Stakeholders will be concerned to ensure that the expertise and resources provided by the External Team Members are available throughout the key phases of the Project.

While an unconditional commitment to see the Project through to completion might not be viable at the time of entry into the contracts appointing the External Team Members, these contracts can be structured with timelines and phases that permit the parties to take stock and continue, amend or terminate their involvement in time to minimise disruption to the Project.

Changing roles

The composition of the IMT and the roles of the External Team Members might change with different stages of the Project.

At the outset, the focus of the IMT's efforts will be on the achievement of Financial Close. The early establishment of the IMT is critical. Early involvement facilitates better alignment and collaborative practices, and in turn ensures a proactive approach and commitment to achievement of Financial Close and the Project goals instead of a reactionary approach. From an engineering perspective, early involvement is conducive to lean, 'get it right the first time' practices and minimises re-design and re-work.

This will entail a substantial amount of pre-construction work, including design, procurement, approvals, Financial Stakeholder Management and early works, but it will not involve the commencement of the main construction project.

After Financial Close, some External Team Members might take on more arm's length roles in the design and construction of the Project.

For example, the Design Delivery Partner might become a principal designer and the Project Delivery Partner might move to more of an EPCM contractor role.

In those circumstances, new agreements will be required and the roles of those parties on the IMT will require review.

General contract features

Each External Team Member will enter into an **Integrated Management Team Contract** with the Owner.

Subject to the comments made below in relation to the Project Design Partner, there are five fundamental legal elements involved in the Integrated Management Team Contract:

- The scope of the roles of the external organisations must be clearly described.
- The term of the contract must be agreed, particularly whether the role will continue into Project delivery.
- The role of the external organisations is advisory only. With the exception of the Project Design Partner, they will not undertake actual design or construction activities as part of the integrated team and third party reliance will not be granted on deliverables.
- If any such design and construction activities are performed by the external organisations, they must be done under appropriate separate contracts, with clear provisions in relation to conflicts of interest. The appointment for such activities may not be guaranteed, and the external organisations must be prepared to participate in tender and other procurement processes if required.
- The ability to make claims against the External Team Member is limited, other than in respect of design services.

Project Design Partner



The role of the Project Design Partner is to provide overall advice and direction to the Owner in relation to:

- the design of the end to end system
- equipment selection
- FEED
- Delivery Contract design briefs.

The Owner and the Project Design Partner will enter into the **Project Design Partner Contract**.

The Project Design Partner Contract should be prepared in the light of the following context.

- This contract will include actual design services that go beyond the provision of advice. Critical decisions will be made by the Owner in reliance on the services provided by the Project Design Partner.
- The Project Design Partner might assume the role of a principal designer as the project progresses. If that occurs (and there are significant practical benefits that flow from that continuity) the parties should consider whether the Project Design Partner should continue as a member of the IMT and, if so, how the two roles can be accommodated given the different types of service and the potential for conflicts of interest.
- The Project Design Partner's early design outputs, including the FEED:
 - will be manifested in the form of equipment selections, Project schedule and embedded designs that will be implemented through the Delivery Contracts
 - can irretrievably set the course of the Project.
- The following key considerations will have to be taken into account in preparing the Project Design Partner Contract:
 - **Liability:** The actual engineering scope in the Project Design Partner Contract will give rise to significant potential liability. The interests of the Owners and the Financial Stakeholders will require the Project Design Partner to be liable for its negligence and breaches of contract.
 - **Liability cap:** Such liability will require bankable liability caps and associated requirements for professional indemnity insurance. If the Project Design Partner Contract is novated in whole or in part, as discussed below, that cap will be shared with the novatees.

- **Delivery Contract risk:** In the absence of provisions to the contrary, the Owner will bear the risk of the design work performed by the Project Design Partner. Those designs might be the fundamental basis of the Project's detailed design and effectively lock subsequent designers, suppliers and Works Contractors into fixed design pathways. Financial Stakeholders will expect that Owner held risk to be mitigated. The mitigation measures can include:
 - verification of the key design assumptions by the FSTA, designers, suppliers and Works Contractors
 - early engagement and design workshops to facilitate such verification
 - in some cases the novation of parts of the Project Design Partner Contract.

None of the above measures are perfect and will not always be viable. For example, incoming designers, suppliers and Works Contractors might not accept a verification responsibility in the absence of the opportunity to undertake a root and branch re-design, and novation can be commercially unsatisfactory, especially on a piecemeal basis.

It will be worthwhile considering two further matters in connection with the Design Partner Contract.

- **Task order structure:** It might be useful to adopt a task order structure under the Project Design Partner Contract to facilitate novation and to regulate the scope as the project progresses. As a general principle, the earlier the design responsibility shifts to the Delivery Contractors the better, provided that the Design Delivery Partner is able to maintain consistency of designs in relation to the end to end solution.
- **Separate contracts:** If the Project Design Partner progresses to become a conventional design consultant, a separate agreement will be required. If the Project Design Partner continues as part of the IMT, it will be important to differentiate the scopes of service to which the different contracts, or, preferably, increase the levels of insurance, security (if applicable) and liability caps to match the expanded role.

Project Delivery Partner

The role of the Project Delivery Partner is to provide overall delivery related advice and direction to the Owner in relation to:

- procurement
- budgets and programmes
- project controls and governance
- contract management and administration
- interface and integration management
- testing and commissioning
- initial determinations and valuations.

The Owner and the Project Delivery Partner will enter into the **Project Delivery Partner Contract**.

The Project Delivery Partner Contract should be prepared in the light of the following context:

- The Project Delivery Partner Contract might not include scope for the actual performance of design and construction work. Rather, the scope is more likely to be for the delivery of services in order to augment the Owner's resources.
- The Project Delivery Partner should give comfort to the Financial Stakeholders that the Project is well supported by an adequately resourced, expert delivery partner.

The following key considerations will have to be taken into account in preparing the Project Delivery Partner Contract.

- **Liability:** While the Project Delivery Partner might not perform design and construction, it will provide critical management services which will be relied on by the Owner. As such, the Project Delivery Partner will have potential contractual and tortious liability which will be the subject of appropriate caps and insurance. If actual design and construction work forms part of the scope, the applicable caps and insurance requirements will require further consideration. It is also important to note that there is a likelihood the Project Delivery Partner will insist on a cap that is substantially lower than Financial Stakeholders may want.
- **Scope:** It is essential for the Owner and the Project Delivery Partner to have clear agreement in relation to the scope of the Project Delivery Partner's services. In this context it is particularly important to ensure that the parties are clear about the extent to which the Project Delivery Partner is responsible for the accuracy of the Project budgets and programmes. More particularly:

- Is the budget review an independent cost estimate or an aggregation of prices received from market soundings and other sources?
- Are the Project Programme and sub-programmes the result of the application of the Project Delivery Partner's expertise as a programmer or the synthesis of feedback received from the market?

This is ultimately an issue of reliance: to what extent are the Owner and the Financial Stakeholders relying on the budgets and programmes in proceeding with the Project and has that reliance been accepted by the Project Delivery Partner? Usually, in practice, the Owner and the Financial Stakeholders will rely on the budgets and programmes (with appropriate contingencies); however, the Project Delivery Partner will not warrant their accuracy and, to the contrary, will require express terms that clearly define its role as an aggregator of estimates and forecasts by others, rather than as a provider of original specialist advice.

- **Targets:** The Project Delivery Contract should set out the Project targets that the Owner is aiming to achieve. Those targets might relate to time, capital cost, operating cost and system performance and environmental/social outcomes. In addition to establishing a framework of project drivers, those targets can form the basis of a pain share/gain share regime that incentivises performance.
- **Self-performance:** It is not uncommon for the Project Delivery Partner to undertake actual design and construction work. While such self-performance might be convenient, it must be undertaken in the context of strict probity obligations, both because of the effect of self-performance on market perception and because of the jeopardy to the Owner of having significant work undertaken by a party embedded in the Project with significant inside knowledge and an obvious conflict of interest.
- **Delivery Contract system and terms:** The Project Delivery Partner cannot perform its role without agreement as to the delivery system to be implemented and access to an agreed set of contracts that will form the basis of the Delivery Contracts. In combination, they will encapsulate the Owner's and the Financial Stakeholders' agreed risk profile and method of Project delivery.

- **Processes:** The Owner and the Project Delivery Partner must agree:
 - a delegations framework so that it is clear what the Project Delivery Partner is authorised to do without specific approvals
 - the process for
 - procuring the Delivery Contracts
 - expending funds
 - resources and cost ramp up to reflect the availability of funds and progress to financial close
 - obtaining instructions from the Owner
 - generally conveying and receiving information. In this context it is particularly noteworthy that the Project Delivery Partner is the only Project participant who will have clear end to end vision of the progress of the Project.

- **Roles:** The Project Delivery Partner is likely to play three separate roles under the Delivery Contracts:
 - as agent of the Owner for the purposes of contract administration
 - as an independent valuer of business-as-usual claims, such as progress claims
 - as an initial independent determiner of more contentious claims such as extension of time (**EOT**) and variation claims (provided that the contracting parties and the Financial Stakeholders are aware of this role and are comfortable with any potential conflicts this may raise).

Those roles should be clearly defined in the Project Delivery Contract and reflected consistently in the Delivery Contracts.

If the Project Delivery Partner assumes a different role after Financial Close, similar considerations will apply to those set out in relation to the Project Design Partner.



The Risk Management Partner

The Risk Management Partner will develop:

- a project wide insurance strategy and
- a sophisticated risk analysis and risk mitigation strategy.

Both of those services are critical to the Owner and Financial Stakeholders in the context of a Giga Project.

It is essential for the Owner and the Financial Stakeholders to understand the extent of cover that can be provided, the types of loss that can be insured and the terms, including deductibles, available across the Project.

The extent to which insurance can underwrite risk in a Giga Project is more restricted both because of the value of the project and its potential risk; and because of the reluctance of insurers to over-expose themselves to liability should one or more insurable events detrimentally affect the project.

Risk is different in the context of Giga Projects.

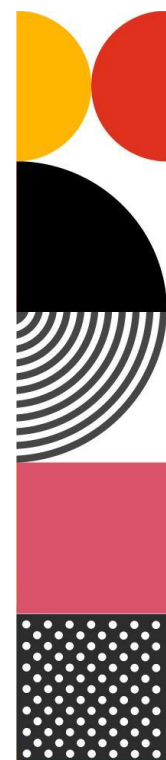
First, scale is an innate risk factor. The effort and organisation required to undertake a multi-billion dollar, technologically, transcontinental project is fundamentally different to a Traditional Project.

Secondly, the range of risks is wider and can include political, economic, climatic and geotechnical issues, especially in transcontinental projects.

The Risk Management Partner should be selected on the basis of relevant international reach and expertise. The Risk Management Partner should also fully understand the importance of adopting a proactive approach to risk identification and mitigation as part of its role. The Risk Management Partner services are more sophisticated than the mere identification of insurance options.

The following key considerations should be taken into account in preparing the Risk Management Partner Contract.

- **Liability:** The Risk Management Partner's advice and recommendations are crucial to the Project and can lead to substantial loss if it is incorrect. Accordingly, the Risk Management Partner will require a reasonable liability cap and professional indemnity insurance cover. It should be noted that any reports or advice will also be conditional on the accuracy of the information provided by the owner and other statistical data relied by it.
- **Reliance:** The Risk Management Partner will require reliance on its services to be confined to the Owner and a closed class of third parties, each of whom will be required to execute a deed limiting the Risk Management Partner's liability and the right to disclose the advice to others.
- **Intellectual property:** While the Risk Management Partner will be prepared to licence or grant full IP ownership of its reports to the Owner, it will not (and possibly cannot) grant IP rights over the underlying materials that are the basis of its reports. Such material is often statistical or factual and is not capable of sustaining IP rights.



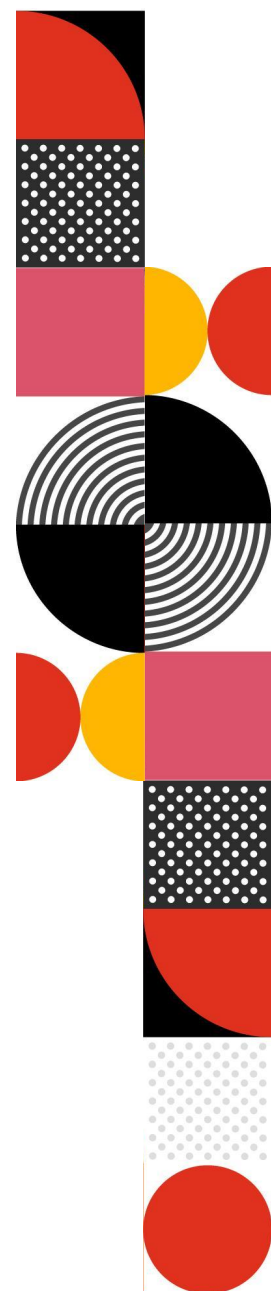
The Project Advisory Partner

The Project Advisory Partner is the glue that holds the IMT together. It may consist of one entity or a combination of entities, such as a law firm, tax firm and investment bank. It is responsible for the formation of the IMT, monitoring its operation and assisting all of the External Team Members to understand their roles and collaborate with each other and the Owner.

The Project Advisory Partner's other roles will include:

- establishment of Project systems, including in relation to:
 - communications
 - IT
 - finance
- legal advice
- tax advice and structuring
- development of Project contracts
- advice in relation to debt and equity raising
- financial modelling and economic review
- assistance with procurement
- administration of the IMT
- management of relations between the IMT members
- market insights, intelligence and updates.

The Project Advisory Partner's role will continue throughout the Project's implementation.



Delivery contracts

Delivery contracts: Consultancy

The Owner will enter into numerous consultancy agreements which will mostly be on customary industry terms.

The key issues with respect to these contracts in a disaggregated project are:

- the extent to which consultants are entitled to rely on information provided by or on behalf of the Owner
- the extent to which design consultants are required to work with other design consultants, suppliers and contractors to ensure that interfaces are managed and the design is integrated on an end to end basis. This function may, in part, be facilitated by a BIM system or similar
- the possibility that the consultancy agreement will be novated to one or more Works Contractors. If the delivery strategy entails such novations, then, if practicable, it will be important to include a task order system for the procurement of services so that they can be novated in parts to different Works Contractors
- the extent to which the design consultants are required to verify any design assumptions that are embedded in preliminary designs or FEED packages that are provided by the Owner
- it is important to have a clear understanding about whether the design consultant is responsible for the detailed completion/documentation of a concept design or FEED that has been provided by the Owner (and can rely on the assumptions embedded in those preliminary designs) or whether it must review and validate the concept design or FEED and then undertake the detailed design.

Delivery contracts: Supply

In a disaggregated model the Owner will often enter into more supply contracts than usual, especially in the context of renewable energy projects. This is attributable to a number of factors, including:

- the relatively significant scope of equipment supply as opposed to the performance of onsite work
- the cost savings that can be achieved through FIM
- the time savings that can be achieved.

While Owner initiated procurement can be advantageous, its extent should be considered in the context of the following questions:

- Are the Owner and the Financial Stakeholders prepared to accept the time, cost and fitness for purpose risks in relation to the procurement?
- Has the Owner factored in supply chain uncertainty?
- Does the Owner intend to novate the supply contract to a Works Contractor?
- Does the equipment selection mandate future design and/or construction decisions by hard wiring in technologies?

The Owner should also be mindful that supply contracts are often less detailed than EPC contracts and can be on vendor terms. This gives rise to further issues, particularly whether:

- the liability cap and security provisions are adequate
- the security can be held until the equipment has been successfully commissioned or must be returned on delivery
- the law of the contract is appropriate
- the dispute resolution provisions are consistent with the project wide dispute resolution strategy.

Delivery contracts: EPC

Works contracts (often EPC contracts) will generally make up the bulk of the Project. They will range from conventional civil works through to technology driven design and construct arrangements.

The Financial Stakeholders will have particular interest in the EPC contracts because they will:

- be the source of most of the security and available liability caps
- have significant well capitalised counterparties
- be the biggest aggregation of design and construct warranties.

The EPC contracts can be expected to follow largely industry accepted terms, however, there are a number of special issues that must be considered in a disaggregated project. These issues are fundamentally concerned with the management of interfaces, integration and Owner inputs. From a legal perspective, the fewer the interfaces and Owner inputs the lower the risks; however, the practical exigencies of procurement and engineering must sometimes prevail over legal risk.

Interface and integration are connected, but not identical issues; however, in broad terms, both are concerned with the interaction between contracts where there is a physical, temporal or technological connection in the context of liability and the performance and fitness for purpose of the end to end system.

In a traditional EPC contract the interface and integration issues are comparatively limited because the EPC Contractor substantially accepts the risk and responsibility to produce a project that is fit for purpose, by a nominated time and for an agreed price.

In a disaggregated project there is no such single point of responsibility and control. The Owner must knit together its own inputs with the inputs of various designers, suppliers and contractors to produce the end to end system.

While this paper focuses on the legal aspects of this process, successful management of interface/integration will be the result of careful engineering and, in particular:

- clear scope delineation between packages
- a detailed understanding of the interface/integration issues
- a general willingness of all Project participants to cooperate
- step by step design, defects, testing and commissioning processes that identify and solve issues as quickly as possible.

Contractual interface and integration strategies

- **The contract structure should reflect the engineering interfaces**

- This will require each of the relevant EPC contracts (**Subject Contract**) to recognise the role of the interfaces and the relationship with other contracts (**Interface Contracts**).
- The relationships between a **Subject Contractor** and the **Interface Contractors** should be documented directly between them in an **Interface and Integration Deed**, which will set out, the rights and obligations of the Contractors as between each other and the dispute resolution process that will apply between them.
- One of the purposes of the Interface and Integration Deed dispute resolution system should be to insulate the Owner from liability to a Subject Contractor where that liability arises out of the breach of another EPC contract or the Interface and Integration Deed by an Interface Contractor.

- Interfaces between a Subject Contractor and designers and suppliers might be able to managed by Interface and Integration Deeds, but this will not always be the case. In such circumstances, the Owner's risk minimisation will be based on:
 - novation, and/or
 - product/design verification by the Subject Contractor, and/or
 - a detailed design and procurement process that limits the possibility of interface inconsistency.
- **The tender process should result in the identification of as many interface/integration points as possible**
 - This can be achieved through a combination of Owner nominated interface/integration points and specifications and tenderer nominations. This will be a critical element of the tender process.
 - The interface/integration points will flow two ways:
 - **TO** the Subject Contractor in the form of the interface/integration points and specifications provided by the Owner and Interface Contractors (**Input Interface Specifications**).
 - **FROM** the Subject Contractor advising the Owner and Interface Contractors of its interface/integration points and specifications (**Output Interface Specifications**).
 - The result should be a series of warranties given by the EPC Contractor in the EPC contract and the Interface and Integration Deed to the effect that:
 - in relation to the Input Interface Specifications:
 - › it is aware of and has tendered on the basis of the Input Interface Specifications
 - › if the requirements of the Input Interface Specifications are fulfilled by the Interface Contractors:
 - its scope of works will integrate with the nominated interfacing scopes
 - it will not have any claim or defence against the Owner or an Interface Contractor on the basis of interface issues
 - in relation to the Output Interface Specifications:
 - › it has fully stipulated the integration/interface conditions and is aware that they will be included in Interface Contracts by the Owner
 - › it will not change or augment the Output Interface Specifications without notifying the Owner and the Interface Contractors
 - › will bear the time, cost and performance risks of any such change or augmentation.

- ***The tender process should obtain tenderers' views in relation to potential suppliers and their products***

Tenderers can be required to include their views in relation to potential suppliers, supply terms and product selection as part of the tender process, both in order to reduce risk generally and also to enhance the ease of supply contract novation if desired.

- ***An ECI process can clarify scope, price, programme and interfaces***

Early contractor involvement, whether at tender stage (as a competitive ECI) or after appointment of a preferred contractor, can be used to clarify key issues, including interface points, prior to the finalisation of the relevant EPC contracts.

- ***The overall Project governance system should include an interface and integration group to identify, monitor and resolve interface and integration issues***

A sample governance structure for delivery activities is set out in **Schedule 2**.

- ***The issues notification process should identify interface and integration issues and, together with the dispute resolution process should be a single, seamless system for issues identification and resolution***

A sample issues process is set out in **Schedule 3**.

- ***The design development process should involve Interface Contractors***

The extent to which the process set out below is practicable must be assessed on a case by case basis.

The tender stage designs will be developed throughout the lives of the EPC contracts. To the extent practicable, the design development stages should include the Interface Contractors who should be given the opportunity to review those designs that concern the Input Interface Specifications.

If an Interface Contractor considers that a design does not fulfill the requirements of or is not consistent with an Input Interface Specifications, it must raise the issue.

If the issue is not resolved, it will be an Interface Dispute under the Interface and Integration Deed and subject to the dispute resolution process set out in the Interface and Integration Deed.

If the Interface Contractor does not raise the issue, it waives its rights in relation to whether the design complies with the Input Interface Specification.

This process will rarely be perfect. As a general rule, the process will diminish in its effectiveness in line with the generality of the Input Interfaces because where a requirement is stated only in general terms, it will be easier to assert compliance with them.

- ***The defects process should involve Interface Contractors***

It is desirable for the Interface Contractors to be involved in the defects process at fixed times including prior to mechanical completion.

If the Interface Contractor identifies a defect, the Subject Contractor should be required to rectify it unless it is disputed. Such a dispute will be an Interface Dispute. It is important that defects are fixed as soon as possible, rather than delaying while the parties undertake a dispute resolution process to determine who was at fault. It is helpful to have an accelerated dispute resolution process for these situations.

It should be noted that if mechanical completion is not achieved due to a failure to fulfill an Output Interface Specification, there might be delay liquidated damages consequences for the Subject Contractor. Accordingly, it will be important to determine which Output Interface Specifications are prerequisites to mechanical completion under the Subject Contract.

- ***The testing and commissioning process should involve Interface Contractors***

In some instances, the testing and commissioning processes will determine whether the Output Interface Specifications have been fulfilled. The Interface Contractors should be provided with the test and commissioning results in those instances so as to verify compliance.

The overall testing and commissioning programme might have to be sequenced in a manner that demonstrates that the end to end system operates as required.

- ***The completion process might be more complex***

The need to establish end to end performance might require the individual EPC contracts to have a multi-stage completion process featuring:

- **Conditional Mechanical Completion**, being when the relevant Works have been completed and have passed their individual commissioning/ functional tests
- **System Mechanical Completion**, being when the end to end system has been completed and has been successfully commissioned
- **Steady State Operation**, being when the Project has been operated satisfactorily for a period that indicates that the Project is capable of sustained acceptable performance (and permits a commercial refinance to reduce borrowing costs).

These stages will have different contractual consequences in relation to matters such as:

- the timing of handover
- the assessment of delay and performance liquidated damages
- the timing of the defects liability period
- the return of security.

Set out below is a table that illustrates how these issues can be categorised.

Issue	Conditional Mechanical Completion	System Mechanical Completion	Commercial Operation
Hand over	The Owner will probably take possession of the Works at Conditional Mechanical Completion and be responsible for insurance, maintenance and site security. This might be achieved by passing possession on to a following contractor.		
Delay Liquidated Damages (DLDs)	DLDs will probably be linked to Conditional Mechanical Completion.		
Performance Liquidated Damages	These will probably be referenced to the performance of the Works rather than the end to end system, however, appropriate testing might not be possible at Conditional Mechanical Completion. The issue will be addressed on a contract by contract basis.	Possibly.	Possibly.
Defects Liability Period (DLP)	The DLP will commence at Conditional Mechanical Completion.	This might be a possible end date, especially given that the operator will be in possession of the Works.	Possibly, in conjunction with the Operator.
Security return	A percentage step down will occur at this stage.	A further percentage step down will occur at this stage.	Possibly, a further percentage step down will occur at this stage.

Delivery contracts: Interface and integration deeds

The purposes of the Interface and Integration Deeds are to:

- clarify the roles and responsibilities of the designers, suppliers and contractors whose scopes interface with each other or must be integrated with each other
- deal with site related issues such as safety and access
- establish administrative and technical processes such as in relation to handover, completion and defects
- set up a dispute resolution system to matters that relate to interface and integration issues. As stated above, it is helpful to establish an accelerated dispute resolution scheme and adopt a 'cure first, allocate blame later' principle.

Interface and Integration Deeds can be established on a contract by contract basis or on a project-wide basis under a mechanism which invokes that at the direction of the Owner.

While the primary role of the Interface and Integration Deeds is the prevention of disputes and the enhancement of interface and integration management, a secondary role is to insulate the Owner to the greatest possible extent from liability in interface and integration disputes.

A key challenge is to persuade Works Contractors and suppliers to enter into arrangements, such as Interface and Integration Deeds that not only create rights, but also establish direct liabilities, preferably eliminating liability of the Owner. In particular, non-defaulting contractors will look to the Owner if they cannot recover against a defaulting contractor, for example, because of its liability cap. Non-defaulting contractors will want the Owner to share the pain. That issue can be addressed in part by:

- prescribing clear priorities and processes in relation to liability caps and security
- establishing a separate dispute resolution stream for interface disputes (see below)
- contracting with reputable and well capitalised contractors and suppliers
- minimising interfaces
- allowing tenderers to bid as consortia with joint and several liability.

Delivery contracts: Security package

One of the inherent characteristics of project financing is its non-recourse nature. There are few, if any, securities available outside those created by the project documents. Accordingly, Financial Stakeholders are keen to ensure that the project delivery structure establishes sufficient security.

This is achieved in the following ways:

- **Bank Side Deeds** that create pre-emptive rights for Financial Stakeholders to step into and control all key agreements to which the Owner is a party after Owner default
- **Step In Deeds** that extend the Debt Financier's pre-emptive rights down the contractual chain to agreements such as those between the Works Contractors and Key Subcontractors
- the requirement that all significant Delivery Contracts require contractors and suppliers to provide readily accessible unconditional security and parent/third party guarantee/indemnity security in favour of the Owner (which will be controlled by the Financial Stakeholders through the facility documents)
- readily accessible unconditional security to support any advance payments, especially for FIM
- generally appropriate payment terms monitored by the FSTA.

Readily accessible unconditional security requires that the security is:

- in the form of an unconditional bank/insurance company bond
- given by an approved and adequately rated institution
- capable of easy enforcement.

In this regard, it is important to carefully scrutinise the terms of any bank or insurance bonds/guarantees provided as part of the security package. Those instruments might be subject to the **ICC Uniform Rules for Demand Guarantees URDG 758 (URDG)**. The URDG sets out rules for making and honouring demands on unconditional bank guarantees.

The rules are generally consistent with the approach taken in Australia, however, Articles 34 and 35 stipulate:

- the governing law of the guarantee is the place of the guarantor's branch that issued the guarantee
- the jurisdiction for the resolution of disputes is a competent court in the location of the guarantor's branch that issued the guarantee.

Ideally, that risk can be mitigated by:

- requiring that the securities be issued by Australian entities or the Australian branch of a foreign entity
- ensuring that the law of the security is the law of an Australian State
- the Australian courts are given exclusive jurisdiction.

Of course, the ability to achieve such mitigation is dependent on the parties' bargaining power, particularly the willingness of foreign banks to be subject to a different jurisdiction. That issue is best addressed by ensuring that the underlying contract stipulates the form of the security and includes an approved form.



Financial Stakeholders' Technical Advisor

The roles of the FSTA are to:

- undertake due diligence on the technical/engineering aspects of the Project, including designs, site conditions and factory inspections and testing, on behalf of the Financial Stakeholders, which is usually set out in a due diligence report
- certify the payment of progress claims to the Financial Stakeholders (more particularly debt providers) to permit the release of funds to the extent provided by the Financial Stakeholders
- attend at testing and commissioning
- review and verify testing and commissioning data
- verify that the various stages of completion have been achieved.

It should be noted that payment certification by the FSTA in the context of the loan facility documents will not be binding on payees under the Delivery Contracts. Their entitlements will be governed by the Delivery Contracts and the applicable security of payment legislation.

The FSTA is paid for by the Owner.

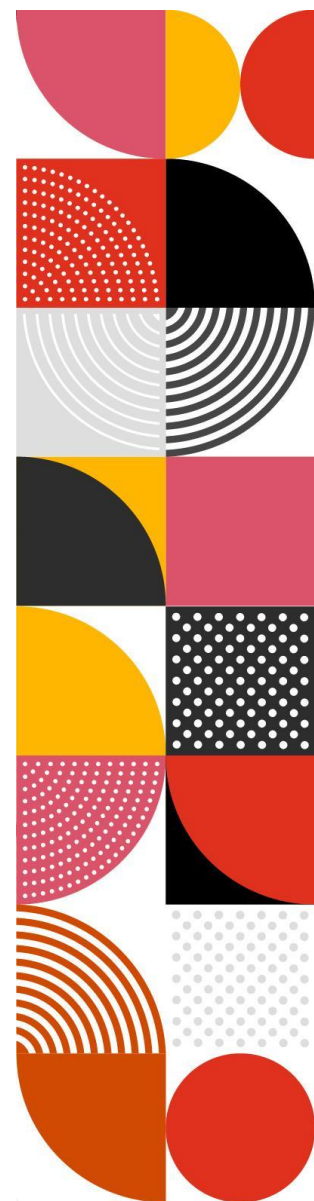
The FSTA might be appointed by the Owner prior to the formation of the financier syndicate, in which case:

- it must be a well known organisation acceptable to the Financial Stakeholders
- the agreement must be prepared on the basis that:
 - amendments might be required by the Financial Stakeholders
 - it can be novated to the Financial Stakeholders (more particularly debt providers)
 - probably, that from such novation, the obligations of the FSTA are owed solely to the Financial Stakeholders (and not to the Owner).

The issue of reliance will arise in relation to the materials prepared by the FSTA, particularly the due diligence report. Market practice is that the recipient of any such materials must sign a letter agreement or a deed poll:

- confirming that it will not disclose the materials
- setting out the purposes of reliance
- agreeing a liability cap and exclusion of indirect and consequential loss in relation to reliance.

In most situations, it is prudent to engage the FSTA early in the design and development process to improve their understanding of the Project and give additional comfort to the Financial Stakeholders.



Independent Certifier

The decision to appoint an IC or a panel of ICs is one of the central considerations in the structuring of the Project.

It is closely connected with the certification process and the dispute resolution system.

The use of an IC has the advantage of bringing objectivity to the assessment process. The IC can also build up familiarity with the Project and the parties, thereby making better and more sustainable decisions.

The IC does add an expense, however, that expense is minor when compared with the cost of numerous disputes, even if they are not significant.

At its most broad, the role of the IC will encompass:

- resolution of ambiguities in technical documents
- certification of progress payment claims
- determination of progress claim disputes
- valuation of variations and other contract adjustments
- determination of disputes concerning valuation of variations and other contract adjustments
- assessment of extensions of time
- determination of disputes concerning extensions of time
- certification of stages of completion
- determination of disputes concerning stages of completion
- determination of disputes concerning defects.

For all of the functions set out above, the IC can be the initial determiner of the matter or, more usually, the initial determiner of a dispute that arises out of a decision made by the Owner's representative under the contract (usually the Project Delivery Partner). If the IC is the initial determiner of a dispute, the issue is then whether the determination is final and binding or merely a step on the dispute pathway. This issue is discussed in further detail below.

The IC Contract is a complex agreement which is characterised by the following features:

- An initial overarching IC Deed is entered into by the Owner and the IC. That deed sets out the terms of the IC's appointment, including in relation to:
 - services
 - payment
 - liability caps and exclusions
 - insurance

- independence
- standard of care
- the use of subconsultants for specialised tasks (such as Programme/EOT assessments).

As each applicable contract is entered into by the Owner a separate deed is entered into by the Owner, the IC and the contractor that:

- retains the IC for the specific contract
- binds the contractor to the terms in the deed between the IC and the Owner and makes any amendments that are agreed
- specifies the specific services in relation to that contract
- allocates or otherwise sets out how the IC's overall liability cap is to be accessed.

The final point is of particular importance.

As discussed below, among the reasons for the appointment of an IC is that its decisions are made independently and not on behalf of the Owner. If the determination is final and binding, the parties cannot have recourse against each other but must claim against the IC on the basis of negligence or a contractual ground under the IC deed. The IC will have a comparatively modest liability cap that must be able to be used by all of the contractors and the Owner. Such sharing can be on a first come first served basis or specially allocated. In practice, this really means that the parties have agreed to live with the final and binding IC determinations.

The IC can be a single organisation or drawn from a panel of organisations. The second approach is appropriate where the IC has resource constraints or the issues that arise under the Delivery Contracts require a variety of experts.

Dispute resolution



The negative impacts of significant disputes are manifested through:

- time delays and cost
- distraction of key resources
- relationship damage
- reputational impact
- technical/temporal failure.

Almost all disputes are settled because the time, cost and risk involved militate against completing the process. That is not the case with mega-disputes up to giga-disputes, where the scale of the project is reflected in the scale of the dispute and make completing the process feasible and the loss unable to be sustained.

It is essential to develop a system that manages all disputes effectively and minimises the prospects of a significant dispute.

A well-prepared dispute resolution system combines three elements:

- prevention
- management
- resolution.

The dispute resolution system must take into account a number of key issues when considering those matters, particularly:

- the number of interfaces
- international jurisdictions
- project scale
- the concerns of the Financial Stakeholders.

Prevention

Dispute prevention/minimisation can be enhanced by the following elements:

- a realistic identification of key project risks and how to manage those risks most effectively
- a well defined and thorough tender process that leads to the selection of the best contractor on realistic terms
- an ECI process that defines the Project scope, price and Programme on the basis of the best possible information
- at the time of contract execution, the alignment of the level of scope certainty and risk allocation in relation to the development of the scope

- clear, consistent, constant communication
- predictive project management tools and processes that facilitate the identification of issues at the earliest possible stage.

Management

The Project will require a system of governance that manages issues that have the potential to develop into disputes in a manner that focuses on:

- early issue identification
- issue evaluation
- solutions
- pan-project communication, especially in relation to interfaces.

This is best achieved through a combination of:

- a realistic notice system that involves:
 - early issue notices
 - detailed issue notices
 - notification to interface parties
- a governance system that facilitates communication at:
 - contract level
 - strategic level
 - with interface parties, and
- a claims process that:
 - maximises early resolution/finality
 - restricts the number of claims that can move into arbitration or litigation
 - results in the exchange of information about the issue so that it can be managed.

A sample governance process for claims is set out in **Schedule 2**.

Resolution

Effective resolution requires disputes to be resolved:

- as soon as sensibly possible
- as economically as sensibly possible
- in a manner that is likely to be acceptable to all stakeholders, including the Financial Stakeholders
- consistently across contracts
- at the appropriate point, with finality.

Resolution options

Disputes differ widely and the processes for their resolution should be tailored for the specific dispute type.

- This involves categorising and charting the applicable resolution process by reference to:
 - subject matter
 - quantum (of money and/or time)
 - whether an interface is involved
 - the point at which the parties are prepared to accept finality.

The process must also take into account:

- relevant legislation, such as security of payment and proportionate liability legislation
- whether it is an international dispute
- the role of insurance
- the nature of the parties' relationship.

Fundamental to any dispute resolution system is the point at which a determination becomes final and the parties must accept it without any further rights of appeal or re-hearing.

In developing a dispute resolution system, the parties should take into account the following further matters:

- What type of disputes do they want to have resolved while construction is underway and what type are they willing to have resolved after the completion of construction?
- To what extent do the parties wish to control the appointment of the determiner and the process utilised?
- How much are the parties prepared to spend on the process and different types of disputes?
- What level of reliability do the parties and the Financial Stakeholders require for different levels of disputes?

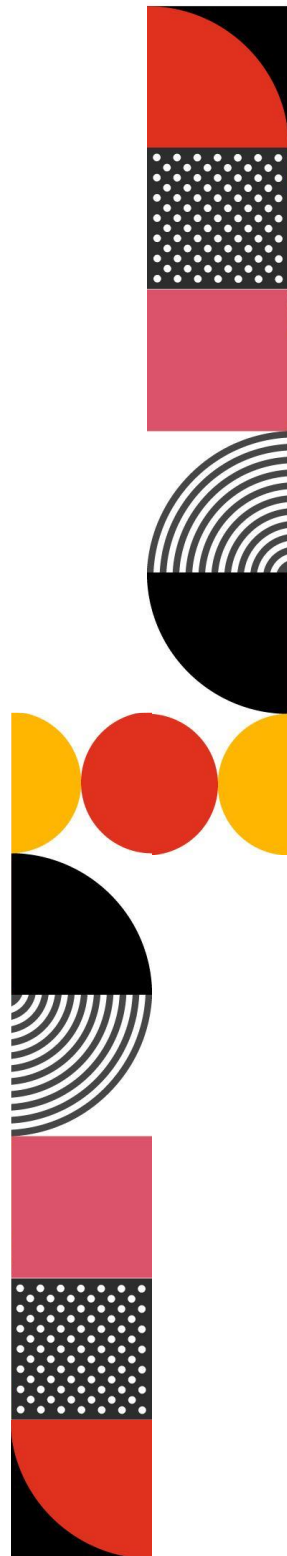
Set out below is a sample table that categorises different types of disputes, how they are resolved and the point of finality.

The numbers indicate the sequence of the applicable steps.

The red boxes indicate the point of finality.

This is a sample only and the process must be analysed on a case by case basis. It should also be noted that other dispute resolution alternatives, such as a dispute avoidance board can be considered.

It should also be noted that these processes commence after the issues process set out in **Schedule 3** has been completed.



Dispute type	Owner's Rep	External executive intervention	IC	Mediation	Expert determination	Arbitration	Court
Variation valuation up to \$10M	1	2					
Variation valuation \$10M to \$50M	1	2	3	4	5		
Variation valuation over \$50M	1	2	3	4	5	6	
Progress Payment claim	1	2					
Recourse to security							1
Intellectual property breach							1
Existence of a Latent Condition	1	2					
Defects with a rectification cost up to \$10M	1	2			4		
Defects with a rectification cost \$10M to \$50M	1	2	3	4	5		
Defects with a rectification cost over \$50M	1	2	3	4	5	6	
Achievement of a stage of completion	1	2					
Provisional sum calculation	1	2					
EOT up to 60 days	1	2					
EOT 60 to 120 days	1	2	3		4		
EOT over 120 days	1	2			4	5	
Delay costs up to \$10M	1	2			4		
Delay costs \$10M to \$50M	1	2	3	4	5		
Delay costs over \$50M	1	2	3	4	5	6	

Each of the potential processes have characteristics that should be considered when preparing the relevant contract.

Owner's Representative

The Owner's Representative will often be the first level determiner of claims because they can do so quickly and with the most available information.

When drafting the contract it is important to ensure that the Owner's Representative is not acting as the Owner's agent for these purposes, but is an independent determiner. The reason for the distinction is to avoid the possibility that the claimant can raise a dispute against the Owner not just on the basis of the circumstances of the claim itself, but also on the basis of the Owner's failure to ensure that Owner's Representative has acted in an honest and reasonable manner. Technically, progression to the next stage of the disputes process should be on the basis of a de novo consideration of the claim itself, rather than on the basis of a failure to determine it in an honest and reasonable manner.

External executive intervention

External executive intervention is an opportunity for senior executives to resolve the dispute, possible on broad commercial grounds, rather than solely by reference to the specific merits of the claim itself.

The intervention should involve executives at a senior level who are somewhat removed from the day to day management of the contract and who are able to make decisions on a more objective basis.

Independent Certifier

The IC is appointed by all of the parties to the dispute.

The parties will be obliged to co-operate with the IC, including in relation to the provision of information.

The critical issues to be considered are:

- the matters where the IC's determination will be final and binding
- whether such final and binding status should be subject to review in cases of errors of fact or law that appear on the face of the determination.

If the parties are seeking early finality in relation to the category of disputes that are to be determined by the IC, they must be aware that the error of fact or law exclusion can open the door to a further round of litigation/dispute that can be used tactically to prolong the dispute process.

Mediation

Mediation can be used as the final stage of negotiation before a dispute moves into the imposition of a determination of an external party.

It can often be an effective means of dispute resolution, but it suffers from the following disadvantages:

- It can take a considerable time to organise and complete. Accordingly, in the absence of a contractual mechanism that enables the mediation to be conducted speedily, it is often used in the second phase of the disputes process, as a step that is preliminary to external determination, rather than as a means of achieving a resolution while the Project is underway.

- If it is poorly managed, mediation can actually drive the parties further apart rather than bring them together. In this regard it is important to consider whether the mediation process should mimic the legal process with legal representatives presenting a case, or if it should be more focussed on commercial issues and pathways to resolution.

Expert determination

Expert determination is an attractive method for resolving predominately technical disputes. Accordingly, it can be useful where the claim concerns valuation, extension of time assessment, performance testing or the technical interpretation of specifications.

Its success depends on the selection of the appropriate experts and the use of rules and processes that are conducive to technical discussion rather than those which replicate legal debate. If possible, experts for various categories of disputes should be pre-selected in the contract.

Arbitration

Arbitration is sometimes preferred over Courts as a means of determining disputes because it is confidential and is perceived by some to be less expensive and more efficient.

The primary difficulties with all arbitrations, in the absence of careful contractual control, are that:

- arbitrators can be of varying quality and the better ones are busy
- they can descend into procedural complexity
- they are costly
- they are vulnerable to delay as the parties jostle in relation to the identity of the arbitrator, the terms of the arbitration and various other preliminary and procedural issues.

The parties can mitigate these risks in their contract by agreeing:

- the identity of the arbitrator or a panel of arbitrators
- the precise rules that will apply in different categories of disputes in relation to matters such as:
 - the extent of verbal evidence
 - the use of written evidence
 - the time allowed for submissions and evidence presentation
 - the time allowed for an award.

Arbitration must be viewed in domestic and international contexts.

In all cases:

- an appropriate domestic capital city should be nominated as the seat and venue of the arbitration
- the Delivery Contract and the rules of the arbitration should provide for the joinder of parties and the consolidation of disputes, especially in the context of interface disputes.

It is also prudent to assess the enforceability of any judgment or award when designing the dispute resolution system if the counter party or its guarantor is a foreign entity.

The ***Convention for the Recognition and Enforcement of Foreign Arbitral Awards (New York Convention)*** provides significant advantages for countries who are signatories to it. The New York Convention should be expressly adopted in the Delivery Contract.

Court

Court based litigation has a number of advantages:

- The Courts are provided for no cost.
- Judges are experienced and of a generally high quality.
- Many Court procedures are now well suited for technical disputes.
- Judges are often skilled at controlling the abuse of the process or time wasting.
- The judgement is usually reliable and accepted by the parties.

However:

- demands in the Court system can lead to considerable delays in the resolution of cases
- expensive lawyers and experts are inevitably involved
- judges rely on experts rather than having inherent expertise
- Court proceedings are public.

Accordingly, the parties might consider that court proceedings should be confined to high value disputes with a significant legal element.

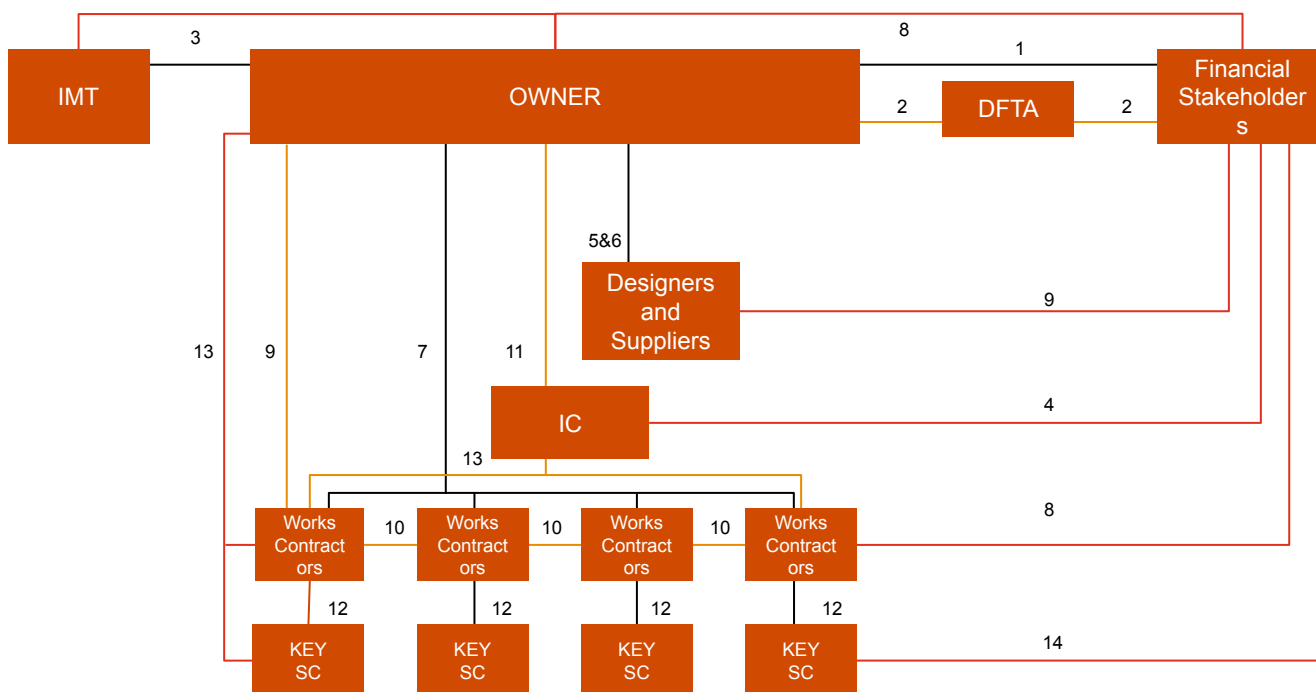
Conclusion

While disaggregation presents challenges, it also creates opportunities for cost savings, technology enhancements and more nimble relationships with key stakeholders.

The key to their structuring is to take into account and balance the requirements of all stakeholders from an early stage and to approach contract drafting in a realistic and specific manner on a case by case basis and, most importantly, to assess the key risks (including interface and integration) and to prepare scopes of work, general conditions and processes that facilitate the monitoring and management of those risks.

Through its expertise and experience in relation to Giga Projects, PwC can assist Project Owners, Contractors and Financial Stakeholders in understanding and delivering the appropriate structure and robust contract systems for disaggregated projects.

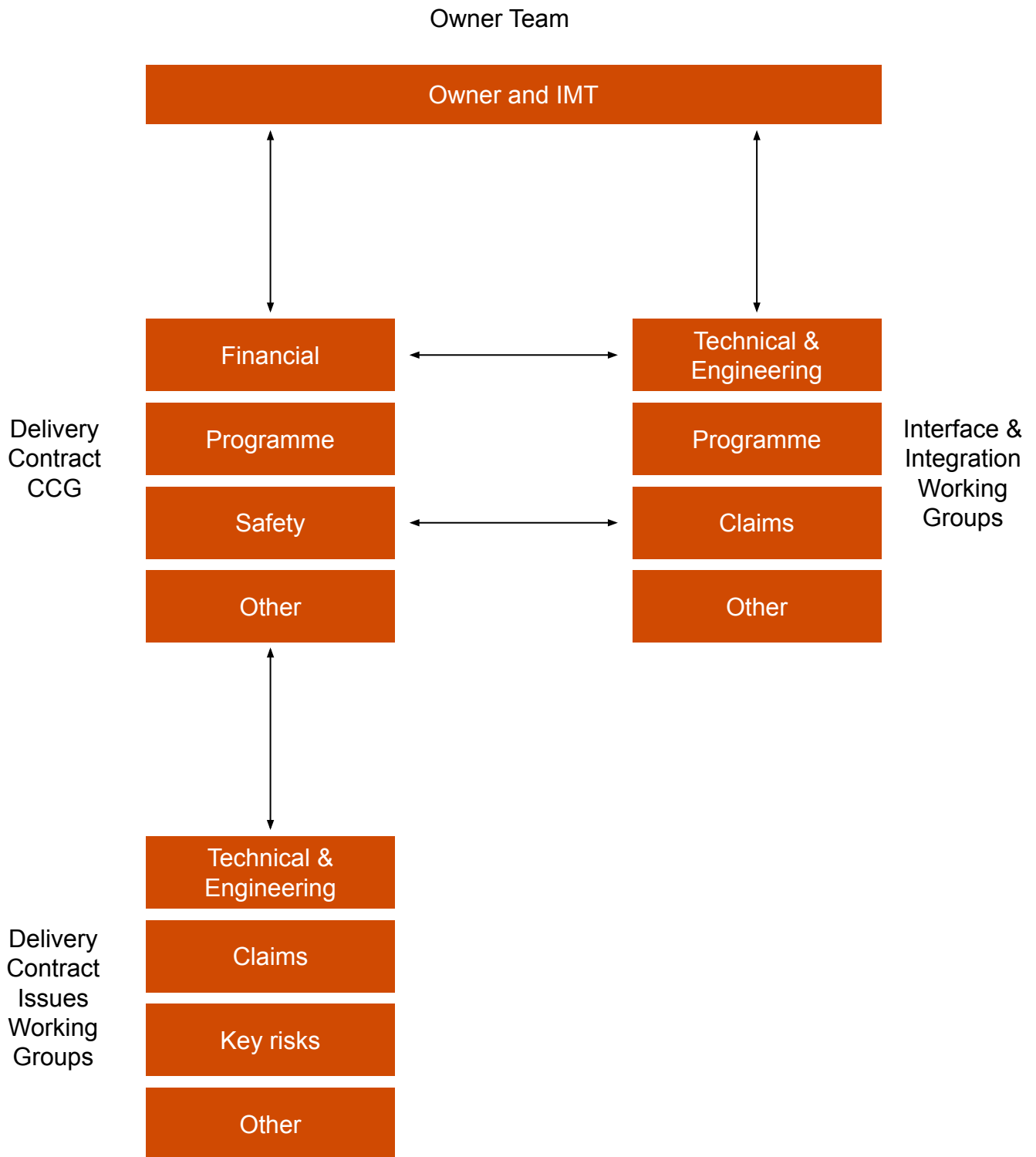
Schedule 1



Schedule 1 notes

1. **Facility Documents:** the various financing agreements between the Owner and its guarantors, equity financiers and the Financial Stakeholders
2. **FSTA Contract:** between the Financial Stakeholders (or their representative), the Owner and the FSTA
3. **Integrated Management Team Contracts:** between the external members of the IMT (Project Design Partner, Project Delivery Partner, Risk Management Partner and Project Advisory Partner) and the Owner (where applicable – see section 6 of this paper)
4. **Bank Side Deeds:** between the Owner, the IC, the External Team Members (respectively) and the representative of the applicable Financial Stakeholders, primarily to deal with the rights and obligations of the parties in the event of termination of those contracts and the insolvency of the Owner
5. **Delivery Design Contracts:** FEED, design consultancies and supply contracts
6. **Delivery Supply Contracts:** supply arrangements, including FIM
7. **Delivery Design and Construction Contracts:** contracts pertaining to the construction of the Project, including EPC contracts and ECI contracts
8. **Bank Side Deeds:** between the Owner, the relevant Delivery Contractors and the representative of the Financial Stakeholders primarily to deal with the rights and obligations of the parties in the event of termination of those contracts and the insolvency of the Owner
9. **Deeds of Novation:** between the consultants, suppliers originally engaged by the Owner (where required to secure pricing or schedule) and the Works Contractors to which the relationship is novated
10. **Interface and Integration Deeds:** between the Owner and the Works Contractors with interfacing Works Contractors (and possibly consultants, logistics providers and suppliers)
11. **Independent Certifier Deeds:** between the Owner, the IC and the Works Contractors
12. **Key Subcontracts:** between the Works Contractors and Key Subcontractors
13. **Key Subcontract Step In Deeds:** between the Works Contractors, Key Subcontractors and the Owner
14. **Key Subcontractor Bank Side Deeds:** between the Works Contractors and Key Subcontractors and the representative of the applicable Financial Stakeholders, primarily to deal with the rights and obligations of the parties in the event of termination of those contracts
15. **Expert Determination Agreements** and
16. **Arbitration Agreements.**

Schedule 2



Schedule 2 notes:

The Project's overall governance structure will be complex and made up of numerous elements, including forums that directly involve the Debt Financiers.

For delivery purposes the structure might consist of four primary elements:

- the Owner Team
- the Delivery Contract Control Groups
- the Delivery Contract Issues Working Groups
- the Interface and Integration Working Groups.

Owner Team

The Owner Team will be comprised of the Owner, the IMT members and other invitees nominated by the Owner.

The Owner Team will be responsible for:

- overall project control and direction
- monitoring claims
- interaction with key stakeholders, including Debt Financiers
- monitoring and resolving interface and integration issues.

The Owner Team will receive information through a reporting system from:

- the Owner's Representative
- the Contract Control Group
- the Interface and Integration Working Groups.

Owner level decisions might be implemented through:

- directions, including variation orders, which will be flowed down to the Delivery Contracts through the Owner's Representative
- amendments to Delivery Contracts.

Delivery Contract Control Group

The Contract Control Group (**CCG**) is the principal governance body for each Delivery Contract on an Owner/Delivery Contractor level, especially the EPC contracts.

An Owner's Representative will be a permanent member of the CCG.

The CCG will monitor issues such as:

- financial matters
- claims
- programme
- safety
- other matters agreed by the parties in which the Owner has an interest.

The CCG will report to the Owner Team and will provide information to and receive information from the Delivery Contract Issues Working Groups and the Interface and Integration Working Group.

Delivery Contractors will have further subcontract level governance bodies.

Delivery Contract Issues Working Groups

The Delivery Contract Issues Working Groups will monitor and seek to resolve specific issues that emerge in connection with the Delivery Contract and will report to the CCG.

An Owner's Representative will be a permanent member of the CCG.

At the outset, the parties might agree a range of key risks that should be the subject of an Issues Working Group and others might be added over time.

Day 1 Issues might include:

- specific technical issues
- key risks
- claims resolution.

The Issues Working Groups will be an important step in the dispute resolution process in relation to non-interface disputes. Claims will be explored, considered and negotiated in detail with a view to arriving at an early commercial and technical resolution and identifying areas of genuine dispute.

Interface and Integration Working Groups

The Interface and Integration Working Groups are a key method for monitoring and resolving interface and integration issues in the disaggregated model. They will be as required to bring together the Delivery Contractors whose scope interface with each other, or whose works must be integrated for the project to operate successfully on an end to end basis.

Designers, suppliers and EPC contractors might be members of one or more Interface and Integration Working Groups. The Owner's Representative will be a permanent member.

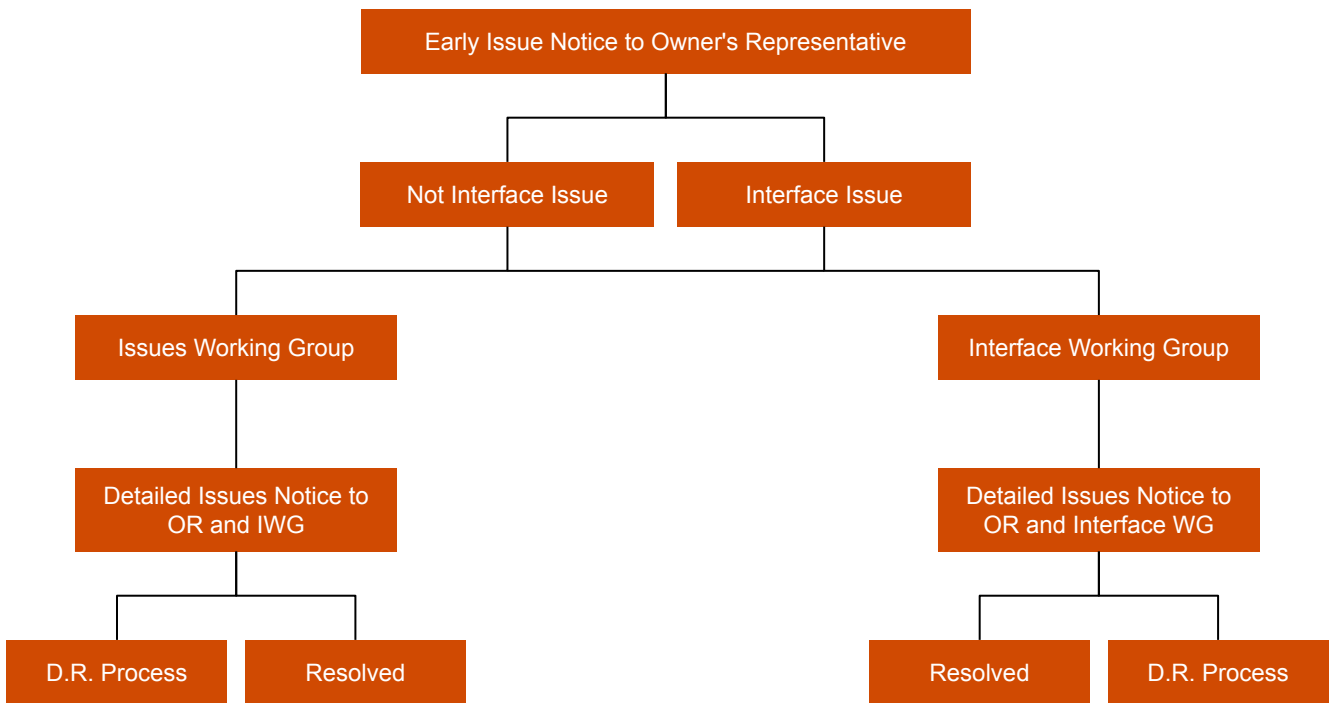
The Interface and Integration Working Groups will report to each CCG of Delivery Contractors who are members and directly to the Owner Team.

The purpose of the Interface and Integration Working Groups is to identify, monitor and resolve interface and integration issues.

The Interface and Integration Working Groups will be a stage in the dispute resolution process in relation to interface disputes. The use of the Interface and Integration Working Groups will permit interface disputes to be considered in the context of all relevant Delivery Contracts and encourage the development of solutions that take into account all related issues, rather than those that are confined to a single contract.



Schedule 3



Schedule 3 notes

The purpose of the issues notification process is to facilitate the consideration of issues in a manner that is conducive to problem definition and solution.

The process involves the following steps.

Step 1: An Early Issue Notice (**EIN**) is delivered to the Owner's Representative. That notice is designed to raise an alert in relation to the relevant matter and to permit the Owner's Representative to:

- broadly understand the issues
- determine whether they are an Interface Issue, that is, a matter that affects interfacing Delivery Contracts and/or integration issues.

Step 2: The Owner's Representative determines whether the issue is an Interface Issue and:

- if so, the Owner's Representative refers the EIN to the relevant Interface and Integration Working Group and advises the party who delivered the EIN of that reference
- if not, the Owner's Representative refers the EIN to the relevant Issues Working Group and advises the party who delivered the EIN of that reference.

Step 3: A Detailed Issues Notice (**DIN**) is delivered to the Owner's Representative and either the relevant Interface and Integration Working Group or relevant Issues Working Group. The DIN must contain detailed information about the problem, the applicable facts and circumstances and the potential financial, timing and cost impacts.

Step 4: The relevant Working Group, together with the affected parties, attempts to resolve the issues. To the extent that the issues are not resolved, the matter progresses to the applicable dispute resolution process.

There are a number of further matters to note in relation to the process:

- the content of the EIN and DIN should be adequate but reasonable
- sensible time periods/bars can be allocated to the notices
- the parties can decide whether the IC is involved in any of the processes.



Key issues
for project management

10 Export Credit Agency financing

Investing in Energy Transition Projects
March 2023



Executive summary

Purpose

This briefing paper examines how export credit agency (ECA) financing may be applicable to developers in relation to renewable energy projects. This paper can be used to feed into the broader project, including in relation to offtake and development strategies, arrangements and timelines. From the early stages of a project, it is important that the ECA, capital raise and development strategies and timelines are closely aligned, in particular, the selection of investor(s) and understanding their ECA connections.

Note that any early ECA strategies may require further consideration in light of the project's tax and corporate structure to ensure these strategies align. Any discussions or applications to any of the ECAs will need to reflect this overall structure. Further consideration will also be required in relation to tax implications, for example, the availability of interest withholding tax exemptions under some double tax treaties or alternatively the making of offers under section 128F of the *Income Tax Assessment Act 1936* (Cth).

Summary

Project developers should investigate a number of ECA financing options, as follows:

- direct ECA financing, in the form of facility agreements, in the following forms:
 - untied financing from a number of different ECAs, including potential funding from the Australian ECA
 - untied financing in relation to particular delivery partner model contracts, and during any capital raise phase of the project to support foreign direct investments
 - tied financing in relation to contracts with manufacturers and suppliers
- indirect ECA financing, provided to commercial lenders (if required)
- insurance provided by ECAs to manage both commercial and political risk.

It may be possible for participating ECAs to form a debt syndicate alongside commercial lenders (if required) prior to financial close and operate as a group, rather than individually.

Structure

This paper is structured as follows:

- **Section 1** outlines the common forms of ECA financing and contains a high-level summary of the key features or requirements that will be relevant for any application by developers to obtain funding.
- **Section 2** covers the specific ECA financing options that may be available to developers, including in relation to both untied and tied financing options.
- **Section 3** outlines the typical benefits and drawbacks of ECA financing, along with a summary of the current landscape, which indicates a focus by ECAs on projects that satisfy ESG objectives.
- **Section 4** identifies possible action items for developers that we have flagged throughout this paper, which may help to direct timing and next steps in an ECA financing work stream.
- **Section 5** summarises several case studies of projects that have successfully secured ECA financing, identified in this paper due to the common elements of scale, risk and complexity that they share with major renewable energy projects. These case studies serve to illustrate certain takeaways for developers identified in this paper.



Introduction

Export credit financing refers to financing provided by states (either directly by governments, or by government-owned or affiliated entities) to promote the sale and export of products and provide employment domestically, to increase the wealth of the country from which they originate.

Many countries offer export credit financing via the establishment of government mandated export credit agencies (**ECAs**). The number of official ECAs was 115 in 2021, with a significant variance in export credit volumes between them. In 2021, the top five countries providing official medium to long term export credit support (in US billion dollars) were China (US\$11 billion), Italy (US\$10.9 billion), Germany (US\$7.2 billion), France (US\$5.9 billion), and Sweden (US\$5.4 billion). Refer to Appendix A for a full list of major ECAs.

Each ECA is given a mandate by its government outlining what support it can provide. The mandates of the ECAs can differ markedly and can change from time to time. For example, the Australian government has recently changed the mandate of Export Finance Australia and the Canadian government has changed the mandate of Export Development Canada. Export Finance Australia was previously known as the Export Finance and Insurance Corporation. Its involvement with Ichthys led to a review of its mandate and, for a period of time, an effective prohibition in relation to these types of large deals.

The products offered by most ECAs include the following:

- direct finance (tied and untied)
- guarantees and bonds
- insurance products, including credit insurance and political risk insurance (the latter of which is either unobtainable or prohibitively expensive in the commercial marketplace).

ECA financing can provide many benefits for developers, as outlined further in section 3. Primarily, ECAs are a stable source of financing and can help to avoid certain risks particularly in complex and multi-jurisdictional project. ECA involvement sends a clear and positive investment signal which can help build momentum for a capital raise.



1

Categories of ECA financing

Forms of ECA financing

This section provides further details about the various financing options that ECAs can provide. For context, it is possible that all applicable ECA lenders for a project will form a debt syndicate alongside commercial lenders (if they are required) prior to financial close. The amounts and products that each individual ECA contributes will depend on the particular circumstances of the project.

Direct ECA financing

Financing by an ECA is 'direct' when the ECA lends money directly pursuant to a facility agreement.

Tied financing

'Tied financing' describes direct financing from an ECA that is tied to a particular contract for goods or services supplied by a contractor from that ECA's home country. For example, an ECA may provide direct financing to manufacturers in their home country, or to purchasers of the equipment manufactured by resident companies, where there is an underlying supply contract for such equipment. For tied financing, ECAs will generally fund the home country portion of the goods being financed, but their ability to finance foreign content within the exporter's contract varies. Financing will sometimes be conditional upon the sourcing of a set value of works and services (the eligible content) from the ECA's home country.

For renewable energy projects, tied financing will often be relevant at the point in the development timeline when the developer is undertaking procurement and entering into contracts with suppliers for each works package. Refer to section 2 for further details.

Untied financing

'Untied financing' describes direct financing from an ECA that is not conditional on the procurement of goods or services from the ECA's home country. Untied financing is instead offered on the basis that the transaction is strategically in the national interest of the ECA's home country, securing broader benefits for the country. For example, untied loans may be granted to support foreign direct investments; to help secure a stable supply of energy and resources or to finance projects having significant positive effects on global environmental preservation.

For renewable energy projects, untied financing will often be relevant during the capital raise phase of the project to support foreign direct investments from institutional equity investors. In addition, developers should consider whether they may be eligible to apply for ECA financing from the ECA in the jurisdiction where the project will provide the most benefit, such as providing a source of renewable energy. Developers may be able to further increase untied financing by linking this to particular contracts involving the performance of delivery partner services (albeit these do not relate to the purchase of specific equipment or materials). Refer to section 3 of this paper for further detail with respect to ESG considerations of ECA financing.

Indirect ECA financing

ECA financing can also occur through indirect lending or interest rate support. 'Indirect' financing involves the ECA lending funds to a financial intermediary (usually a commercial bank), which in turn lends to the project company at a low fixed interest rate. The ECA may also pay for the difference between the relevant commercial interest reference rate (**CIRR**) and the rate at which the banks fund themselves, plus a margin. This allows the project company to take advantage of an interest rate equal to the CIRR and ensures that the bank sees a commercial return on their loan.

One type of indirect financing is ECA guarantees. ECA guarantees can take a number of forms. Credit guarantee facilities are commonly used, whereby ECAs provide guarantees to lenders in their home country for loans to foreign banks which are then on-lent to foreign purchasers of the home country goods or services.

Loan guarantees and direct loans are different approaches that ECAs may take but the underlying product (buyer credit, project finance) is the same. Not all ECAs offer direct lending, some prefer to work with a bank that funds the transaction, but they otherwise underwrite the transaction in the same way.

If developers are able to secure significant direct ECA financing, indirect ECA financing may not play a very large role in the financing strategy for the project. Indirect financing will likely only be relevant if commercial lenders consider that the risks of the project necessitate further indirect support.

Insurance

Some ECAs also provide insurance products that cover commercial risk, political risk (such as imposition of foreign exchange controls, war, expropriation, rescission of licences etc), or a combination of both. Political risk insurance is often difficult to obtain, or prohibitively expensive in the commercial insurance marketplace, which makes this insurance offered by an ECA particularly useful. Political risk insurance typically involves the following limitations:

- 1** eligibility of the investment (specific asset or equity interest) to be insured
- 2** tenor of policy (most often from one to 20 years)
- 3** percentage of eligible investment that the policy will cover (generally, the policy provider will only cover 85 to 90 per cent of the risk and the policyholder is required to risk-share the remaining percentage of the risk of loss)
- 4** specific claims procedures requiring submission of documentation in specified time frames, exclusions to cover and, as a condition of payment, transfer or subrogation (or both) to the insurer of the insured's covered investment.

ECA insurance may be relevant to the financing strategy for projects if project lenders or equity investors of the project consider there is a heightened likelihood of political risk events that may adversely affect delivery of the project, and in turn the developer's ability to make debt service payments. Refer to section 2 for further details as to political risk implications.



General features of ECA support

OECD compliance

Most ECAs work within a regulated environment where they are obliged to comply with a set of OECD guidelines, called the Arrangement on Officially Supported Export Credits (**OECD Arrangement**) (although it is worth noting that untied financing falls outside of the scope of the OECD Arrangement). The OECD Arrangement is aimed at avoiding unfair competition as a result of certain ECAs offering particularly generous financing conditions and sets out:

- minimum interest rates for fixed rate loans defined as the CIRR. The CIRR depends on the currency of the transaction, and is adjusted by the OECD on a monthly basis
- the maximum repayment tenor for both standard exports, as well as for specified industries through special sector understandings
- an allowance for the financing of a percentage of local costs associated with the exported items
- compliance obligations associated with the Equator Principles' social and environmental standards.

The OECD Arrangement has been updated to include sector specific annexes called 'Sector Understandings'. This includes the Renewable Energy, Climate Change Mitigation and Adaptation and Water Projects Sector Understanding (Annex IV of the OECD Arrangement) (**Annex IV**) which is aimed at promoting good practice in terms of scaling up and better targeting public and private finance that supports climate-friendly investment. Annex IV provides more flexible conditions for the provision of export credits relating to renewable energy projects or climate change mitigation projects (see below for further discussion on the financing conditions contained in Annex IV for renewable energy projects). This contrasts with the Coal-Fired Electricity Generation Sector Understanding (Annex VI of the Arrangement), which provides stricter conditions for the provision of export credits relating to coal-fired electricity generation projects.

Required contractual terms

To be eligible for ECA financing, a developer will need to satisfy the requirements of each of the individual ECAs it approaches, in addition to the requirements under the OECD Arrangement. For example, ECAs that are participants under the OECD Arrangement will require applicants to demonstrate compliance with certain environmental and social policies.

A developer may need to demonstrate compliance with these conditions by incorporating relevant contractual terms into its future agreements. This will be particularly relevant when procuring and contracting works packages. Contracts that will be used for the works packages should include clauses to address this and related ECA requirements. Additionally, developers may wish to select successful tenderers on the basis of value for money, which metric may relate not only to the overall price offered by a tenderer, but to the ability of the tenderer to offer financing from their home country ECA, along with the pricing and tenor of that financing that can be secured by that tenderer.

As a matter of course, ECAs will also want to focus on traditional credit issues and corresponding structures, such as offtake periods greater than the life of the loan, completion wraps, et cetera. Note, it is generally much more procedural to go through an ECA and secure an ECA loan than it is to go through a commercial lender. Developers should seek further advice on the exact process and any required contractual terms once engagement with ECAs commences.

Amount financed

The amount of financing that is available from any one ECA will depend on several factors, including its own mandate, the contract structure, volume of value creation in the exporting country, country and sector limits and risk appetite of the ECA and, in the case of ECA insurance, the availability of re-insurance. The evaluation of how these matters may be satisfied varies from ECA to ECA. While the amounts available to developers from individual ECAs will differ, ECAs are well versed in providing finance solutions on projects that involve multiple countries and multiple ECAs and will be accustomed to working collaboratively to form a cohesive debt syndicate.

Tied financing

In relation to tied financing, the amount of financing is linked to the country of origin of the exported goods and services. ECAs typically lend up to 85% of eligible export contract (home country content requirements vary), with the buyer required to fund the balance of the contract value. ECAs can also cover 40% of the exported contract amounts to fund local costs, for a high income country borrower, which are related to the project where the exported goods or services are used.

Further, the ECA will take into consideration the OECD Arrangement when evaluating a requested loan or guarantee and considering the various financial terms that will apply to such financing. To this end, Annex IV will directly benefit renewable energy projects in relation to any tied financing, given that Annex IV is aimed at promoting climate friendly investment and renewable energy projects.

Untied financing

As the OECD Arrangement does not apply to untied funding, where a company from the ECA's country has an ownership interest in, or manages the relevant project, the terms of funding from the ECA may be more flexible. Most ECAs will link the available amount of untied financing to the overall strategic benefit of the project. This is relevant for both capital raise phases of the project.

How repayment works

Most ECAs have specific project financing programmes that are tailored to meet the needs of a project and its commercial lenders. These programmes combine the various forms of financing into specific packages which meet the specialised requirements of a limited recourse project financing. Repayment schedules will be customised according to the expected cash flow of the project and sometimes may not require repayments to be made until the completion of construction or commissioning of the relevant facility.

For tied project financing in relation to repayment and interest for renewable energy projects that fall within the scope of Annex IV (which will most likely apply to most renewable energy projects), the OECD Arrangement stipulates the following conditions:

- a maximum repayment term of 18 years (this is both legal and notional tenor)
- a profile of repayment of principal and payment of interest as specified below:
 - repayment of principal made in equal instalments
 - repayment of principal and payment of interest combined made in equal instalments
- principal must be repaid and interest shall be paid no less frequently than every six months and the first instalment of principal and interest must be made no later than six months after the starting point of credit.

Annex IV states that, on an 'exceptional and duly justified basis', official support may be provided on terms other than those set out above. The provision of such support shall be explained by an imbalance in the timing of the funds available to the obligor and the debt service profile available under an equal, semi-annual repayment schedule, and must comply with the following terms:

- No single repayment of principal or series of principal payments within a six-month period can exceed 25% of the principal sum.
- Principal must be repaid no less frequently than every 12 months. The first repayment of principal must be made no later than 18 months after the starting point of credit and no less than 2% of the principal sum will have been repaid 18 months after the starting point of credit.
- Interest must be paid no less frequently than every 12 months and the first interest payment must be made no later than six months after the starting point of credit.
- The maximum weighted average life of the repayment period shall not exceed 60% of the maximum available tenor.

To be clear, there will likely be a construction facility as part of the ECA financing package. Project financing is paid back out of revenue that is generated by the project, whether under offtake agreements or spot or merchant sales. The difference with ECA financing, as per the OECD Arrangement, rather than commercial debt financing is that it implies that interest payments would have to be physical payments rather than just capitalisation. These interest payments would be paid out of debt and/or equity drawdowns.

Note while not legally binding, the OECD Arrangement effectively places limitations on the financing terms and conditions that ECAs can offer. As such, any ECAs that developers engage with that are Participants under the OECD Arrangement may consider that they are limited to these terms. The above repayment arrangements and terms and any flexibility developers require will be a particularly important part of early engagement conversations with ECAs.



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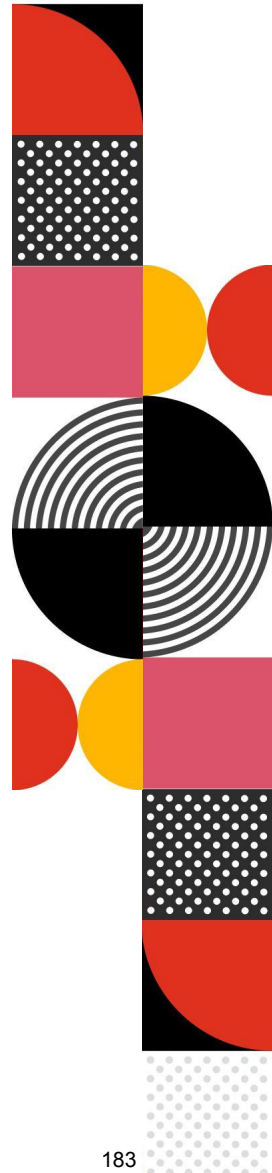
ECA financing options for renewable energy projects

Formation of a consortium of lenders

The section 2 outlines the financing options that may present opportunities for developers to engage with individual ECAs. For many renewable energy projects, it may be possible that all applicable ECA lenders will form a debt syndicate alongside commercial lenders (if they are required) prior to financial close. As such, it is important to note that the options outlined in this section will operate in aggregate.

ECAs commonly provide finance solutions on projects that involve multiple countries and are accustomed to working collaboratively to form a cohesive debt syndicate. Refer to section 5 for examples of projects involving multiple ECAs as part of a syndicate of lenders. It is possible for the lending consortium to have a majority of ECA debt and the balance will be commercial debt.

Developers could look at appointing an ECA as the lead arranger and as the technical bank (albeit, for a range of potential reasons, a commercial bank may need to be appointed for those roles). As an example, the German export finance bank KfW IPEX-Bank GmbH was appointed as a lead arranger for the financing of the Bosch Siemens refrigerator production plant in China and as a joint lead arranger for the Tugaska potash mining project in Canada for the project's senior debt facility.





Tied financing

The following section lists various opportunities for developers to secure tied ECA financing. In the development timeline, tied financing will often provide an early opportunity for developers to engage with ECAs in relation to its contracts with delivery partners. After discussions in relation to contracts with delivery partners, Engaging with ECAs regarding tied financing will be relevant later for the point in the development timeline when the developer is undertaking procurement and entering into contracts for specific goods or services. However, it is important to note that, while tied financing may provide an early point of contact, all ECA financing will come together at Financial Close.

Tied financing to support partnership procurement models

Tied financing may be available to developers that will be engaging another entity as a delivery partner in relation to the project. These contracts do not relate to the purchase of specific equipment or materials but do involve a partner entity participating in and providing services to an overseas project. The home country of the contracting entity of the delivery partner will be relevant, as will the residency status of the individuals working for that contracting entity on the project. ECAs typically aim to assist companies that support jobs in their own country but it is becoming more usual to see ECAs work with international businesses or affiliate companies.

As noted above, however, this will typically form part of an overall ECA financing strategy in aggregate and the delivery partner contracts will not provide the only opportunity for developers to engage with ECAs.

Example: Partnering with an American company

Where a developer is partnering with an American entity, that entity may, subject to certain conditions, be able to apply to the Export-Import Bank of the United States (**US EXIM**) for export finance as an American company exporting its services to an overseas developer, albeit depending on the contracting entity and residency considerations. There are several US EXIM financing mechanisms available, including the options summarised below.

Direct loans

US EXIM can provide direct loans to creditworthy international purchasers in both the public and private sector. According to US EXIM, it generally provides direct loans and loan guarantees to international purchasers of US capital equipment and services. Prior to approving certain transactions, US EXIM will consider the economic and environmental impact of the particular transaction. US EXIM can provide fixed-rate financing with the interest rate set at the CIRR for up to 18 years for projects that operate in the renewable energy sector. US EXIM will currently finance local costs up to 30%, but it expects to adopt the new OECD policy on local costs shortly, which in this case would be 40%. However, US EXIM will finance only the US originated goods and services.

To apply for a direct loan or loan guarantee, one option is for the US company exporting services to apply to US EXIM for a letter of interest prior to contract award. A letter of interest from US EXIM is not required in order for the developer to apply for a final commitment, but it is useful in the context of early engagement. The letter is processed within seven working days, is valid for 12 months, and can be renewed. Once the contract is awarded, the developer as the international purchaser who intends to borrow from US EXIM can submit a final commitment application to US EXIM.

Note, as flagged above, this will link back to overall tax and corporate structuring to ensure the correct entity is the relevant party to the transaction. It may ultimately be a subsidiary of the project company or a related party under a project contract who borrows from US EXIM.

Project finance

Another product that US EXIM provides is limited recourse project financing to support US exporters and their international customers, including in Australia. As part of a broader aggregated ECA financing strategy, developers may wish to investigate whether it as the customer, and/or the American entity, working with other American exporters, could seek a project finance loan from US EXIM for the project.

US EXIM will consider limited recourse project financing in most countries and has no financing limits. However, the OECD limits official credit in high income countries. US EXIM has two primary goals in relation to its project and structured financing and developers would need to establish that these goals will be met by the project. Namely, developers would need to demonstrate that the project will:

- maximise US company participation in the transaction to support US jobs
- be a creditworthy project that will protect the interests of US taxpayers.

Financing for exporters

For US exporters, US EXIM can provide either a direct loan or a 100% loan-backing guarantee to the lender of a US exporter. The loan guarantee backs the borrower's debt in the event something goes awry, thereby decreasing repayment risk and increasing the lender's willingness to extend a loan. Additionally, US exporters can apply to US EXIM for a working capital loan guarantee in relation to transaction-specific facilities. Developers may wish to investigate this with potential partner entities.

Action item: Refer to item 4 in section 4.

Example: Partnering with a Canadian entity

Where a developer is partnering with a Canadian entity, that entity may, subject to certain conditions, be able to apply to Export Development Canada (**EDC**) for export finance as a Canadian company exporting its services to an overseas developer. As with American entities (see above), considerations as to the contracting entity and the tax residency status of its personnel may apply.

As an example, EDC lists the Australian market as 'open', meaning that EDC is actively pursuing business in Australia, and all EDC solutions are available in this particular market.

Buyer financing

One financing solution that EDC provides is buyer financing, which it provides to the international customers of Canadian exporters. This is essentially like vendor financing, except EDC provides the loan. To capitalise on this, the Canadian exporter would need to provide EDC with the export contract and credit information on the project and on the developer as the foreign buyer with a request that EDC undertake a credit review and approval process. Once approved, EDC would issue the loan agreement to the developer. EDC would then hold responsibility for collecting payment from the developer.

Project finance

Another financial solution that EDC can provide is project financing, designed for limited recourse financing of long-term, capital intensive projects. EDC lists its sector expertise as including renewables and sustainable technologies, energy, infrastructure, and extractive industries.

Developers may be eligible to apply for financing if it can be established that the project:

- will generate revenues of over US\$50 million
- will have export activities outside of Canada, that it requires structured financing to execute a large-scale global project in the power, utilities, infrastructure or industrial sector
- clearly demonstrates economic benefits to Canada.

Action item: Refer to item 4 in section 4.

Procuring the works packages

Commencement of procurement of the works packages for a project will provide developers with another opportunity to engage with ECAs to secure tied financing. Developers can approach individual ECAs in relation to each works package for the project, but ultimately it is likely that all participating ECAs will aggregate under a common facility agreement (which will require liaising with the ECAs to handle any potential conflicts between the individual requirements of each ECA). Figures 1 and 2 below illustrate the potential structures this financing can take.

Figure 1. Example of ECA direct tied loan structure

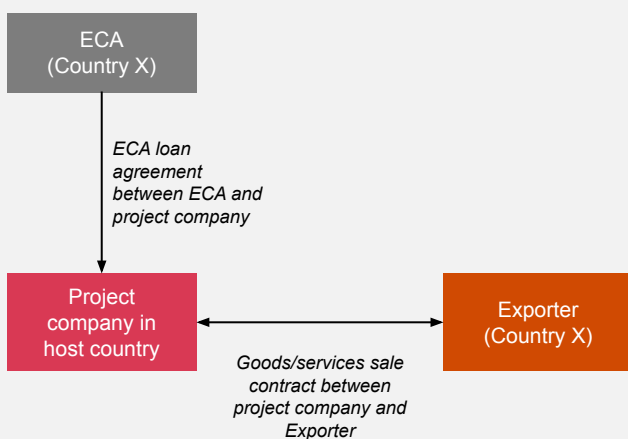
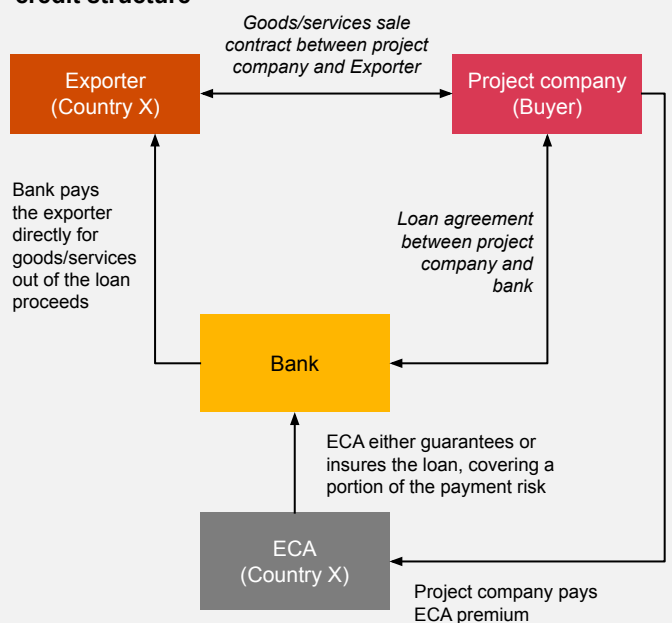


Figure 2. Example of ECA indirect tied buyer credit structure



When approaching the market for procurement, developers should consider requesting tenderers or prospective suppliers to identify their ability to introduce ECA funding. For example, in the returnable tender schedule as part of an invitation to tender, developers may request that tenderers provide details about their experience and expertise assisting projects to reach financial close, including working with ECAs.

Where relevant for future procurement processes, developers may also request that prospective suppliers in eligible jurisdictions include letters of interest or support from the ECA of their home country. The prospective supplier will then need to liaise with the relevant ECA to procure the letter of interest. Either the prospective supplier or the buyer (requirements vary) will then submit a formal application for financing, including all relevant project information. The ECA will then conduct a detailed due diligence process in relation to the project.

Action item: Refer to item 7 in section 4.

Tied financing for developers that are Australian export businesses

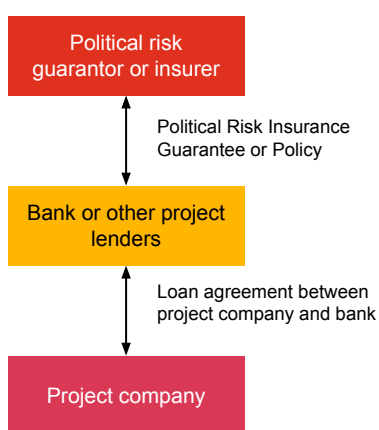
If developers from Australia will be securing international export contracts, they may be eligible to apply to Export Finance Australia (EFA), the Australian ECA for tied financing. EFA can provide flexible loan structures aligned to business cash flow that can be drawn for export-related transactions. EFA loans start from US\$100,000 and are available for companies that have an export contract in place. However, EFA will not compete with commercial banks and only provides finance when a bank is unwilling or unable to do so.

ECA insurance

ECAs insurance can cover both commercial risk and political risk. For example, Australia's ECA provides political risk insurance to Australian investors, contractors and their lenders to mitigate potential losses due to certain political events, as well as export payment insurance to Australian exporters to protect against the risk of non-payment due to certain commercial and political risks. Given the global nature of some renewable energy projects, certain developers may benefit from the ability to secure political risk insurance, particularly as it can be difficult and costly to obtain in the commercial insurance market. ECAs that provide political risk insurance are subject to the OECD Arrangement's terms, as discussed above.

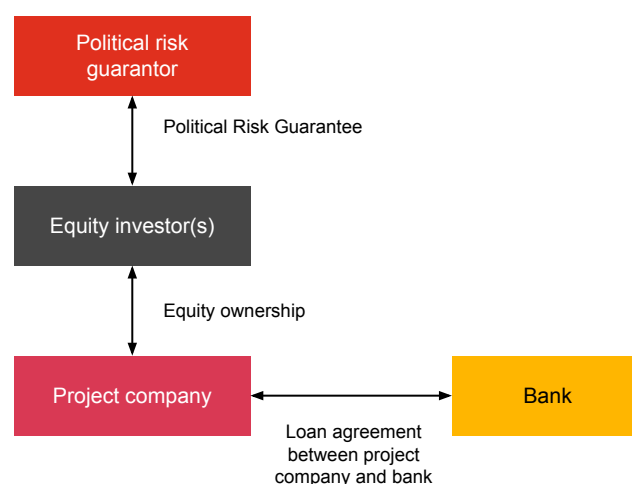
As set out in Figure 3 below, project lenders may be eligible to secure political risk insurance to provide credit support for the repayment of their principal and interest in the event of covered political risk events adversely affecting the project company's ability to make debt service payments.

Figure 3. Political risk guarantee or insurance provided to project lenders



Alternatively, equity investors may be eligible to secure political risk insurance to protect their equity investment and the enterprise value of the project in the event of covered political risk events affecting the value of their equity investment in the project.

Figure 4. Political risk guarantee or insurance provided to equity investor(s)



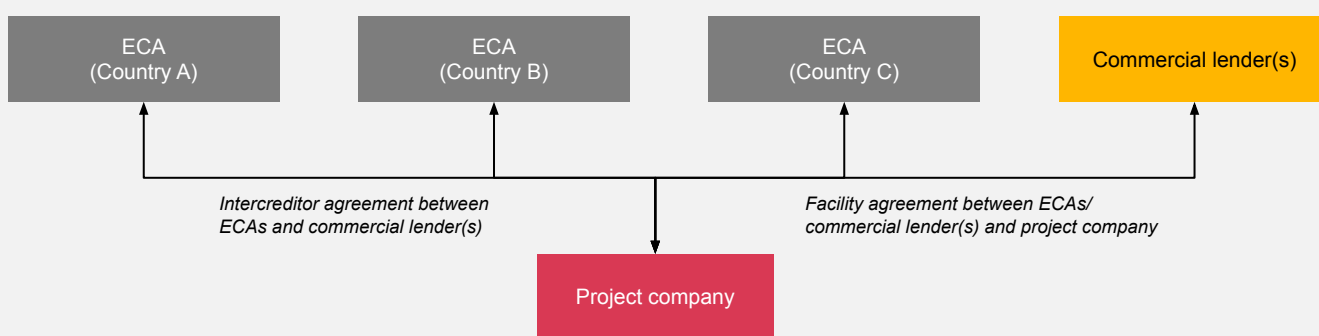
Action item: Refer to item 8 in section 4.

Untied financing options

This section summarises various opportunities for developers to secure direct untied ECA financing. In the project development timeline, untied financing will often provide another early opportunity for a developer to engage with ECAs, given that it is not dependent on having contracts in place involving procurement of goods or services from the ECA's home country (however, as noted above, while untied financing may provide one means for seeking ECA support, all of the ECA financing will come together at financial close). Figure 5 below illustrates this type of structure.

Note, the figures below are for illustration purposes only. The ultimate ECA financing structure will need to align with the tax and ownership structure of the project. It is possible that a finance vehicle will be the borrower with guarantees from the project company or companies.

Figure 5. Direct untied financing to project company



Untied financing where a developer is an Australian export business

EFA is the Australian government's ECA. If a developer is an Australian business that will be exporting overseas, the developer may be eligible to apply directly to EFA for financing. Loans, bonds, guarantees and project financing are available for Australian businesses that are exporting directly, part of an export supply chain, or setting up a presence in an overseas location. To be eligible for most products, the developer would need to demonstrate that it is an Australian registered company established for at least 2 years. For some products, it must demonstrate that it has an annual revenue of over AUD\$250,000 in the last financial year.

Untied financing is available from EFA to support overseas infrastructure projects in areas including energy. Financing limits per project or country are determined on a case-by-case basis assessed according to EFA's risk appetite, EFA capital base and the level of Australian benefit in a project. For the EFA to support an overseas infrastructure project, there must be an Australian benefit (this could be a future or indirect benefit). For larger projects, EFA often shares the risk with partners and encourages investment from other financiers to ensure that viable projects receive the finance required to proceed.

EFA's criteria for providing financing to overseas infrastructure projects is that the underlying project must:

- provide the necessary level of Australian benefit
- be commercially viable
- meet the EFA's social and environmental due diligence standards
- be appropriate for the relevant country
- ensure sound project procurement governance.

EFA introduced two new financing capabilities in 2021. In June, EFA was given the ability to provide equity finance in certain circumstances to finance transactions that serve Australia's national interests and priorities. EFA has stated that an equity power will enable it to better support overseas infrastructure development and export-linked Australian businesses in sectors of economic significance. In September, the Australian government established an EFA-managed AUD\$2 billion loan facility for Australian critical minerals projects.

It should be noted that EFA financing may not play a large role in the overall financing strategy for certain renewable energy projects for several reasons. It is predominantly focused on supporting small and medium-sized enterprises (SMEs) and the amount EFA can lend from its own balance sheet is comparatively small for projects that are large in size. Its funding of offshore projects is often politically driven, with its current mandate in regard to large offshore infrastructure projects being to prioritise infrastructure projects in the Pacific and broader Indo-Pacific region that result in positive outcomes for Australia and the region, both now and in the future and with a heavy developing market focus – a recent example being the AUD\$2 billion of EFA funding provided to Telstra to buy a minority stake in Pacific based telecommunications operated Digicel. The Federal Government guarantees the due payment by EFA of any money that becomes payable, including its borrowings from third parties. It draws on the prudential standards set by the Australian Prudential Regulation Authority and the Bank for International Settlements through the Basel Committee on Banking Supervision.

Action item: Refer to item 1 in section 4.

Untied financing from relevant jurisdictions that are significantly linked to the project

Developers may be eligible to apply for ECA financing from ECAs in other countries that are significantly linked to the project. For example, ECICS, the Singaporean ECA, may provide financing to renewables projects that will be of national significance and will be providing a means for Singapore to secure a stable supply of renewable energy. However, ECICS is largely focused on providing insurance products to SMEs and may play a limited role in the financing of major projects as compared to other, larger ECAs like the Japanese and Korean ECAs, which have both recently been providing more prominent financing in relation to major infrastructure projects (see, for example, the Roy Hill iron ore project described in section 5).

Action item: Refer to item 2 in section 4.

Untied financing based on the nature of the project

Untied financing may be available to developers based on the nature of the project. As explained further in section 3, there is a growing interest amongst ECAs to support environmentally sustainable projects. This is particularly important given that, in the past, many ECAs have received criticism from organisations such as the international NGO 'ECA Watch' for overwhelmingly providing support to fossil fuel industry projects.

For example, JBIC provides untied finance to projects that will:

- use capital to secure stable supplies of energy and mineral resources for Japan
- promote the business activities of Japanese companies
- maintain and expand trade and direct investment from Japan

- have significant effects on global environmental preservation, or
- maintain order in international financing.

JBIC specifies that its untied loans are not conditional on investments or procurement of equipment and materials from Japan. Therefore, JBIC may be willing to provide financing to developers purely on the basis of the nature of the project and the environmental benefits linked to the project, rather than in connection with the specific procurement of equipment.

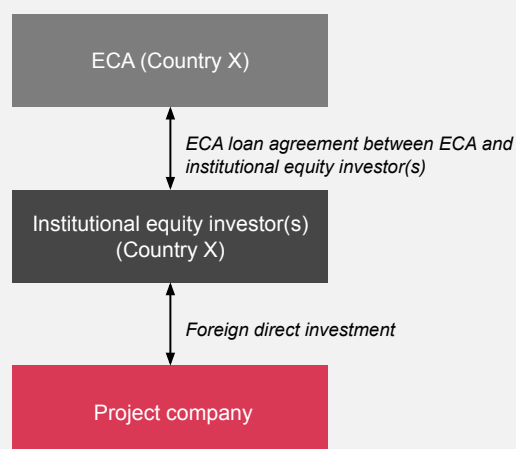
Other ECAs may also provide untied loans for this purpose. While US EXIM has not expressly announced whether its untied support is available for renewable energy projects, it is focused on providing competitive financing, as discussed further in section 3. In its 2021 competitiveness report, US EXIM stated that 'in 2021, ECAs were increasingly focused on implementing climate-related programmes in response to the COVID-19 pandemic to help build up their economy's industrial base in climate-focused industries or green their economy more broadly.' The President and Chair also stated that climate finance remains a top priority, with US EXIM ramping up support for clean energy technology to 'substantially increase our authorisations for exports across clean and renewable energies and environmentally beneficial goods and services'. This may indicate a willingness to provide untied financing for sustainable renewable energy projects.

Action item: Refer to item 3 in section 4.

Untied financing from the capital raise phase

Untied financing may be available as a result of, or in connection with, capital raise phases, for example, to support foreign direct investments which may occur from international institutional equity investors. Many ECAs offer overseas investment loans to companies in their home country making foreign direct investments. As an example, Japan's ECA, JBIC, prioritises overseas investment loans to Japanese foreign direct investors to assist the investor in funding its equity investment in projects that are developing or securing interests in overseas resources that are strategically important to Japan. Figure 6 below illustrates this type of structure.

Figure 6. Direct untied financing to equity investors

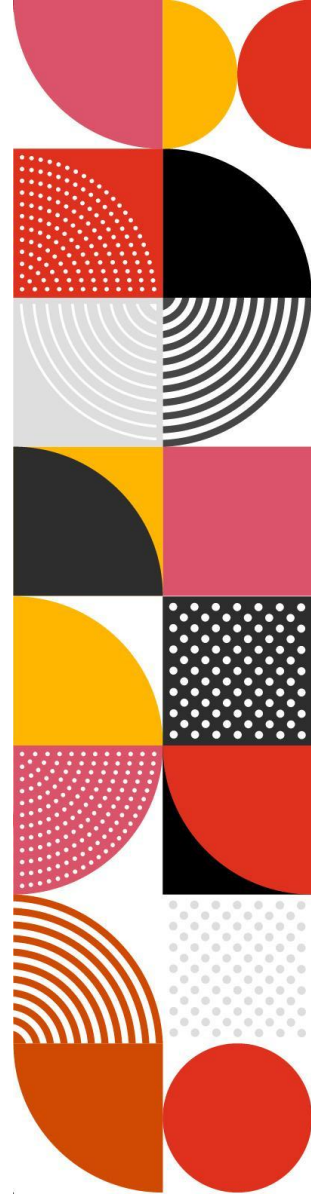


Action item: Refer to item 5 in section 4.

Untied financing in connection with offtake

Developers may be able to secure untied financing in connection with the project offtake. Untied financing can be provided on the basis of an offtake arrangement, such as a power purchase agreement, where the buyer is from the home country of the ECA. For example, if an American company that owns a data centre enters into a power purchase agreement in relation to electricity produced by a renewable energy project, this may provide another source of untied financing from US EXIM. Untied financing is worth investigating in relation to any agreements with offtakers.

Action item: Refer to item 6 in section 4.



3

The current landscape of ECA financing

Benefits of ECA financing and insurance products

The main benefits of ECA financing and insurance products are as follows:

- a large scale, complex, multi-jurisdictional project is most likely to succeed with ECA involvement
- a clear and positive investment signal is sent from ECA countries, helping build momentum for any capital raise phase
- ECAs often assume more risk than commercial financiers and can have a much larger appetite for exposure on a single project compared to commercial financiers
- ECA financing is very stable and reliable, as ECAs are proficient at dealing in challenging risk environments
- developers may enjoy a longer tenor and a fixed or subsidised interest rate compared to the commercial market
- direct tied financing means developers would not have to meet the full cost of the contract with the supplier upfront
- unlike the commercial market, ECAs insure against political risks such as non-payment, bankruptcy, political instability, currency inconvertibility, etcetera
- ECA financing by its very nature involves implicit political risk reduction owing to the ECA country's involvement in the transaction (for example, ECAs and their host governments may seek to be involved in renewable energy projects for wider political or reputational reasons), allowing developers to mitigate political risks associated with international trade.

Drawbacks of ECA financing and insurance products

The main drawbacks of ECA financing and insurance products are as follows:

- as stated under section 1, developers may need to comply with specific requirements, including due diligence or reporting requirements set by individual ECAs, which may be substantially more onerous than the requirements of commercial financiers

- as stated under section 1, in relation to any tied financing where an ECA covered by the OECD Arrangement is involved, the transaction will need to comply with the OECD Arrangement
- dealing with multiple ECAs may be burdensome (although ECAs and banks are well versed in arranging export finance).

ESG considerations

Anti-corruption and bribery

In recent years, ECAs have been reinforcing their focus on avoiding corruption and bribery. This is particularly important given the use of public funding and the fact that ECAs will often finance projects that multilateral banks (such as the World Bank) would not accept. Operations benefitting from ECA support are typically under increased scrutiny by NGOs, and there is now an international ECA watch network. For example, a report by Spotlight on Corruption issued in 2020 condemned the UK Export Finance agency for its outdated remit for fighting corruption and called for greater transparency in relation to its operations.

The OECD Arrangement was amended in 2006 to address this, and now requires more rigorous legal and business due diligence where there have been previous corruption issues with any of the entities involved. Applicants for ECA support have, amongst others, to declare that neither they, nor anyone acting on their behalf (agents), have been engaged or will engage in bribery.

Sustainable development

The environmental and social impact of projects has become a focus of ECAs as they seek to support sustainable development. The OECD Arrangement requires participant ECAs to undertake environmental and social due diligence to identify, consider and address the potential environmental and social impacts and risks relating to applicant Members' decision-making and risk management systems. The UK's ECA, for example, is vigilant in relation to its modern slavery due diligence processes to ensure that the deals it supports include protections for the rights of workers.

Key takeaways for renewable energy projects: *Due to the public nature of ECA funding, the developer itself, and any third parties that are engaged, will be under scrutiny in relation to their handling of social, environmental and governance issues. However, given that ECAs are seeking to support sustainable development, renewable energy projects will be an attractive option for ECAs. Developers should also be mindful that its modern slavery due diligence processes could be a focus for OECD-compliant ECAs.*

Trends in ECA financing

US competition with China

US EXIM has introduced a programme called the China and Transformational Exports Program (CTEP). CTEP is a mandate for US EXIM to help US exporters facing competition from the People's Republic of China and ensure the US leads in ten 'Transformational Export Areas', which include the areas of renewable energy, energy storage and energy efficiency. To support US companies in these areas, US EXIM through CTEP may provide reduced fees, extended repayment tenors and exceptions from other EXIM policies. For example, this has included lowering the minimum US content required in a deal from 85% to 51%.

In its 2021 competitiveness report, US EXIM stated that CTEP authorised more than US\$140 million in its first year of being fully operational and, of that, it had authorised US\$90 million over five medium to long term transactions in transformational export sectors in 2021. US EXIM also stated that since the transformational export industries are priorities for Chinese government subsidies, transactions in these sectors do not need to have a specific competing Chinese bid to qualify for US EXIM support under the CTEP programme.

Note, in contrast with traditional US EXIM finance offerings, if a developer seeks to secure financing via CTEP, US EXIM may prohibit the developer from accessing US EXIM financing in relation to any Chinese content.

Reduced long term ECA project financing following COVID-19

The effects of COVID-19 have led to a reduction in spending. According to the Global Investment Trends Monitor, Global Foreign Direct Investment in 2020 fell by 42% and is likely to remain weak in 2021. In 2020, OECD Arrangement activity generally trended downward due to decreased support from major countries providing official export credits under the Arrangement, including Germany, Italy, Korea, the United Kingdom, and the United States.

According to the OECD, short term ECA financing in relation to working capital has increased as governments attempt to support companies facing liquidity challenges. However, medium to long term export credit transactions decreased by 34% in volume and 15% in number in 2020, which indicates a drop in large projects.

Untied financing down in 2020

Untied financing is a means to promote the provider country's national interests (for example, an ECA supports energy-project development involving offtake contracts that benefit the provider's country). This provides a competitive offering that gives buyers more flexibility. In line with other business areas, untied financing saw decreased volumes in 2020. However, Korea's untied support remained high in 2020 (it provided around US\$4 billion) and was still almost double that provided by the next highest (Canada), albeit not as high as its peak in 2015 (US\$7.7 billion). Canada provided slightly over US\$2 billion through its Pull loan programme, but still only half of what it provided in 2019.

Increased support for environmentally beneficial projects

In addition to the OECD Arrangement requirement for participant ECAs to undertake environmental and social due diligence, the following developments indicate growing support for renewable energy projects:

- US EXIM this year announced the establishment of a Chair's Council on Climate to better prioritise funding for US exports that promote environmentally beneficial renewable energy.
- EDC, Canada's ECA, has announced that 'cleantech' is one of its priority areas and that it is dedicated to helping Canadian companies in the clean technology space.
- Japan's overseas investment loans are designed to support Japanese foreign direct investments (as opposed to the export of goods or services). These untied loans help to secure stable supplies of energy and resources for Japan and to finance projects maintaining order in international financing or having significant effects on global environmental preservation. JBIC is focused on 'quality infrastructure' projects which invest in Japanese technology.
- The UK's ECA provides direct loans within an overall limit of £8 billion to overseas buyers. Of that limit, £2 billion has been allocated to support 'clean growth projects' which are 'growing [the] national income while cutting greenhouse gas emissions'.

Key takeaway for renewable energy projects: Many ECAs have announced specific initiatives to support renewable energy projects, indicating that ECA funding may more readily be available for a developer if it otherwise meets the criteria of the ECAs.

4

Information gaps/next steps

The following is a list of possible action items for developers to consider, arising from the analysis outlined in this paper:

No.	Source of potential ECA financing	Relevant phase	Suggested further action
1	Home country ECA	Early development and procurement phases	Developers should contact and liaise with the ECA in their own home country to discuss available financing options.
2	ECAs in any other key jurisdictions for the project	Procurement phase	Developers should contact and liaise with ECAs in any other jurisdictions that are significant to the project to discuss available financing options.
3	In relation to the nature of the project	Early development and procurement phases	Developers should contact and liaise with ECAs in jurisdictions that may offer support based on the sustainable nature of the project.
4	In relation to partnership procurement model contracts	Procurement and negotiations phases	Developers should raise potential ECA financing options when procuring and negotiating with potential delivery partners.
5	In relation to foreign direct investment during capital raise phases	Capital raise phases	Developers should consider and assess whether foreign investors may be able to secure additional funding from ECAs.
6	In relation to offtake	Offtake negotiations phase	Developers should contact and liaise with ECAs in the home countries of potential offtakers.
7	In relation to contracts for goods and services	Procurement of works packages	<p>Developers should request that potential suppliers provide details of ECA funding options in their tender submissions or responses.</p> <p>Developers should liaise with their home country ECA in relation to funding for any contracts with home country suppliers.</p>
8	Various ECA insurance options	Procurement phase	Developers should consider the use of and potential benefit posed by ECA insurances.



5

Case studies: Projects funded by ECA financing

Australia Pacific LNG: Financing from various ECAs

Australia Pacific LNG (APLNG) is a joint venture between three oil and gas companies: Origin (37.5%), ConocoPhillips (37.5%) and Sinopec (25%). APLNG is a liquefied natural gas project in Queensland.

The project sponsors reached financial close on the project on 23 May 2012, after a final investment decision on the first phase of the project occurred in July 2011 when they began to seek debt to support a 70-30 debt-equity profile.

APLNG executed a US\$8.5 billion project finance facility in May 2012, providing funding for the LNG Facility component of the Australia Pacific LNG project. This involved:

- a US\$2.866 billion direct loan from US EXIM with a 17-year tenor expiring on 23 May 2029
- a US\$2.759 billion direct loan from China EXIM with a 16-year tenor expiring on 23 May 2028
- a US\$2.875 syndicated bank loan with a 16-year tenor expiring on 23 May 2028 from a consortium of 15 Australian and international banks.

APLNG completed a refinancing of a portion of its existing project financing on 29 March 2019, entering into a new term loan with a syndicate of commercial banks and also completed a private placement of US\$600 million aggregate principal amount of 4.85% senior secured notes due 2030.

Key takeaway for renewable energy projects: Large scale LNG projects are complex interfacing infrastructure projects that provide a very strong point of comparison for large renewable energy projects. Large projects of this kind often necessitate multiple ECAs and commercial lenders working together to finance the project and, as demonstrated by this project, the timeline for starting engagement with ECAs to financial close can take a year or more.

Ichthys LNG: Financing from various ECAs

Ichthys LNG is ranked among the most significant oil and gas projects in the world. The energy development is a joint venture between INPEX group companies (the Operator), major partner Total, and the Australian subsidiaries of CPC Corporation Taiwan, Tokyo Gas, Osaka Gas, Kansai Electric Power, JERA and Toho Gas. A Final Investment Decision for Ichthys LNG was reached in 2012 and production commenced in July 2018.

On 18 December 2012, INPEX announced that it had secured US\$20 billion in project finance loans including with eight ECAs and 24 commercial banks. This involved:

- US\$5.8 billion in ECA direct loans from ECAs (JBIC, KEXIM and EFA Australia) (including US\$5 billion direct loans from Japan's ECA and US\$2.75 billion loans insured by Japan's NEXI)
- US\$5.4 billion in ECA insured/guaranteed commercial loans (comprising of Japan, Korea, the Netherlands, Germany and France)
- US\$4.8 billion in commercial loans
- US\$4 billion in project sponsor loans.

At the time, the Ichthys project financing was the biggest project financing ever arranged in the international financial market.

Key takeaway for renewable energy projects: This project provides another example of a complex interfacing infrastructure project where a large number of ECAs and commercial banks were required to achieve financial close.



Total Mozambique onshore LNG project: Financing from various ECAs

The Total Mozambique onshore LNG project is a large project entailing the design, build, and operation of an integrated liquefied natural gas plant including offshore extraction, underwater pipeline, an onshore processing plant and ancillary support facilities.

The project secured financing in mid-2020 in the form of direct loans from four ECAs (US, Japan, UK and Thailand), 19 commercial banks and the African Development Bank (AfDB) with part of that private financing being guaranteed/insured by four ECAs (Japan, UK, Italy and SA), amounting to an aggregate of US\$14.4 billion of debt and support. The US EXIM reported that private financing was not available for this project given its size, complexity, and risk, therefore necessitating support from ECAs such as US EXIM.

The project was suspended in April 2021 due to violence in Mozambique, with Total declaring Force Majeure. ECAs and lending parties are reportedly working together to consider next steps.

Key takeaway for renewable energy projects: As flagged under the two projects above, similarly large infrastructure projects will likely necessitate early engagement with ECAs and will require multiple ECAs and commercial lenders working together to finance the project.

PNG LNG: Financing from various ECAs

Australia's EFA provided a US\$350 million loan to the ExxonMobil-led liquefied natural gas project in the Southern Highlands of Papua New Guinea. The EFA was part of a syndicate of international export credit agencies and commercial lenders that participated in the project.

The PNG LNG project is an integrated LNG facility, including gas gathering and a conditioning plant, overland and subsea pipeline, a two-train LNG plant and an export terminal near Port Moresby.

According to EFA, it provided financing to the project to help Australian exporters pursue contracts for the construction phase of the project and ensure Australia's involvement in a 'world class project'. EFA says it provided project finance 'well beyond the capacity of the private market'. EFA's commitment made up part of the total ECA financial support provided to the project, which came to approximately US\$5.65 billion, as part of the overall project debt of approximately US\$10 billion.

However, it should be noted that while EFA executed this loan, this was part of an overall political decision to provide economic support to Papua New Guinea.

Key takeaway for renewable energy projects: EFA may be able to provide a direct loan to Australian developers if the developer is able to demonstrate that the project will contract with Australian exporters of goods or services. As noted above, EFA's current mandate in regard to large offshore infrastructure projects is to prioritise infrastructure projects in the Pacific and broader Indo-Pacific region.



Roy Hill iron ore project: Financing from ECAs and commercial banks

Project background

Gina Rinehart's Roy Hill iron ore mine is located in the Chichester Range in the Pilbara region of Western Australia. When it was built, it was one of the biggest mining construction projects in Australia. Roy Hill currently delivers 60 million tonnes per annum (**Mtpa**) of iron ore to international markets and employs over 2,800 employees, plus a number of contract suppliers and service providers.

Hancock Prospecting Pty Ltd is the majority shareholder and owner of Roy Hill Holdings Pty Ltd with a 70 per cent equity interest. The remaining 30 per cent equity interest is held through a consortium comprising Marubeni Corporation, holding 15 per cent, POSCO, holding 12.5 per cent, and China Steel Corporation, holding 2.5 per cent. As part of the ownership agreement, the minority partners purchase 28.75 million tonnes of iron ore at the current full production rate of 60Mtpa from Roy Hill.

Financing strategy

On 20 March 2014, the sponsors signed a long-term financing agreement for the project and reached financial close when the final conditions precedent were fulfilled on 22 April.¹ The project raised US\$7.2 billion in debt with a consortium of lenders, including ECAs and commercial banks. At the time, it was the largest project financing deal in the world for a land-based mining project. The financing deal won a number of awards, including Project Finance International Magazine's Asia Pacific Deal of the Year.

The long-term finance agreement completed a funding package totalling US\$10 billion, following equity commitments by the shareholders, who provided US\$2.8 billion in equity. This was used to fund the early stages of construction including some of the more risky aspects, such as dredging work.

The finance deal was made up of direct, tied and untied and covered loans from five export credit agencies (the US, two ECAs from Japan and two from Korea) and uncovered direct and hedging loans from a consortium of 19 commercial banks from Australia, Japan, Europe, China, Korea and Singapore (including the big four Australian banks, National Australia Bank, ANZ, Westpac and the Commonwealth Bank).

The finance carries a tenor of about 10.5 years and features several tranches:²

- US\$2.565 billion uncovered term loan
- US\$635 million direct loan from US EXIM
- US\$900 million direct loan from JBIC
- US\$700 million term loan guaranteed by NEXI
- US\$450 million term loan guaranteed by KEXIM
- US\$1.2 billion term loan guaranteed by K-SURE
- US\$550 million direct loan from KEXIM
- US\$200 million foreign exchange facility.

There were also several ancillary facilities, including a US\$300 million working capital facility, a US\$100 million performance bond facility, and a US\$200 million letter of credit facility carrying a legal maturity of 10.5 years.

The pricing on the long-term uncovered debt was said to be around 300 basis points (although this has not been confirmed by the borrower).

Contracting and procurement strategy

In March 2013, Roy Hill signed a US\$5.6 billion engineering, procurement and construction (**EPC**) contract with South Korea's Samsung Group. The performance-based fixed price and time EPC contract was for all project works covering iron ore mine, rail and port development.

The Korean conglomerate POSCO, minority shareholder in Roy Hill, also submitted a tender bid but was unsuccessful. The EPC contract was expected to be announced in late 2012, but Roy Hill delayed the process and sent bidders back to the drawing board to find additional savings.

In order to help secure financing, the contract shifted much of the completion risk from the owners and lenders onto the EPC contractor. Under the contract, Samsung was liable for liquidated damages of about US\$55.9 million a month, applied on daily for each day the first shipment was delayed after the end of October. Samsung had a 30-day grace period beyond an initial 30 September deadline before the financial penalties begun. After a delay, the first two cargoes from Roy Hill were dispatched in December. In 2017, Roy Hill and Samsung settled a US\$1 billion construction dispute, with the two sides contesting a broad range of claims over significant sums.

¹ <https://iiglobal.com/articles/91662/roy-hill-australia>

² Ibid.

The 19 commercial banks that participated in the deal were tiered based on their ticket allocations. Key roles were as follows:

- **Mandated lead arrangers:** ANZ, BNP Paribas, Bank of China, BTMU, CBA, HSBC, ICBC, Korea Finance Corp, Mizuho, NAB, OCBC, SMBC, Societe Generale and Westpac.
- **Lead arrangers:** Caterpillar Financial, China Construction Bank, Natixis and Sumitomo Mitsui Trust.
- **Intercreditor agent:** ANZ.
- **ECA coordinator:** SMBC.
- **Roy Hill legal advisors:** Latham and Watkins and Herbert Smith Freehills.
- **Roy Hill financial advisors:** BNP Paribas and NAB.
- **Debt legal advisors:** Allen & Overy.

In October 2020, Roy Hill's CEO announced that the mining operation had paid off the US\$7.2 billion debt funding package.

Samsung has been involved in a number of disputes with its subcontractors. Forge and Duro Felguera were subcontractors for the processing plant but Forge's subsequent collapse meant that Samsung stepped in to fulfil its obligations. Samsung was also involved in a dispute with civil and mining contractor NRW holdings over the rail formation contract, originally valued at more than US\$620 million. In a November 2015 settlement, Samsung agreed to pay the contractor US\$30 million and NRW will withdraw all litigation actions through the WA courts and the Singapore arbitration process.

Samsung awarded McConnell Dowell an EPC Contract for the design and construction of the Port Marine Works, valued at approximately US\$455 million.

Key takeaway for renewable energy projects: As flagged above, similarly large infrastructure projects will likely necessitate multiple ECAs and commercial lenders working together to finance the project. As was the case for Roy Hill, large renewable energy projects will likely involve a variety of financial products, including tied and untied loans.



Senegal Renewable Energy Project: US EXIM (US) funding

In 2020, US EXIM approved approximately US\$91.5 million in loan guarantee financing that supports US exports of design engineering and construction services to the Republic of Senegal. The transaction will increase access to reliable electricity for rural communities throughout Senegal while supporting an estimated 500 US jobs.

The Senegal National Electricity Agency will be the borrower in the transaction and the buyer of the exports. Senegal's Ministry of Economy, Planning and Cooperation will provide a sovereign guarantee of the financing. JP Morgan Chase is the lead arranger and mandated lender. The total cost of the project is estimated to be US\$100 million, with EXIM supplying 81.5 percent of the funding.

Key takeaway for renewable energy projects: *One potential opportunity for funding from US EXIM is a direct loan, if the developer is able to demonstrate that the project will contract with American exporters of goods or services. This case study also demonstrates the availability of funding for renewable energy projects.*

Gemini Wind Farm: EDC (Canada) funding to Northland Power

EDC provided financing of EUR125 million for Toronto-based clean energy company Northland Power to purchase a 60 per cent ownership stake in Project Gemini, a 600-megawatt offshore wind farm in the Dutch North Sea off the coast of the Netherlands.

EDC stated that it supported Northland as a company with 'the potential to become world leaders in the cleantech space, and these are the type of companies that EDC wants to invest in. When Northland grows, the potential of the entire Canadian cleantech sector grows along with it, which is an important economic benefit, but the environmental benefit of these technologies is an investment that will pay meaningful global dividends for decades to come'.

Financial close for the project occurred in May 2014 and included €2bn senior debt, €600m equity investment and €200m (US\$220m) subordinated debt. The debt facilities were provided by 12 commercial banks, the European Investment Bank and export credit agencies, including from Germany, Denmark and Belgium.

Final commissioning of the project occurred in 2017. At the time of completion, Gemini was the second largest offshore wind farm in the world.

Key takeaway for renewable energy projects: *EDC is committed to helping Canadian companies in the clean technology space. The focus on environmental benefits may be useful for renewable energy projects if the project can establish that it will be helping the Canadian economy as an environmentally beneficial project. This also demonstrates EDC's willingness to fund companies for the purposes of direct foreign investment.*



Appendix A

Key ECAs

Country	Export Credit Agency	Export Credits provided under the OECD Arrangement?
Australia	Export Finance Australia	Yes
Austria	Oesterreichische Kontrollbank AG	Yes
Belgium	Credendo – Export Credit Agency	Yes
Brazil	Brazilian Guarantees Agency Banco Nacional de Desenvolvimento Econômico e Social	No
Canada	Export Development Canada	Yes
Czech Republic	Česká Exportní Banka, a.s. Export Guarantee and Insurance Corporation	Yes
China	The Export-Import Bank of China China Export and Credit Insurance Corporation (SINOSURE)	No Yes
Denmark	Eksport Kredit Fonden	Yes
Finland	Finnish Fund for Industrial Cooperation Ltd. Finnvera plc	Yes
France	Bpifrance Assurance Export SFIL	Yes
Germany	Euler Hermes KfW (refinancing entity for Hermes covered loans) KfW IPEX-Bank (support entity through ERP Export Financing Programme and Shipping CIRP Programme)	Yes
Hungary	Hungarian Export-Import Bank plc	Yes
India	ECGC Limited Export-Import Bank of India	No
Indonesia	Indonesia Eximbank (LPEI)	No
Israel	Ashra – The Israel Foreign Trade Risks Insurance Corp. Ltd.	No
Italy	SACE spa	Yes

Appendix A

Key ECAs (cont'd)

Country	Export Credit Agency	Export Credits provided under the OECD Arrangement?
Japan	Japan Bank for International Cooperation	Yes
	Nippon Export and Investment Insurance	
Korea	Korea Eximbank (KEXIM)	Yes
	Korea Trade Insurance Corporation	
Mexico	Banco Nacional de Comercio Exterior	No
Netherlands	Atradius Dutch State Business NV	Yes
Norway	Garanti-instituttet for eksportkreditt	Yes
	EksportKreditt Norway	
Russia	Export Insurance Agency of Russia	No
	Eximbank of Russia	
Singapore	ECICS Limited	No
South Africa	Export Credit Insurance Corporation	No
Spain	Compañía Española de Seguros de Crédito a la Exportación	Yes
Sweden	Exportkreditnämnden	Yes
	Svensk Exportkredit	
Switzerland	Swiss Export Risk Insurance	Yes
Turkey	Export Credit Bank of Turkey	Yes
United Kingdom	UK Export Finance	Yes
United States	Export-Import Bank of the United States	Yes



Key bankability issues
for renewable energy projects

11 Key bankability issues for renewable energy projects

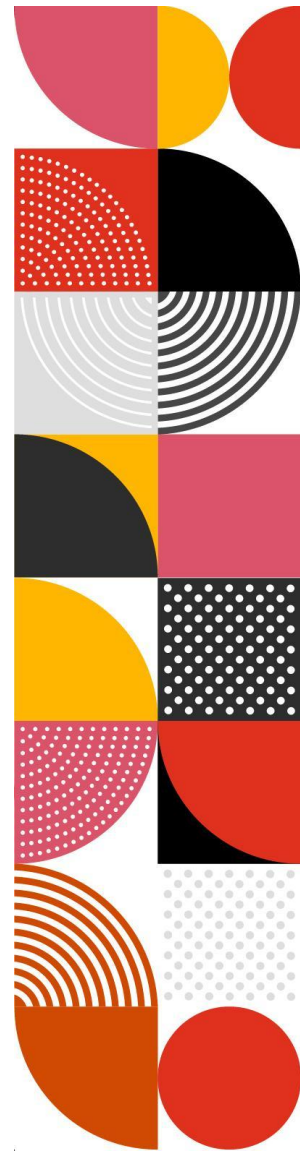
Investing in Energy Transition Projects
March 2023



Renewable energy projects and key bankability issues

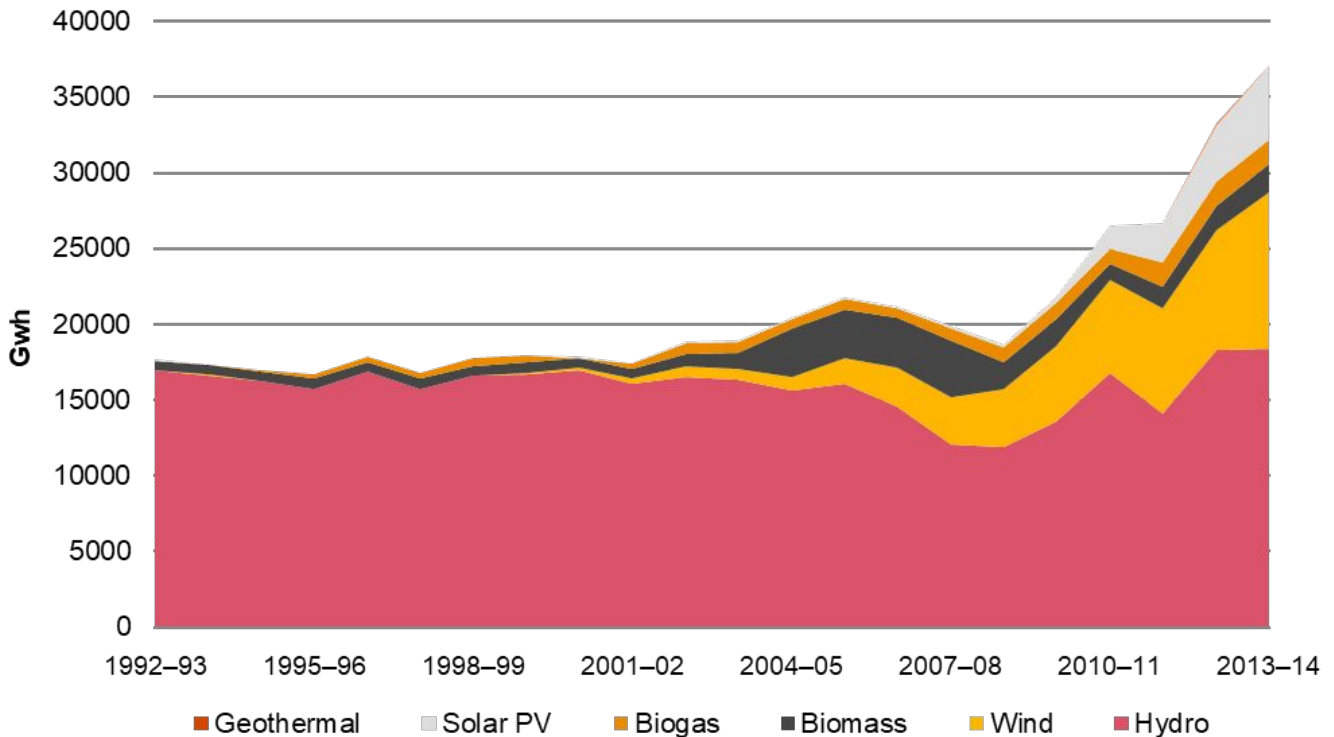
The renewable energy industry in Australia is well-established and mature for some technologies (e.g., wind, rooftop solar PV and utility scale solar PV), developing in others (e.g., solar thermal/CSP and hybrid solar) and at the commercialisation stage in others (e.g., geothermal, wave and hydrogen).

At this time of increasing market interest and development, it is relevant to consider key issues and market trends in the construction, operation and regulatory aspects of projects, and critical bankability considerations relating to each of these issues. While this paper focuses on issues that are of most interest to project Sponsors and Lenders, many of these considerations are equally relevant to Contractors. This paper considers these issues in the context of utility scale solar and wind projects in Australia.



Overview of the current state of renewable energy in Australia

Australian energy generation from renewable sources



Features of wind and solar facilities

Wind facilities

A wind farm typically comprises a series of wind turbines, a substation, cabling (to connect the wind turbines and substation to the electricity grid), wind monitoring equipment and temporary and permanent access tracks. The wind turbines used in commercial wind farms are large rotating, three-bladed machines that typically produce between 1MW and 3MW of output. Each wind turbine is comprised of a rotor, nacelle, tower and footings. The height of a tower varies with the size of the generator but can be as high as 100m. The number of turbines depends on the location and capacity of turbines.

The amount of power a wind generator can produce is dependent on the availability and the speed of the wind. The term 'capacity factor' is used to describe the actual output of a wind energy facility as the percentage of time it would be operating at maximum power output.

Wind farms need to be located on sites that have strong, steady winds throughout the year, good road access and proximity to the electricity grid. Australia has one of the world's best wind resources, especially along the southeast coast of the continent and in Tasmania.

Solar PV facilities

Solar PV facilities utilise PV cells which are assembled to form PV panels or modules that are then lined up into solar arrays, PV cells convert sunlight into electric current using the photoelectric effect. Most solar arrays use an inverter to convert the DC power produced by the PV panels into AC power. Solar PV plants can use either fixed-mount solar arrays or automated tracking systems that allow the solar arrays to follow the sun's daily path across the sky and optimise electricity production.

A solar PV facility typically comprises a series of PV panel arrays and inverters, mounts, trackers (if used), cabling, monitoring equipment, substation and access tracks.

The amount of electricity generated by a PV facility will be dependent on a number of factors including the type and positioning of the panels and whether trackers are used.

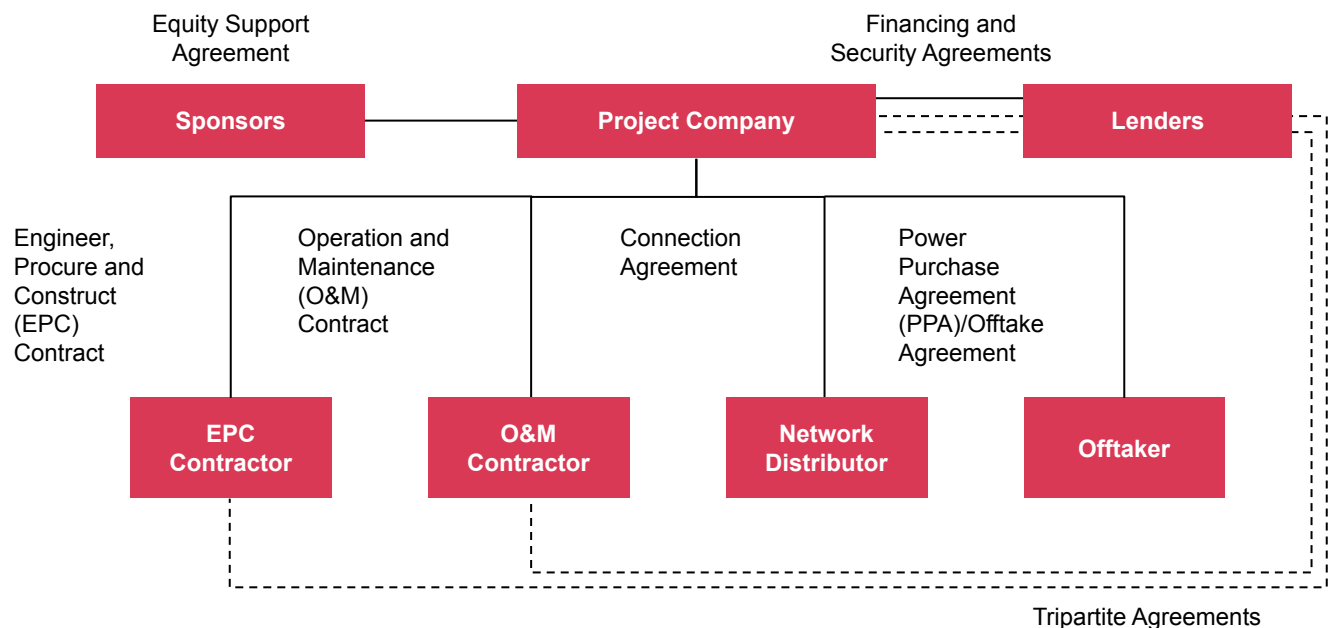
Solar thermal facilities

There are four primary technologies used in solar thermal facilities – Parabolic trough, solar tower, fresnel refractors and solar dish. Of these, the technology used in parabolic trough facilities is currently the most commercially mature, being used in 94% of solar thermal projects worldwide, followed by that used in solar tower facilities. The basic features of a solar thermal facility vary by technology but are essentially comprised of an array of mirrors used to concentrate sunlight and produce heat and steam to generate electricity using the conventional thermodynamic cycle. In parabolic trough projects, for example, curved mirrors concentrate the sun's rays on a focal line and synthetic oil, steam or molten salt is used to transfer the solar heat to a steam generator.

One of the main features driving the commercialisation of solar thermal technology is the ability to incorporate storage systems using synthetic oil or molten salt. Some solar thermal facilities with molten salt storage have storage capacities of 6-15 hours, which increases the capacity factors of the plants significantly.

Contractual structure

The diagram below illustrates the basic contractual structure of a typical project financed renewable energy project.



The detailed contractual structure will vary from project to project. For example, in some wind and hydro projects, the scope of work generally performed under an EPC Contract is split into a Turbine Supply Contract and a Balance of Plant (**BOP**) Contract, with the performance guarantees during the operating phase of the facility dealt with in a Warranty Operating And Maintenance contract (**WOM**). However, for the purpose of this paper, we have examined a project with the basic structure illustrated above.

As can be seen from the diagram, the Project Company¹ will usually enter into the following agreements comprising the project documents:

- **Construction contract** – Governs various elements of the construction of the facility including the supply and assembly of equipment (such as turbines or PV panels) and construction of the balance of the plant comprising civil and electrical works. As outlined above, there are a range of contracting methods that may be used, from an EPC Contract (under which a Contractor is obliged to deliver a complete facility to a Developer who requires only ‘turn a key’ to start operating the facility) to a split contracting structure (with the supply, design and construction of the facility all performed by separate parties, with or without a project manager). The choice of contracting approach will depend on a number of factors including the time available, Lender requirements, identity of the Contractor(s) and whether the Contractor is willing to ‘wrap’ or guarantee the performance of the components of the facility (e.g., panels, turbines). The major advantage of the EPC Contract over the other possible approaches is that it provides for a single point of responsibility. This is discussed in more detail below. In our experience most utility-scale renewable energy projects use EPC Contracts.

Interestingly, on large project-financed projects, the Contractor is increasingly becoming one of the Sponsors, (i.e., an equity participant in the Project Company). Contractors will ordinarily sell down their interest after financial close because, generally speaking, Contractors will not wish to tie up their capital in operating projects. In addition, once construction is complete the rationale for having the Contractor included in the Ownership consortium no longer exists. Similarly, once construction is complete a project will normally be reviewed as lower risk than a project in construction and therefore, all other things being equal, the Contractor should achieve a good return on its investment when selling down.

- **Operation and maintenance contracts** – Are generally comprised of a long-term operating and maintenance contract (**O&M contract**) with an Operator, though the term will vary from project to project depending on factors such as the location, technology and PPA available. The Operator may be a Sponsor, particularly if one of the Sponsors is an independent power producer or utility company whose main business is operating wind or solar facilities. In some financing structures, the Lenders will require the Project Company itself to operate the facility. In those circumstances the O&M contract will be replaced with a WOM contract with the manufacturer and supplier of the major equipment supplied, for example, in the case of a wind farm, the wind turbine generators.

- **PPA or offtake agreement** – Under which the Project Company will sell the electricity produced by the facility to a purchaser or ‘offtaker.’ In traditional project-financed power projects there will be a power purchase agreement (**PPA**) between the Project Company and an offtaker such as an electricity retailer, large electricity consumer or government, under which the retailer or government undertakes to pay for a set amount of electricity for a specified amount of time, regardless of whether it actually takes that amount of electricity (referred to as a ‘take or pay’ obligation). In turn, the Project Company will undertake to produce a minimum quantity of electricity. Sometimes a tolling agreement is used instead of a PPA, under which the power purchaser directs how the plant is to be operated and dispatched.

Merchant power projects without a PPA in place do not have the same certainty of cash flow as they would if there was a PPA and are generally considered higher risk than non-merchant projects. This risk can be mitigated by entering into synthetic PPAs or hedge agreements to provide some certainty of revenue.

These agreements are financial hedges as opposed to physical sales contracts. These are discussed in further detail below.

- **Connection agreement** – For connection of the facility’s generation equipment into the relevant grid or electricity distribution or transmission network between the Project Company and the Owner of the network (a transmission company, distribution company, electricity utility or small grid Owner/Operator). The connection agreement will broadly cover the construction and installation of connection facilities and the terms and conditions under which electricity generated by the facility will be exported into the grid. A connection agreement will not be required where the facility is not connected to the grid, such as in the case of a ‘captive’ facility with a single offtaker.
- **Concession agreement** – In traditional power projects, a concession or project agreement is entered into between the Project Company and a government entity granting the Project Company a concession to build and operate the facility for a fixed period of time (usually between 15 and 25 years), after which it was handed back to the government. However, following the deregulation of electricity industries in many countries, merchant or independent power producer renewable energy projects are becoming increasingly prevalent. Merchant power projects do not normally require a concession agreement to be entered into – The Project Company will instead be required to obtain the necessary regulatory consents to construct and operate the project. The nature and extent of these approvals will vary from place to place, but will generally include planning, environmental and building approvals and approvals and licences to sell electricity into the market.

¹ Given this paper focuses on project financed infrastructure projects we refer to the Principal as the Project Company. Whilst project companies are usually limited liability companies incorporated in the same jurisdiction as the project is being developed in the actual structure of the Project Company will vary from project to project and jurisdiction to jurisdiction.

- **Financing and security agreements** – With the Lenders to finance the development of the project.

It is critical that the above-listed suite of documents that govern the development, construction and long-term operation of a renewable energy facility are, where practical, tailored so as to be consistent and aligned from a risk allocation perspective with the requirements of the other project documents. Further, it is vital to properly manage the interfaces between the various types of agreements.

Bankability

A bankable contract is a contract with a risk allocation between the Contractor and the Project Company that satisfies the Lenders. Lenders focus on the ability (or more particularly the lack thereof) of the Contractor to claim additional costs and/or extensions of time as well as the security provided by the Contractor for its performance. The less comfortable the Lenders are with these provisions, the greater amount of equity support the Sponsors will have to provide. In addition, Lenders will have to be satisfied as to the technical risk of the technology proposed and other project-specific features. Obviously price is also a consideration, but that is usually considered separately to the bankability of the contract because the contract price (or more accurately the capital cost of the facility) goes more directly to the bankability of the project as a whole.

Before examining the requirements for bankability, it is worth briefly considering the appropriate financing structures and lending institutions. The most common form of financing for infrastructure projects is project financing. Project financing is a generic term that refers to financing secured only by the assets of the project itself. Therefore, the revenue generated by the project must be sufficient to support the financing. Project financing is also often referred to as either 'non-recourse' financing or 'limited recourse' financing.

The terms 'non-recourse' and 'limited recourse' are often used interchangeably, however, they mean different things. 'Non-recourse' means there is no recourse to the project Sponsors at all and 'limited recourse' means, as the name suggests, there is limited recourse to the Sponsors. The recourse is limited both in terms of when it can occur and how much the Sponsors are forced to contribute. In practice, true non-recourse financing is rare. In most projects the Sponsors will be obliged to contribute additional equity in certain defined situations.

Traditionally project financing was provided by commercial Lenders. However, as projects became more complex and financial markets more sophisticated, project finance also developed. The size of the debt required to develop a complex project means that in many cases the debt will be syndicated across multiple commercial Lenders. Additional mezzanine and other subordinated forms of debt may also be used.

Whilst commercial Lenders still provide finance, governments now also provide financing either through export credit agencies² or trans or multinational organisations like the World Bank, the Asian Development Bank and European Bank for Reconstruction and Development. Sponsors are also using more sophisticated products like credit-wrapped bonds, securitisation of future cash flows and political risk insurance to provide a portion of the necessary finance. For example, in 2013 a ZAR1,000,000,000 (approximately AUD\$100 million) solar financing bond was issued by an affiliate of Soitec Solar to finance the construction of a 44 MW utility-scale concentrator photovoltaic (CPV) solar power plant in Touwsrivier, South Africa³.

In assessing bankability, Lenders will look at a range of factors and assess a contract as a whole. Therefore, in isolation it is difficult to state whether one approach is or is not bankable. Generally speaking the Lenders will require the following elements to be included for a contract to be considered to be 'bankable':

- a fixed completion date
- a fixed completion price
- no or limited technology risk
- output guarantees
- liquidated damages for both delay and performance
- security from the Contractor and/or its parent
- large caps on liability (ideally, there would be no caps on liability, however, given the nature of EPC Contracting and the risks to the Contractors involved there are almost always caps on liability)
- restrictions on the ability of the Contractor to claim extensions of time and additional costs.

An EPC Contract delivers all of the requirements listed above in one integrated package. This is one of the major reasons why they are the predominant form of construction contract used on large-scale project financed infrastructure projects. Lenders have become comfortable with the interface risk arising in a split EPC structure and will focus on the remedies for underperformance in the WOM.

Sponsor support

In certain cases, it may be necessary to provide Sponsor support to strengthen the capacity of the Project Company to satisfy its obligations to the banks and to have a 'bankable' project. Forms of Sponsor support may include equity subscription agreements (base and standby equity), completion guarantees of whole or part of the debt until the project commences commercial operation, bank guarantees to support the completion guarantee and cost overrun guarantees/facility. Completion guarantees, for example, ensure that the Lenders will be paid back a set amount if the facility does not reach completion or the repayment of scheduled debt service, of Principal plus interest, if completion is delayed. Other forms of support may be incorporated where the Sponsor is a party to a key project contract (such as a construction contract, O&M agreement or offtake agreement) by requiring the Sponsor to provide additional guarantee letters of credit or corporate support to underpin the project.

² Export credit agencies are bodies that provide finance on the condition that the funds are used to purchase equipment manufactured in the country of the export credit agency.

³ <https://www.prnewswire.com/news-releases/soitec-completes-zar-1000000000-inaugural-solar-financing-bond-transaction-in-south-africa-205386281.html>.

Merchant PPA

As noted above, to ensure certainty of revenue project Sponsors will generally prefer to enter into a long-term PPA in respect of the energy produced by a renewable energy facility. Where this is not available or not available on terms satisfactory to the Sponsors, the Sponsors will be required to enter into merchant arrangements and sell directly into the electricity spot market. For a fully merchant project (FMP), versus a fully or partly contracted project, from the Sponsor's perspective the expected IRR will obviously need to increase to account for the significantly increased risk in returns the project will experience due to exposure to spot prices.

Some FMPs may seek to implement an electricity hedge Programme to reduce pricing risk in an otherwise merchant transaction. Beyond the amount of generation hedged and beyond the term of the implemented hedge, spot market pricing risk will remain. If the project and the Lenders required these hedges, their renewal on expiry (i.e., rolling hedges) would most likely need to be documented to involve the Lenders, or otherwise meet pre-agreed minimum criteria.

Any Lender requirement for long-term foundation hedges will come down to being able to model an acceptable return for the Sponsor and Lenders. Lenders will also look to the credibility and financial strength of any offtake swap providers. In some cases, the Lenders' own internal energy trading desk may be involved, provided there is a certain level of certainty regarding expected generation from the facility.

It can generally be anticipated that both the gearing and ratios for a FMP will be higher than for projects with full or partial PPAs in place.

Gearing could be expected to be around 45-50% for an FMP, as opposed to 60-75% for a project which had hedged/set prices for whatever it was able to generate. Our understanding is that the gearing for a recent Australian merchant wind project was 50%, but since then merchant prices have declined along with price forecasts, which could push gearing even lower.

From a Lenders' perspective, with a long-term PPA in place with a known price for an accepted generation profile contracted, Debt Service Cover Ratios could be expected to be around 1.40x. If the price for the entire generation profile is not known however, given the spot price risk a DSCR of around 2.0x may be required (on a conservative forward price assumption). The higher DSCR is required on the basis that it is anticipated that far greater revenue will need to be achieved for the scheduled debt service costs.

We understand that some Lenders are contemplating the possibility of using a blended DSCR in modelling the bankability of renewable energy projects. For example, if 30% of anticipated generation is the subject of a hedge, that portion of the project may have a DSCR of 1.4x. The remainder of anticipated generation (including the tail end of the contracted portion, which a financier would assume reverts to spot price risk) would need to achieve a higher DSCR, say around 2.0x.



Basic features of an EPC Contract

The key clauses in any construction contract are those that impact time, cost and quality.

The same is true of EPC Contracts. However, EPC Contracts tend to deal with issues with greater sophistication than other types of construction contracts. This is because, as mentioned above, an EPC Contract is designed to satisfy the Lenders' requirements for bankability.

EPC Contracts provide for:

- **A single point of responsibility** – The Contractor is responsible for all design, engineering, procurement, construction, commissioning and testing activities. Therefore, if any problems occur the Project Company need only look to one party – The Contractor – To both fix the problem and provide compensation. As a result, if the Contractor is a consortium comprising several entities, the EPC Contract must state that those entities are jointly and severally liable to the Project Company.
- **A fixed contract price** – Risk of cost overruns and the benefit of any cost savings are to the Contractor's account. The Contractor usually has a limited ability to claim additional money, which is limited to circumstances where the Project Company has delayed the Contractor or has ordered variations to the works.
- **A fixed completion date** – EPC Contracts include a guaranteed completion date that is either a fixed date or a fixed period after the commencement of the EPC Contract. If this date is not met the Contractor is liable for Delay Liquidated Damages (**DLDs**). DLDs are designed to compensate the Project Company for loss and damage suffered as a result of late completion of the facility. To be enforceable in common law jurisdictions, DLDs must be a genuine pre-estimate of the loss or damage that the Project Company will suffer if the facility is not completed by the target completion date. The genuine pre-estimate is determined by reference to the time the contract was entered into.

DLDs are usually expressed as a rate per day, which represents the estimated extra costs incurred (such as extra insurance, supervision fees and financing charges) and losses suffered (revenue forgone) for each day of delay.

In addition, the EPC Contract must provide for the Contractor to be granted an extension of time when it is delayed by the acts or omissions of the Project Company. The extension of time mechanism and reasons why it must be included are discussed below.

Performance guarantees – The Project Company's revenue will be earned by operating the facility. Therefore, it is vital that the wind farm or solar farm performs as required in terms of output and reliability. As such EPC Contracts contain performance guarantees backed by compensation measures such as Performance Liquidated Damages (**PLDs**), payable by the Contractor if it fails to meet the performance guarantees. These mechanisms are described in further detail below.

PLDs must be a genuine pre-estimate of the loss and damage that the Project Company will suffer over the life of the project if the wind farm does not achieve the specified performance guarantees. As with DLDs, the genuine pre-estimate is determined by reference to the time the contract was signed. PLDs usually represent a net present value (**NPV**) (less expenses) calculation of the revenue forgone over the life of the project if the relevant performance guarantees are not met.

PLDs and the performance guarantee regime and their interface with DLDs and the delay regime are discussed in more detail below.

Caps on liability – As mentioned above, most EPC Contractors will not, as a matter of company policy, enter into contracts with unlimited liability. Therefore, EPC Contracts for power projects cap the Contractor's liability at a percentage of the contract price. This varies from project to project; however, an overall liability cap of 100% of the contract price is common. In addition, there are normally sub-caps on the Contractor's liquidated damages liability. For example, DLDs and PLDs might each be capped at 15% of the contract price, with an overall cap on both types of liquidated damages of 25% of the contract price.

There will also generally be an exclusion of consequential or indirect loss. Put simply, consequential damages are those damages that do not flow directly from a breach of contract, but which were in the reasonable contemplation of the parties at the time the contract was entered into. This used to mean heads of damage like loss of profit. However, loss of profit is now usually recognised as a direct loss on project-financed projects and, therefore, would be recoverable under a contract containing a standard exclusion of consequential loss clause.

Given the unclear position under Australian law, parties must ensure that an exclusion of liability clause is carefully drafted. Importantly, the clause should set out clearly and exhaustively expressed in detail those losses which are intended to be categorised as consequential. Where presented with a clause excluding liability for consequential loss, project companies must expressly state the categories of loss for which the Contractor will be liable. This essentially means that project companies will need to include a definition of Direct Loss which would identify losses that are within the contemplation of the parties, (for example, project financing of a power or process plant project a Direct Loss should include loss of revenue under a corresponding PPA). Clearly this may be difficult to negotiate, but this should nevertheless be the starting position.

Nonetheless, care should be taken to state explicitly that liquidated damages can include elements of consequential damages. Given the rate of liquidated damages is pre-agreed, most Contractors will not object to this exception to the exclusion of consequential loss.

In relation to both caps on liability and exclusion of liability, it is common for there to be some exceptions. The exceptions may apply to either or both the cap on liability and the prohibition on claiming consequential losses. The exceptions themselves are often project specific; however, some common examples include fraud or wilful misconduct, death or personal injury and breaches of intellectual property warranties.

Security – It is standard for the Contractor to provide performance security to protect the Project Company if the Contractor does not comply with its obligations under the EPC Contract. The security takes a number of forms including:

- A bank guarantee for a percentage, normally in the range of 5-15%, of the contract price. The actual percentage will depend on a number of factors including the other security available to the Project Company, the payment schedule (the greater the percentage of the contract price remaining unpaid by the Project Company at the time it is likely to draw on security to satisfy DLD and PLD obligations, the smaller the bank guarantee can be), the identity of the Contractor and the risk of it not properly performing its obligations, the price of the bank guarantee and the extent of the technology risk associated with the facility. The Project Company and the Lenders will generally require minimum standards in respect of the entity providing the guarantee, such as a minimum Standard & Poor's rating, and may also require the ability to approve the specific provider of the guarantee.
- Retention, i.e., withholding a percentage (usually 5%-10%) of each payment. Provision may be made to replace retention monies with a bank guarantee (sometimes referred to as a retention guarantee or retention bond). However, cash retention and retention guarantees/bonds are less prevalent in the current market as both project companies and Lenders prefer this to be incorporated into the bank guarantee

- Advance payment guarantee, if an advance payment is made. This is generally in the form of a bank guarantee to the value of the advance payment.
- Parent company guarantee, from the ultimate parent (or other suitable related entity) of the Contractor, which provides that it will perform the Contractor's obligations if, for whatever reason, the Contractor does not perform.

Variations. The Project Company has the right to order variations and agree to variations suggested by the Contractor. If the Project Company wants the right to either omit works in their entirety or to be able to engage a different Contractor, this must be stated specifically. In addition, a properly drafted variations clause should make provision for how the price of a variation is to be determined. In the event the parties do not reach an agreement on the price of a variation, the Project Company or its representative should be able to determine the price. This determination is subject to the dispute resolution provisions. In addition, the variations clause should detail how the impact, if any, on the performance guarantees is to be treated. For some larger variations the Project Company may also wish to receive additional security. If so, this must also be specified within the variations clause.

Defects liability. The Contractor is usually obliged to repair defects that occur in the 12 to 24 months following completion of performance testing. Defects liability clauses can be tiered, ie the clause can provide for one period for the entire facility and a second, extended period for more critical items (e.g., wind turbines or PV panels). In such cases, the Project Company will usually seek to ensure that it is protected by manufacturer's warranties (discussed in further detail below).

Intellectual property – The Contractor warrants that it has rights to all intellectual property used in the execution of the works and indemnifies the Project Company if any third parties' intellectual property rights are infringed.

Force majeure – The parties are excused from performing their obligations if a force majeure event occurs. This is discussed in more detail below.

Suspension – The Project Company usually has the right to suspend the works.

Termination – This sets out the contractual termination rights of both parties. The Contractor usually has very limited contractual termination rights. These rights are limited to the right to terminate for non-payment or for prolonged suspension or prolonged force majeure and will be further limited by the tripartite agreement between the Project Company, the Lenders and the Contractor. The Project Company will have more extensive contractual termination rights. They will usually include the ability to terminate immediately for certain major breaches or if the Contractor becomes insolvent and the right to terminate after a cure period for other breaches. In addition, the Project Company may have a right to terminate for convenience. It is likely the Project Company's ability to exercise its termination rights will also be limited by the terms of the financing agreements.

Performance specification – Unlike a traditional construction contract, an EPC Contract usually contains a performance specification. The performance specification details the performance criteria that the Contractor must meet. However, it does not dictate how such criteria must be met. This is left to the Contractor to determine. A delicate balance must be maintained. The specification must be detailed enough to ensure the Project Company knows what it is contracting to receive but not so detailed that if problems arise the Contractor can argue that the issues are not its responsibility.

Potential drawbacks of using an EPC Contract

Whilst there are, as described above, numerous advantages to using an EPC Contract, there are some disadvantages. These include the fact that an EPC Contract may command a higher contract price than alternative contractual structures. One factor is the allocation of almost all the construction risk to the Contractor. This has a number of consequences, one of which is that the Contractor will have to factor into its price the cost of absorbing those risks. This will result in the Contractor building contingencies into the contract price for events that are unforeseeable and/or unlikely to occur. If those contingencies were not included, the contract price would be lower. However, the Project Company would bear more of the risk of those unlikely or unforeseeable events, which may not be acceptable to the Lenders. Sponsors have to determine, in the context of their particular project, whether the strict risk allocation is warranted in the face of the increased price.

As a result, Sponsors and their advisors must critically examine the risk allocation on every project. Risk allocation should not be an automatic process. Instead, the Project Company should allocate risk in a sophisticated way that delivers the most efficient result. For example, if a project is being undertaken in an area with unknown geology and without the time to undertake a proper geotechnical survey, the Project Company may be best served by bearing the site condition risk itself as it will mean the Contractor does not have to price a contingency it has no way of quantifying. This approach can lower the risk premium paid by the Project Company. Alternatively, the opposite may be true. The Project Company may wish to pay for the contingency in return for passing off the risk which quantifies and caps its exposure. This type of analysis must be undertaken on all major risks prior to going out to tender.

Another consequence of this strict approach to risk allocation is the fact that there are relatively few construction companies that can and are willing to enter into EPC Contracts, which can also result in relatively high contract prices.

Another major disadvantage of an EPC Contract becomes evident when problems occur during construction. In return for receiving a guaranteed price and a guaranteed completion date, the Project Company cedes most of the day-to-day control over the construction. Therefore, project companies have limited ability to intervene when problems occur during construction. The more a Project Company interferes, the greater the likelihood of the Contractor claiming additional time and costs. In addition, interference by the Project Company will make it substantially easier for Contractors to defeat claims for liquidated damages and defective works.

Obviously, ensuring the project is completed satisfactorily is usually more important than protecting the integrity of the contractual structure. However, if a Project Company interferes with the execution of the works, in most circumstances it will have the worst of both worlds – A contract that exposes it to liability for time and costs incurred as a result of its interference without any corresponding ability to hold the Contractor liable for delays in completion or defective performance. The same problems occur even where the EPC Contract is drafted to give the Project Company the ability to intervene. In many circumstances, regardless of the actual drafting, if the Project Company becomes involved in determining how the Contractor executes the works, then the Contractor will be able to argue that it is not liable for either delayed or defective performance.

It is critical that great care is taken in selecting a Contractor that has sufficient knowledge and expertise to execute the work. Given the significant monetary value of EPC Contracts, and the potential adverse consequences if problems occur during construction, the lowest price should not be the only factor.



Split EPC Contracts

One common variation on the basic EPC structure illustrated above is a split EPC Contract. In the case of wind and hydro projects, the split is commonly between the turbine supplier, responsible for supplying, installing and commissioning the turbines, and the civil Contractor responsible for performing the balance of the plant (**BOP**). Lower prices may be achieved using this form of split by avoiding the Contractor applying a risk premium for having to wrap or guarantee either equipment that it has not sourced or manufactured or work that it has not performed.

Another common split structure involves splitting an EPC Contract into an onshore infrastructure contract and an offshore supply contract. The main reason for using this form of split contract is because it can result in a lower contract price as it allows (in an onshore/offshore split) the Contractor to make savings in relation to onshore taxes; in particular on indirect and corporate taxes in the onshore jurisdiction⁴.

In multi-jurisdiction projects, a split structure may also be used to reduce the cost of complying with local licensing regulations by having certain portions of the works, particularly the design works, undertaken in other offshore jurisdictions.

In a split arrangement, unlike a standard EPC Contract, the Project Company cannot look only to a single Contractor to satisfy all the contractual obligations (in particular, design, construction and performance). In such cases a third agreement, a wrap-around guarantee or coordination and interface agreement, may be used to deliver a single point of responsibility despite the split. Under a wrap-around guarantee, an entity, usually either the offshore supplier or the parent company of the contracting entities, guarantees the obligations of both Contractors. This delivers a single point of responsibility to the Project Company and the Lenders.

However, a wrap-around guarantee will not be relevant where the manufacturer of the turbines or panels and the balance of plant Contractor are separate entities and neither company will take the single point of responsibility under the wrap-around guarantee. Accordingly, the Lenders will want to be satisfied that the interface issues are dealt with in the absence of a single point of responsibility.



⁴ This is common to projects in Asia; however, detailed tax advice is required to ascertain whether this is appropriate for any specific project.

Key renewable energy specific clauses in EPC Contracts

Manufacturers' warranties

Ensuring that the EPC Contract allows for recourse by the Project Company to the manufacturers' warranties for equipment such as (in the case of solar PV) inverters, modules, trackers and other key components, is paramount to meeting bankability requirements. It is critical that the technology used for a facility is efficient, reliable, safe and serviceable.

The solar PV manufacturing landscape in particular has seen many manufacturers face a zero or negative profit margin and file for bankruptcy due to the rapid growth of the market leading to an oversupply which has depressed prices. With most solar PV facilities expected to have a lifetime of 20+ years, the Owner needs to ensure that the manufacturer behind the inverters, modules and other warranted equipment it uses can honour the warranty for the life of the project. To avoid potential issues arising, we recommend that parties are stringent in conducting their due diligence regarding the selection of manufacturers. This includes looking for (among other things) common financial metrics to indicate the relative stability of those manufacturers (e.g., cash flow per share, debt to capital ratio).

Key matters for consideration in reviewing any warranty offered by a manufacturer include:

- **Term of the warranty** – Although the required term will vary depending on the equipment that the warranty applies to, the term must be sufficient to cover the likely period in which issues are likely to arise and (if possible) the life of the facility. For example, in the case of PV modules, these warranties should subsist for five to ten years after the commercial operation date for product guarantees or defects, and up to 25 years in respect of output guarantees and degradation.
- **What is covered by the warranty** – Which piece of equipment and which level of performance? Are there any exclusions or exemptions? For example, if there is an oversizing of the panel arrays in proportion to the inverters, will this void or otherwise affect the warranties provided in respect of the inverters?
- **Choice of law** – Manufacturers will generally select the law of the country in which their operations are based. However, inconsistencies may arise where this is different to the law applying to the other project documents. Manufacturers' warranties may also be difficult to enforce in certain jurisdictions such as the People's Republic of China.

- **Dispute resolution** – The warranty documents should set out the process to be followed in the event that a dispute arises. International manufacturers generally tend to prefer arbitration over litigation.

The warranties obtained by the Contractor must be fully transferable and contain provisions to be assigned to the Project Company on project completion or in the event of the Contractor's default or insolvency. Further protections for the Project Company and the Lenders include the side agreements and Lenders' ability to take security over the warranties and to exercise the right of step-in under a tripartite agreement.

Where manufacturer's warranties are not available, or where they are available but may be inadequate or impractical to enforce, Lenders and Sponsors may need to consider other options. One option we are seeing in the market to address the risk of underperformance are specialist insurance products that guarantee the output of the system. The cost of the long-term usage of such insurance products is something that would have to be weighed against other options and, if selected, incorporated into the project's financial model.

Another option to avoid over-reliance on manufacturer's warranties is to implement stringent quality assurance practices for key components. This will generally involve a multi-stage process, including factory audits and field inspections, on-site inspections of purchased equipment before it leaves the plant and field inspections following installation. To maintain stringency, it is preferable that an independent QA is used rather than relying on any QA conducted by the manufacturer.

Serial defects

Where a facility incorporates a large number of the same components that are critical to performance (such as wind turbines for wind facilities or modules or inverters for solar PV facilities), it is important that the Sponsors are protected in the instance that a fault or defect emerges in a batch or other consignment of that component with the same root cause (known as a 'serial defect'). Although Sponsors should also be protected by the manufacturer's warranties applying to those components (as noted above), it is beneficial for bankability purposes to ensure that the Contractor also has obligations to address serial defects.

Serial defects provisions are triggered where defects with the same root cause arise with respect to a specified percentage of a batch or consignment of a component. Although the required percentage will vary depending on factors such as the technology used, we have seen ranges between 2-20% of a specific component. The term of the Contractor's serial defects obligations will generally be the same length as the defects liability period.

If a serial defect is identified, the Contractor will generally be required to test all other components from the same batch or consignment to determine whether the serial defect is present. An independent party or laboratory may be nominated in the EPC Contract to perform the tests if required. As a minimum, the Contractor will be required to report to the Sponsors on the result of the tests and to replace the components in which the serial defect is identified (at the cost of the Contractor, including shipping costs). Generally the Contractor will be required to replace all components within that batch or component (even those in which a serial defect was not identified in testing) to ensure that the serial defect does not arise elsewhere. A requirement may also be included to notify the Project Company in the event that serial defects are identified in other batches of the same product worldwide, in which case the Project Company may require additional monitoring to be implemented.

Grid access

Clearly, EPC Contracts will not provide for the handover of the wind farm or solar PV facility to the Project Company and the PPA will not become effective until all commissioning and reliability trialling has been successfully completed. This raises the important issue of the need for the EPC Contract to clearly define the obligations of the Project Company in providing grid access to the Contractor.

Lenders need to be able to avoid the situation where the Project Company's obligation to ensure grid access is uncertain, as this could result in protracted disputes concerning the Contractor's ability to place load onto the grid system and to obtain extensions of time where delay has been caused as a result of the failure of the Project Company to provide grid access.

Grid access issues arise at two differing levels, namely:

- the obligation to ensure that the infrastructure is in place
- the obligation to ensure that the Contractor is permitted to export power.

With respect to the first obligation, the Project Company is the most appropriate party to bear this risk vis-à-vis the Contractor, since the Project Company usually either builds the infrastructure itself or has it provided through the relevant concession agreement. Issues that must be considered include:

- What are the facilities that are to be constructed (e.g., substations, transmission lines) and how will these facilities interface with the Contractor's works? Is the construction of these facilities covered by the PPA, connection agreement, concession agreement or any other construction agreement? If so, are the rights and obligations of the Project Company dealt with in a consistent manner?

- What is the timing for completion of the infrastructure – Will it fit in with the timing under the EPC Contract?

With respect to the Contractor's ability to export power, the EPC Contract must adequately deal with this risk and satisfactorily answer the following questions to ensure the smooth testing, commissioning and entering of commercial operation:

- What is the extent of the grid access obligation? Is it merely an obligation to ensure that the infrastructure necessary for the export of power is in place or does it involve a guarantee that the grid will take all power which the Contractor wishes to produce?
- What is the timing for the commencement of this obligation? Does the obligation cease at the relevant target date of completion? If not, does its nature change after the date has passed?
- What is the obligation of the Project Company to provide grid access in cases where the Contractor's commissioning/plant is unreliable – Is it merely a reasonableness obligation?
- Is the relevant grid robust enough to allow for full testing by the Contractor – For example, the performance of full load rejection testing?
- What is the impact of relevant national grid codes or legislation and their interaction with both the EPC Contract and the PPA?

Many EPC Contracts are silent on these matters or raise far more questions than they actually answer. It is advisable to back-to-back the Project Company's obligations under the EPC Contract (usually to provide an extension of time and/or costs) with any restrictions under the PPA. This approach will not eliminate the risk associated with grid access issues but will make it more manageable.

A variety of projects we have worked on have incurred significant amounts of time and costs in determining the grid access obligations under the EPC Contract, indicating that it is a matter which must be resolved at the contract formation stage. Therefore, we recommend inserting the clauses in Appendix 1, as modified to align with the relevant regulatory/grid access regime.

Development and environmental considerations

The responsibility for environmental obligations relating to the construction and operation of a wind or solar facility must be set out clearly in the EPC Contract. In particular, wind farms have a range of environmental impacts which need to be considered and managed properly and the Sponsor or Project Company will have to investigate if any aspects of the project are likely to be subject to scrutiny under the Environmental Protection and Biodiversity Conservation Act 1999 (Cth) (**EPBC Act**)⁵ or other environment or planning legislation such as the relevant state planning scheme provisions.

⁵ The EPBC Act prescribes the Commonwealth's involvement in environmental matters where an action has or will have a significant impact on 'matters of national environmental significance'. Detailed administrative guidelines are found at www.environment.gov.au/epbc.

Certain factors relating to the location of the facility or its effect on particular environmental features may limit development or trigger the need for reports or assessments to be conducted and approvals obtained before construction can proceed. For example, as outlined above, if wind turbines are located close to dwellings, written consent may be required from the Owners before development is allowed. Depending on the relevant state legislative framework, if the facility will require the clearance of native vegetation, a native vegetation offset management plan may need to be prepared, and if flora and fauna will be affected, surveys and assessments may be required. In the case of solar PV, issues may arise in respect of visual amenity and glint issues. In a 2013 decision, Civil Aviation Safety Authority (**CASA**) rejected claims that potential glare from a proposed solar farm at Mt Majura in the ACT could pose a danger for aircraft using nearby Canberra Airport⁶.

Environmental and development impacts of solar and wind energy facilities include:

- Concern regarding visual impact, as well as the effect of shadow flicker and blade glint (for wind) or reflective glare (solar), which must be avoided or mitigated by design and siting.
- Visual impacts may also pose an issue in terms of effects on particular locations of high amenity or tourist value, which may restrict or prevent development.
- In the case of wind, noise from the swishing of the blades and mechanical noise associated with noise from the generator, along with requirements to comply with prescribed noise standards and guidelines.
- Impacts on listed threatened species that inhabit the nearby area, whose habitat or surrounding ecological community may be impacted by the development, or on migratory species that may fly or move through the wind farm area, even if they do not inhabit the area. This is a particular issue in the case of migratory birds whose migration path crosses an established or proposed wind energy facility. In addition, effects on areas of high conservation and landscape values, such as national and state parks, Ramsar Wetlands, World Heritage properties and National Heritage Places, may also limit or prevent development.
- Effects caused by the clearance of native vegetation during construction and continued clearing requirements during the operation of the facility to, in the case of solar, avoid shading or shadowing.
- Potential electromagnetic interference with microwave, television and radio signals.
- Construction issues such as the impact of construction traffic and the construction of access road and lay-down areas.
- Archaeological and heritage issues including the impact on cultural heritage values and sites of significance to Indigenous peoples.

Many of these issues will be most relevant at the stage of seeking development approval and will be the responsibility of the Sponsor or Project Company. The list of permits, approvals and licences that must be obtained by the Project Company should be clearly identified in the EPC Contract, with the balance of construction consents and approvals being the responsibility of the Contractor. However, responsibility for adherence to the conditions attached to the development approvals, permits and the risks identified in the environmental impact assessment, must be passed on to the Contractor. For instance, planning approvals for wind farms are generally subject to permit conditions about noise limits. The Contractor must adhere to the required noise specifications and provide warranties that the wind farm will comply with the noise curves required by the specifications. If the environmental assessment has identified areas of ecological or archaeological importance, then these pre-construction site conditions must be documented in the EPC Contract and accepted by the Contractor.

The Contractor must also develop an environmental management plan to identify risks, mitigation and monitoring processes during construction. This should take into account factors such as erosion, dust and sediment control, storage of hazardous materials, weed control and waste management.

Consistency of commissioning and testing regimes

It is also important to ensure the commissioning and testing regimes in the EPC Contract mirror the requirements for commercial operation under the PPA. Mismatches only result in delays, lost revenue and liability for damages under the PPA, all of which have the potential to cause disputes.

Testing/trialling requirements under both contracts must provide the necessary Project Company satisfaction under the EPC Contract and system Operator/offtaker satisfaction under the PPA or connection agreement. Relevant testing issues which must be considered include:

- Are differing tests/trialling required under the EPC Contract and the PPA/connection agreement? If so, are the differences manageable for the Project Company or likely to cause significant disruption?
- Is there consistency between obtaining handover from the Contractor under the EPC Contract and commercial operation? It is imperative to prescribe back-to-back testing under the relevant PPA and the EPC Contract, which will result in a smoother progress of the testing and commissioning and better facilitate all necessary supervision and certification. Various certifications will also be required at the Lender level, and the Lenders will not want the process to be held up by their own requirements for certification. To avoid delays and disruption it is important that the Lenders' engineer is acquainted with the details of the project and, in particular, any potential difficulties with the testing regime. Therefore, any potential problems can be identified early and resolved without impacting on the commercial operation of the facility.

⁶ The Canberra Times, 'Solar glare safe: CASA' (13 November 2013) <<https://www.canberratimes.com.au/story/6149588/solar-glare-safe-casa/>>.

- Is the basis of the testing to be undertaken mirrored under both the EPC Contract and the PPA? For example, what noise tests are to be performed?
- What measurement methodology is being used? Are there references to international standards or guidelines to a particular edition or version?
- Are all tests necessary for the Contractor to complete under the EPC Contract able to be performed as a matter of practice?

Significantly, if the relevant specifications are linked to guidelines such as the relevant International Electrotechnical Commission (IEC) standard, consideration must be given to changes which may occur in these guidelines. The EPC Contract reflects a snapshot of the standards existing at a time when that contract was signed, meaning that mismatches may occur if the relevant standards guidelines have changed. It is important that there is certainty as to which standard applies for both the PPA and the EPC Contract – The standard at the time of entering the EPC Contract or the standard which applies at the time of testing?

Consideration must be given to the appropriate mechanism to deal with potential mismatches between the ongoing obligation of complying with laws, and the Contractor's obligation to build to a specification agreed at a previous time. One solution is to require satisfaction of guidelines 'as amended from time to time'. The breadth of any change of law provision will be at the forefront of any review.

The above issues raise the importance of the testing schedules to the EPC Contract and the PPA. The size and importance of the various projects to be undertaken must mean that the days when schedules are attached at the last minute without being subject to review are gone. Discrepancies between the relevant testing and commissioning requirements will only serve to delay and distract all parties from the successful completion of testing and reliability trials.

In addition, there is a need to ensure that the interface arrangements in relation to testing and commissioning are appropriately and clearly spelled out between the EPC Contractor and the Operator under the EPC Contract, the O&M contract and any other relevant interface agreements to avoid any subsequent interface disputes.

These are all areas where lawyers can add value to the successful completion of projects by being alert to and dealing with such issues at the contract formation stage.

Interface issues between the offtaker and the EPC Contractor

It is imperative that the appropriate party corresponds with the relevant offtaker/system Operator during construction on issues such as the provision of transmission facilities/testing requirements and timing.

The Project Company must ensure the EPC Contract states clearly that it is the appropriate party to correspond with the offtaker and the System Operator. Any uncertainty in the EPC Contract may unfortunately see the EPC Contractor dealing with the offtaker and/or the system Operator, possibly risking the relationship of the Project Company with its customer. It is the Project Company which must develop and nurture an ongoing and long-term relationship with the offtaker, whereas the Contractor's prime objective is generally to complete the project on time or earlier at a cost which provides it with significant profit. The clash of these conflicting objectives in many cases does not allow for such a smooth process. Again, the resolution of these issues at the EPC Contract formation stage is imperative.

Interface issues on-site access

Access to land involves negotiations with the landowner or the appropriate state-based land authority. In the case of wind energy in particular, the Project Company will generally enter into access agreements with the landowners and may be required to do so under legislation. The more common arrangements will be land leases providing possession and site access for the duration of the construction and operation of the wind farm. While the leasing of land to wind energy companies provides long-term income that complements farming income, the substance of the land lease agreements with landowners is the subject of much discussion and negotiation. Principally to ensure that the environmental and development impact of the wind farm development is considered and managed properly. Securing land rights for good development sites may be difficult if there is community opposition to these developments, particularly given the controversy in recent years relating to aspects of wind farm development such as noise and 'flicker' issues from wind turbines. However, there is also a large body of community support for wind farms demonstrated by pro-wind rallies and the increasing development of community wind farms such as Hepburn Wind⁷.

Principal responsibility for obtaining access to the site and negotiating the terms of the lease agreements will lie with the Project Company. However, in order for the Project Company to comply with the terms of the land lease or other access agreements, the Project Company will have to ensure that the Contractor under the EPC Contract complies with all the terms and conditions of the land lease agreements. The Contractor must also accept some degree of responsibility for the ongoing liaison and coordination with landowners during the construction and operation of the facility. Given that considerations and concerns will often differ between landowners, the specific requirements of the landowners should be taken into account at an early stage in the negotiation of the terms of the EPC Contract for any facility. Such concerns will vary from prohibitions on the depth of excavation to allow farming activity, to controlling the spread of pests and weeds.

⁷ Hepburn Wind is a 4.1 MW community owned wind energy facility, located at Leonards Hills in Victoria and reached commercial operation in July 2011: <https://www.cleanenergyregulator.gov.au/Infocentre/case-studies/renewable-energy-target-case-studies/hepburn-wind-community-cooperative>

The Project Company should only be required to provide possession and access as permitted under the negotiated land lease or site agreements, and the obligations of the Project Company under the land lease or site agreements should be flowed down into the EPC Contract. The Contractor should be appraised of the specific conditions and requirements of the landowners to ensure that the Contractor is aware of the limits on access to the site on which the facility is to be constructed and operated. The Contractor must formally acknowledge the Project Company's obligation to comply with the terms of the land lease or site agreements and must accept responsibility for compliance with the terms of the land lease or site agreements which are affected by the Contractor's design and construction obligations under the EPC Contract.

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Wind turbine certification

In the case of wind farms, the provision of design certificates or a statement of compliance from an independent certifying body is essential for the Project Company to ensure that the wind turbines provided by the Contractor have been designed in accordance with industry standards and will fulfil the required design parameters.

Certification of wind turbines has a history of more than 25 years and different standards apply in Denmark, Germany and the Netherlands (which pioneered the development and application of certification rules). In recent years, other countries, as well as Lenders, have realised the necessity of a thorough evaluation and certification of wind turbines and their proposed installation. The certifications are commonly divided into type certification and wind turbine certification. The certification is usually required to be carried out by an independent certifying body such as Germanischer Lloyd Industrial Services GmbH (**GL Renewables**) (an international operating certification body for renewable energy equipment, including wind turbines), and is performed in accordance with that body's rules – In the case of GL Renewables in accordance with the *Regulations for the Certification of Wind Energy Conversion Systems, 1999 edition and the Guideline for the Certification of Wind Turbines, 2010 edition*⁸. Under these regulations, type certification comprises design assessment, evaluation of quality management and prototype testing and is preferably obtained by the Project Company prior to shipment of components to site. Where possible, the certification should encompass confirmation on the design life of the wind turbines.

Wind turbine certification involves a complete third-party assessment and certification of specific wind turbines from design assessment to commissioning, witnessing, site assessment and periodic monitoring. Wind turbine certification can only be carried out for type-certified wind turbines and in locations for which the necessary data is available.

The Project Company may also require a site certification to be provided by an independent certifying body confirming that real site conditions of the wind farm as a whole (including factors such as wind, climate, topography and turbine layout) comply with the design parameters of the relevant international standard. The real climatic conditions of the relevant site will be provided to the certifying body for assessment of factors such as the wind conditions prevalent at the site as compared with standard wind conditions and the calculation of loads for the site conditions compared with the design basis.



⁸ Other certifications include certification according to the Dutch prestandard NVN 11400-0, Wind Turbines – Part 0: Criteria for type certification-technical criteria, Issue April 1999 and certification according to the Danish Technical Criteria.

Staged completion

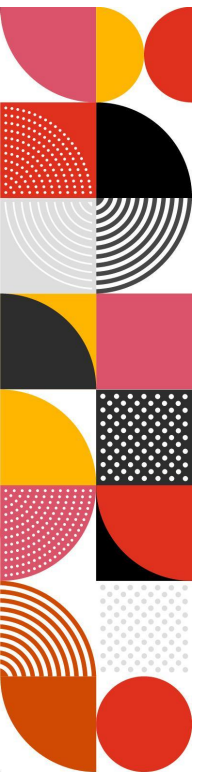
As each wind turbine generator or solar PV array is usually constructed sequentially, they may be taken over by the Project Company as they each pass the required tests on completion. While the taking over of each wind turbine generator or solar PV array and associated equipment as and when it is installed and commissioned is not unusual, it is important to ensure that the issue of a taking over certificate for each individual wind turbine does not affect the Contractor's obligations under the EPC Contract. Issues such as the management of staggered defects liability periods, the method of calculation of the availability guarantees and the point at which performance security held by the Project Company should be released are among the important issues that must be considered carefully by the Project Company when contemplating staged taking over.

Despite taking over individual wind turbine generators or solar PV arrays, the performance security held by the Project Company should only be reduced or released when the facility has passed all tests required for commercial operation of the entire facility. Factors such as the time period between taking over of each wind turbine generator or solar PV array and the generation of electricity by the wind turbine generators or solar PV arrays taken over by the Project Company, will influence the point at which it is reasonable to reduce the performance security held by the Project Company. If the operation and maintenance obligations of an Operator of the facility commences on the taking over each wind turbine generator or solar PV array, the performance security to be provided by the Operator can be increased in accordance with the number of wind turbine generators or solar PV arrays taken over.



The issue of a taking over certificate for individual wind turbine generators or solar PV arrays will also trigger commencement of the defects liability period for that particular wind turbine generator or solar PV array. If a facility has, in the case of a wind farm, between 20 and 25 wind turbines, this could mean that the Project Company will have to administer defects liability periods equivalent to the number of wind turbines on the wind farm. If there is a substantial gap between taking over of the first wind turbine and the last wind turbine, this could also result in the defects liability period for the first wind turbine expiring substantially earlier than the last wind turbine taken over and could affect the Contractor's defects rectification or warranty obligations for defects affecting the entire wind farm. The ideal position would be to require the defects liability period to commence on taking over of each wind turbine generator but to expire only from a set time from taking over of the entire wind farm. If this proves too onerous for the Contractor, the wind turbine generators could be divided into circuits, each comprising a separable portion. A taking over certificate will therefore only be issued in relation to each circuit, making it easier to administer the defects liability periods or to manage other issues such as the reduction of security.

Another important consideration is to ensure that the delay liquidated damages imposed for failure to complete the entire facility by the required date for practical completion takes into account any revenue that may be generated by the Project Company from individual wind turbine generators or solar PV arrays that are taken over and operated prior to commercial operation of the entire facility. This is to ensure that the delay liquidated damages represent a genuine pre-estimate of the Project Company's loss.



Key performance clauses in renewable energy EPC Contracts

Liquidated damages

Almost every infrastructure contract will impose liquidated damages for delay and standards in relation to the quality of construction. Most, however, do not impose PLDs. EPC Contracts impose PLDs because the achievement of the performance guarantees has a significant impact on the ultimate success of a project.

Similarly, it is important that the wind farm or solar PV facility commences operation on time because of the impact on the success of the project and because of the liability the Project Company will have under other agreements (e.g., under a PPA or financing agreements). This is why DLDs are imposed. DLDs and PLDs are both 'sticks' used to motivate the Contractor to fulfil its contractual obligations.

The law of liquidated damages

As discussed above, liquidated damages must be a genuine pre-estimate of the Project Company's loss. If liquidated damages are more than a genuine pre-estimate they will be deemed to be a penalty and unenforceable. There is no legal sanction for setting a liquidated damages rate below that of a genuine pre-estimate, however, there are the obvious financial consequences.

In addition to being unenforceable as a penalty, liquidated damages can also be void for uncertainty or unenforceable because they breach the Prevention Principle. 'Void for uncertainty' means, as the term suggests, that it is not possible to determine how the liquidated damages provisions work. In those circumstances, a court will void the liquidated damages provisions.

The Prevention Principle was developed by the courts to prevent Principals, ie project companies, from delaying Contractors and then claiming DLDs. It is discussed in more detail below in the context of extensions of time.

Prior to discussing the correct drafting of liquidated damages clauses to ensure they are not void or unenforceable it is worth considering the consequences of an invalid liquidated damages regime. If the EPC Contract contains an exclusive remedies clause the result is simple – The Contractor will have escaped liability unless the contract contains a 'fail safe' clause with an explicit right to claim damages at law if the liquidated damages regime fails.

If, however, the EPC Contract does not contain an exclusive remedies clause the non-challenging party should be able to claim at law for damages they have suffered as a result of the challenging party's non or defective performance. What then is the impact of the caps in the now invalidated liquidated damages clauses?

Unfortunately, the position is unclear in common law jurisdictions, and a definitive answer cannot be provided based upon the current state of authority. It appears the answer varies depending upon whether the clause is invalidated due to its character as a penalty, or because of uncertainty or unenforceability. Our view of the current position is set out below. We note that whilst the legal position is not settled the position presented below does appear logical.

- **Clause invalidated as a penalty** – When liquidated damages are invalidated because they are a penalty (i.e., they do not represent a genuine pre-estimate of loss), the liquidated damages or its cap will not act as a cap on damages claims at general law. We note that it is rare for a court to find liquidated damages are penalties in contracts between two sophisticated, well-advised parties.
- **Clause invalidated due to acts of prevention by the Principal** – If a liquidated damage clause is invalidated as a result of the Contractor not being entitled to an extension of time for an act of prevention by the Principal, the amount of liquidated damages or the cap on liquidated damages specified in the EPC Contract will not act as a cap or limit in respect of general damage claims at law.
- **Clause void for uncertainty** – A liquidated damages clause that is unworkable or too uncertain to ascertain what the parties intended is severed from the EPC Contract in its entirety, and will not act as a cap on the damages recoverable by the Principal from the Contractor at law. Upon severance, the clause is, for the purposes of contractual interpretation, ignored. However, it should be noted that the threshold test for rendering a clause void for uncertainty is high, and courts are reluctant to hold that the terms of a contract, in particular a commercial contract where performance is well advanced, are uncertain.

Drafting of liquidated damages clauses

Given the role liquidated damages play in ensuring EPC Contracts are bankable, and the consequences detailed above of the regime not being effective, it is vital to ensure they are properly drafted to ensure Contractors cannot avoid their liquidated damages liability on a legal technicality.

Therefore, it is important, from a legal perspective, to ensure DLDs and PLDs are dealt with separately. If a combined liquidated damages amount is levied for late completion of the works, it risks being struck out as a penalty because it will overcompensate the Project Company. However, a combined liquidated damages amount levied for underperformance may undercompensate the Project Company.

Our experience shows that there is a greater likelihood of delayed completion than there is of permanent underperformance. One of the reasons why projects are not completed on time is Contractors are often faced with remedying performance problems. This means, from a legal perspective, if there is a combination of DLDs and PLDs, the liquidated damages rate should include more of the characteristics of DLDs to protect against the risk of the liquidated damages being found to be a penalty.

If a combined liquidated damages amount includes an NPV or performance element, the Contractor will be able to argue that the liquidated damages are not a genuine pre-estimate of loss when liquidated damages are levied for late completion only. However, if the combined liquidated damages calculation takes on more of the characteristics of DLDs the Project Company will not be properly compensated if there is permanent underperformance.

It is also important to differentiate between the different types of PLDs to protect the Project Company against arguments by the Contractor that the PLDs constitute a penalty. For example, if a single PLDs rate is only focused on availability and not efficiency, problems and uncertainties will arise if the availability guarantee is met but one or more of the efficiency guarantees are not. In these circumstances, the Contractor will argue that the PLDs constitute a penalty because the loss the Project Company suffers if the efficiency guarantees are not met is usually smaller than if the availability guarantees are not met.

Drafting of the testing, performance guarantee and compensation regime

A properly drafted performance testing and guarantee regime is critical because the success or failure of the project depends, all other things being equal, on the performance of (i.e., revenue generated by) the wind farm or solar farm.

The major elements of the performance regime are:

- testing
- Performance Guarantees
- Performance Liquidated Damages or other compensation measures. These are discussed in turn below.

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Testing

Performance tests may cover a range of areas. Three of the most common are:

Functional tests – These test the functionality of certain parts or components of the facility, rather than the facility as a whole. For example, in the case of wind farms, tests may be in relation to SCADA systems, power collection systems and meteorological masts, etc. Performance liquidated damages and other compensation measures do not normally attach to these tests; they are absolute obligations that must be achieved in order to reach the next stage of completion.

Various components of the wind turbine generators themselves (including blades, hubs and nacelles) will also be subject to functional tests. In the case of solar PV, key components to be tested are panels, inverters, trackers (if used) and transformers.

Performance guarantee tests – These test the ability of the facility to meet the performance guarantees for the facility specified in the contract.

Performance tests and corresponding performance guarantees vary between technologies. Common across most renewable energy technologies is a two-stage performance testing framework. The first round of performance tests is generally performed in order to achieve commercial operation and a second round (and potentially further subsequent rounds) is performed after the facility has been operating for a period of time.

For wind farms, tests on commercial operation will generally be comprised of a commissioning test with a reliability run of around 240 hours (though this may vary by project). A capacity or output test and corresponding guarantee may be provided, depending on (among other factors) the requirements of the PPA or other concession arrangements. Tests after commercial operation generally include a range of acoustic tests and power curve tests. Power curve tests are generally performed 12-18 months after commercial operation; however, the time and expense of performing the power curve test means that it will generally only be performed if the facility is experiencing performance issues.

For solar PV farms, performance tests on commercial operation may include both capacity and performance ratio tests. Capacity tests may be in respect of installed capacity (measuring the aggregate nameplate DC capacity of all panels installed) and/or output or achieved capacity (measuring the aggregate DC capacity of the panels based on peak hourly conditions and net of auto-consumption and other system losses applicable under these conditions). Performance ratio tests (measuring the efficiency of the facility) will also generally be performed on commercial operation after an evaluation period of around 60 days. Tests after commercial operation are usually performance ratio tests and are generally completed over multiple 12 month evaluation periods corresponding with the duration of the defects liability period.

In respect of the pre-commercial operation performance tests, the Contractor will continue to be liable for DLDs until either the facility achieves the guaranteed level or the Contractor pays compensation (such as PLDs) where the facility does not operate at the guaranteed level. Obviously, DLDs will be capped (usually at 15% of the contract price), therefore the EPC Contract should give the Project Company the right to call for the payment of the compensation and accept the facility.

It is common for the Contractor to be given an opportunity to modify the facility if it does not meet the performance guarantees on the first attempt. This is because the compensation amounts are normally very large and most Contractors would prefer to spend the time and the money necessary to remedy performance instead of paying compensation. Not giving Contractors this opportunity will likely lead to an increased contract price because Contractors will build a contingency for paying compensation into the contract price. Also, in most circumstances the Project Company will prefer to receive a facility that achieves the required performance guarantees.

If the Contractor is to be given an opportunity to modify and retest, the EPC Contract must deal with who bears the costs required to undertake the retesting. The cost of the performance of a power curve test in particular can be significant and should generally be to the Contractor's account because the retesting only occurs if the performance guarantees are not met at the first attempt.

For each performance test, a corresponding performance guarantee will be set. This may be an absolute level (e.g., due to a corresponding regulatory requirement) or a percentage of the performance level to be reached. If the minimum performance guarantees are not met the Project Company will generally (subject to the requirements of any tripartite arrangements) have the right to terminate and may have the right to reject the facility and require the Contractor to dismantle the facility and return the site to a greenfield state.

The level at which performance guarantees (including minimum performance guarantees) are set will depend on a variety of factors such as technical and project-specific considerations. The performance guarantees should be set at a level of performance at which it is economic to accept the facility. Lender's input will be vital in determining what this level is. However, it must be remembered that Lenders have different interests to the Sponsors. Lenders will, generally speaking, be prepared to accept a facility that provides sufficient income to service the debt. However, in addition to covering the debt service obligations, Sponsors will also want to receive a return on their equity investment. If that will not be provided via the sale of electricity because the Contractor has not met the performance guarantees, the Sponsors will have to rely on the compensation mechanisms to earn their return.

If the Contractor fails to achieve any of the required performance guarantees, the facility may not be able to generate energy at the rate included in the financial model and, as such, there will be a revenue shortfall. To ensure that the required ratios and covenants are met under the financing agreements, as well as to provide an equity return to the Sponsors, an EPC Contract will generally provide compensation mechanisms such as performance liquidated damages or a reduction in the contract price. A lump sum reduction in the contract price or 'buy down' is commonly used where the facility does not meet its capacity guarantees, and will be set at a level to reflect the NPV of the Project Company's losses over the life of the facility due to lost production. Further commentary in respect of PLDs is set out above.

If performance guarantees on commercial operation are not met and a reduction in the contract price and/or PLDs are paid by the Contractor, there will be an adjustment made to the level of post-commercial operation performance guarantees and compensation measures to ensure that the Project Company does not 'double recover' for the same loss.

A diagram setting out a sample performance testing and performance guarantee framework for solar PV is set out at Appendix 1.

Technical issues

Ideally, the technical testing procedures should be set out in the EPC Contract. However, for a number of reasons, including the fact that it is often not possible to fully scope the testing Programme until the detailed design is complete, the testing procedures may be left to be agreed during construction by the Contractor, the Project Company's representative or engineer and, if relevant, the Lenders' engineer. However, a properly drafted EPC Contract should include the guidelines for testing.

The complete testing procedures must, as a minimum, set out details of:

- **Testing methodology** – Reference is often made to standard methodologies, for example, the IEC 61-400 methodology⁹.
- **Testing equipment** – Who is to provide it, where it is to be located and what is the level of sensitivity?
- **Tolerances** – What is the margin of error? For instance excluding wind or solar irradiance in excess of specified speeds or levels.
- **Ambient conditions** – What atmospheric conditions are assumed to be the base case (testing results will need to be adjusted to take into account any variance from these ambient conditions).

⁹ The IEC (<https://www.iec.ch/homepage>) is a global organisation that prepares and publishes international standards for all electrical, electronic and related technologies. The main technical committee for wind turbine systems is TC88 which publishes standards for the wind turbine industry.



Key general clauses in EPC Contracts

Delay and extensions of time

The Prevention Principle

As noted previously, one of the advantages of an EPC Contract is that it provides the Project Company with a fixed completion date. If the Contractor fails to complete the works by the required date they are liable to pay DLDs. However, in some circumstances the Contractor is entitled to an extension of the date for completion. Failure to grant an extension of time for a Project Company caused delay can void the liquidated damages regime and 'set time at large'. This means the Contractor is only obliged to complete the works within a reasonable time.

This is the situation under common law-governed contracts due to the Prevention Principle. The Prevention Principle was developed by the courts to prevent Principals (i.e., project companies) from delaying Contractors and then claiming DLDs.

The legal basis of the Prevention Principle is unclear and it is uncertain whether you can contract out of the Prevention Principle. Logically, given most commentators believe the Prevention Principle is an equitable principle, explicit words in a contract should be able to override the principle. However, the courts have tended to apply the Prevention Principle even in circumstances where it would not, on the face of it, appear to apply. Therefore, there is a certain amount of risk involved in trying to contract out of the Prevention Principle. The more prudent and common approach is to accept the existence of the Prevention Principle and provide for it the EPC Contract.

The Contractor's entitlement to an extension of time is not absolute. It is possible to limit the Contractor's rights and impose pre-conditions on the ability of the Contractor to claim an extension of time. A relatively standard Extension of Time (**EOT**) clause would entitle the Contractor to an EOT for any of the following events:

- an act, omission, breach or default of the Project Company;
- suspension of the works by the Project Company (except where the suspension is due to an act or omission of the Contractor)
- a variation (except where the variation is due to an act or omission of the Contractor)
- force majeure,

which is the cause of a delay to an activity on the critical path and about which the Contractor has given notice within the period specified in the contract. It is permissible (and advisable) from the Project Company's perspective to make both the necessity for the delay to impact the critical path and the obligation to give notice of a claim for an extension of time conditions precedent to the Contractor's entitlement to receive an EOT. In addition, it is usually good practice to include a general right for the Project Company to grant an EOT at any time. However, this type of provision must be carefully drafted because some judges have held (especially when the Project Company's representative is an independent third party) then the inclusion of this clause imposes a mandatory obligation on the Project Company to grant an extension of time whenever it is fair and reasonable to do so, regardless of the strict contractual requirements. Accordingly, from the Project Company's perspective it must be made clear that the Project Company has complete and absolute discretion to grant an EOT, and that it is not required to exercise its discretion for the benefit of the Contractor.

Similarly, following some recent common law decisions, the Contractor should warrant that it will comply with the notice provisions that are conditions precedent to its right to be granted an EOT.

We recommend using the clause in Appendix 1 of this paper.

Concurrent delay

You will note that in the suggested EOT clause, one of the subclauses refers to concurrent delays. This is relatively unusual because most EPC Contracts are silent on this issue. For the reasons explained below we do not agree with that approach.

A concurrent delay occurs when two or more causes of delay overlap. It is important to note that it is the overlapping of the causes of the delays, not the overlapping of the delays themselves that leads to concurrent delay. In our experience, this distinction is often not made. This leads to confusion and sometimes disputes. More problematic is when the contract is silent on the issue of concurrent delay and the parties assume the silence operates to their benefit. As a result of conflicting case law it is difficult to determine who, in a particular factual scenario, is correct. This can also lead to protracted disputes and outcomes contrary to the intention of the parties.

There are a number of different causes of delay which may overlap with delay caused by the Contractor. The most obvious causes are the acts or omissions of a Project Company.

A Project Company often has obligations to provide certain materials or infrastructure to enable the Contractor to complete the works. The timing for the provision of that material or infrastructure (and the consequences for failing to provide it) can be affected by a concurrent delay. For example, the Project Company is usually obliged, as between the Project Company and the Contractor, to provide a transmission line to connect to the wind farm by the time the Contractor is ready to commission the wind farm. Given the construction of the transmission line can be expensive, the Project Company is likely to want to incur that expense as close as possible to the date commissioning is due to commence. For this reason, if the Contractor is in delay the Project Company is likely to further delay incurring the expense of building the transmission line. In the absence of a concurrent delay clause, this action by the Project Company, in response to the Contractor's delay, could entitle the Contractor to an extension of time.

Concurrent delay is dealt with differently in the various international standard forms of contract. Accordingly, it is not possible to argue that one approach is definitely right and one is definitely wrong. In fact, the 'right' approach will depend on which side of the table you are sitting.

In general, there are three main approaches for dealing with the issue of concurrent delay. These are:

- **Option one** – The Contractor has no entitlement to an extension of time if a concurrent delay occurs.
- **Option two** – The Contractor has an entitlement to an extension of time if a concurrent delay occurs.
- **Option three** – The causes of delay are apportioned between the parties and the Contractor receives an extension of time equal to the apportionment. For example, if the causes of a ten day delay are apportioned 60:40 Project Company: Contractor, the Contractor would receive a six-day extension of time.

Each of these approaches is discussed in more detail below.

(i) **Option one: Contractor not entitled to an extension of time for concurrent delays.**

A common, Project Company friendly, concurrent delay clause for this option one is:

*'If **more than one event** causes concurrent delays and the cause of at least one of those events, but not all of them, is a cause of delay which would not entitle the Contractor to an extension of time under [EOT Clause], then to the extent of the concurrency, the Contractor will not be entitled to an extension of time.'*

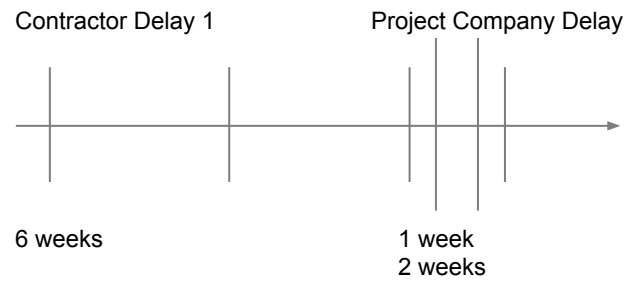
The most relevant words are bolded.

Nothing in the clause prevents the Contractor from claiming an extension of time under the general extension of time clause. What the clause does do is remove the Contractor's entitlement to an extension of time when there are two or more causes of delay and at least one of those causes would not entitle the Contractor to an extension of time under the general extension of time clause.

For example, if the Contractor's personnel were on strike and during that strike the Project Company failed to approve drawings, in accordance with the contractual procedures, the Contractor would not be entitled to an extension of time for the delay caused by the Project Company's failure to approve the drawings.

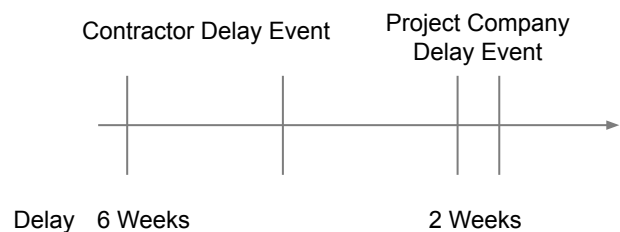
The operation of this clause is best illustrated diagrammatically.

Example 1: Contractor not entitled to an extension of time for Project Company caused delay



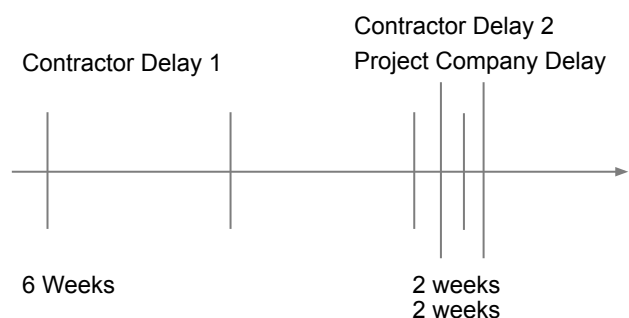
In this example, the Contractor would not be entitled to any extension of time because the Contractor Delay 2 overlaps entirely to the Project Company Delay. Therefore, using the example clause above, the Contractor is not entitled to an extension of time to the extent of the concurrency. As a result, at the end of the Contractor Delay 2 the Contractor would be in an eight-week delay (assuming the Contractor has not, at its own cost and expense accelerated the works).

Example 2: Contractor entitled to an extension of time for a portion of the Project Company caused delay



In this example, there is no overlap between the Contractor and Project Company delay events and the Contractor would be entitled to a two-week extension of time for the Project Company delay. Therefore, at the end of the Project Company delay the Contractor will remain in six weeks delay, assuming no acceleration.

Example 3: Contractor entitled to an extension of time for a portion of the Project Company caused delay



In this example, the Contractor would be entitled to a one week extension of time because the delays overlap for one week. Therefore, the Contractor is entitled to an extension of time for the period when they do not overlap (i.e., when the extent of the concurrency is zero). As a result, after receiving the one-week extension of time, the Contractor would be in seven weeks delay, assuming no acceleration.

From a Project Company's perspective, we believe, this option is both logical and fair. For example, if, in example 2 the Project Company delay was a delay in the approval of drawings and the Contractor delay was the entire workforce being on strike, what logic is there in the Contractor receiving an extension of time? The delay in approving drawings does not actually delay the works because the Contractor could not have used the drawings given its workforce was on strike. In this example, the Contractor would suffer no detriment from not receiving an extension of time. However, if the Contractor did receive an extension of time it would effectively receive a windfall gain.

The greater number of obligations the Project Company has the more reluctant the Contractor will likely be to accept option one. Therefore, it may not be appropriate for all projects.

(ii) Option two: Contractor entitled to an extension of time for concurrent delays

Option two is the opposite of option one and is the position in many of the Contractor friendly standard forms of contract. These contracts also commonly include extension of time provisions to the effect that the Contractor is entitled to an extension of time for any cause beyond its reasonable control which, in effect, means there is no need for a concurrent delay clause.

The suitability of this option will obviously depend on which side of the table you are sitting. This option is less common than option one but is nonetheless sometimes adopted. It is especially common when the Contractor has a superior bargaining position.

(iii) Option three: Responsibility for concurrent delays is apportioned between the parties

Option three is a middle ground position that has been adopted in some of the standard form contracts. For example, the Australian Standards infrastructure contract AS4000 adopts the apportionment approach. The AS4000 clause states:

'34.4 Assessment

When both non-qualifying and qualifying causes of delay overlap, the Superintendent shall apportion the resulting delay to WUC according to the respective causes' contribution.

In assessing each EOT the Superintendent shall disregard questions of whether:

- a) WUC can nevertheless reach practical completion without an EOT*
- b) the Contractor can accelerate, but shall have regard to what prevention and mitigation of the delay has not been effected by the Contractor.'*

We appreciate the intention behind the clause and the desire for both parties to share responsibility for the delays they cause. However, we have some concerns about this clause and the practicality of the apportionment approach in general. It is easiest to demonstrate our concerns with an extreme example. For example, what if the qualifying cause of delay was the Project Company's inability to provide access to the site and the non-qualifying cause of delay was the Contractor's inability to commence the works because it had been black-banned by the unions? How should the causes be apportioned? In this example, the two causes are both 100% responsible for the delay.

In our view, an example like the above where both parties are at fault has two possible outcomes. Either:

- the delay is split down the middle and the Contractor receives 50% of the delay as an extension of time
- the delay is apportioned 100% to the Project Company and therefore the Contractor receives 100% of the time claimed. The delay is unlikely to be apportioned 100% to the Contractor because a judge or arbitrator will likely feel that that is 'unfair', especially if there is a potential for significant liquidated damages liability. We appreciate the above is not particularly rigorous legal reasoning, however, the clause does not lend itself to rigorous analysis.

In addition, option three is only likely to be suitable if the party undertaking the apportionment is independent from both the Project Company and the Contractor.

Exclusive remedies and fail safe clauses

It is common for Contractors to request the inclusion of an exclusive remedies clause in an EPC Contract. However, from the perspective of a Project Company, the danger of an exclusive remedies clause is that it prevents the Project Company from recovering any type of damages not specifically provided for in the EPC Contract.

An EPC Contract is conclusive evidence of the agreement between the parties to that contract. If a party clearly and unambiguously agrees that their only remedies are those within the EPC Contract, they will be bound by those terms. However, the courts have been reluctant to come to this conclusion without clear evidence of an intention of the parties to the EPC Contract to contract out of their legal rights. This means if the common law right to sue for breach of EPC Contract is to be contractually removed, it must be done by very clear words.

Contractor's perspective

The main reason for a Contractor insisting on a Project Company being subject to an exclusive remedies clause is to have certainty about its potential liabilities. The preferred position for a Contractor will be to confine its liabilities to what is specified in the EPC Contract. For example, an agreed rate of liquidated damages for delay and, where relevant, underperformance of the wind farm. A Contractor will also generally require the amount of liquidated damages to be subject to a cap and for the EPC Contract to include an overall cap on its liability.

Project company's perspective

The preferred position for a Project Company is for it not to be subject to an exclusive remedies clause. An exclusive remedies clause limits the Project Company's right to recover for any failure of the Contractor to fulfil its contractual obligations to those remedies specified in the EPC Contract. For this reason, an exclusive remedies clause is an illogical clause to include in an EPC Contract from the perspective of a Project Company because it means that the Project Company has to draft a remedy or exception for each obligation – This represents an absurd drafting position. For example, take the situation where the EPC Contract does not have any provision for the recovery of damages other than liquidated damages. In this case, if the Contractor has either paid the maximum amount of liquidated damages or delivered the wind farm in a manner that does not require the payment of liquidated damages (i.e., it is delivered on time and performs to specification) but subsequent to that delivery the Project Company is found to have a claim, say for defective design which manifests itself after completion, the Project Company will have no entitlement to recover any form of damages as any remedy for latent defects has been excluded.

The problem is exacerbated because most claims made by a Project Company will in some way relate to performance of the facility and PLDs were expressed to be the exclusive remedy for any failure of the facility to perform in the required manner. For example, any determination as to whether the facility is fit for purpose will necessarily depend on the level and standard of the performance of the facility. In addition to claims relating to fitness for purpose, a Project Company may also wish to make claims for, amongst other things, breach of contract, breach of warranty or negligence. The most significant risk for a Project Company in an EPC Contract is where there is an exclusive remedies clause and the only remedies for delay and underperformance are liquidated damages. If, for whatever reason, the liquidated damages regimes are held to be invalid, the Project Company would have no recourse against the Contractor as it would be prevented from recovering general damages at law, and the Contractor would escape liability for late delivery and underperformance of the facility.

Fail safe clauses

In contracts containing an exclusive remedies clause, the Project Company must ensure all necessary exceptions are expressly included in the EPC Contract. In addition, drafting must be included to allow the Project Company to recover general damages at law for delay and underperformance if the liquidated damages regimes in the EPC Contract are held to be invalid. To protect the position of a Project Company (if liquidated damages are found for any reason to be unenforceable and there is an exclusive remedies clause), we recommend the following clauses be included in the EPC Contract:

'[.]1 If clause [delay liquidated damages] is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Project company from claiming Delay Liquidated Damages, the Project company is entitled to claim against the Contractor damages at law for the Contractor's failure to complete the Works by the Date for Practical Completion.'

'[.]2 If [.]1 applies, the damages claimed by the Project company must not exceed the amount specified in Item [.] of Appendix [.] for any one day of delay and in aggregate must not exceed the percentage of the EPC Contract Price specified in Item [.] of Appendix [.]'

These clauses (which would also apply to PLDs) mean that if liquidated damages are held to be unenforceable for any reason the Project Company will not be prevented from recovering general damages at law. However, the amount of damages recoverable at law may be limited to the amount of liquidated damages that would have been recoverable by the Project Company under the EPC Contract if the liquidated damages regime had not been held to be invalid (see discussion above). For this reason, the suggested drafting should be commercially acceptable to a Contractor as its liability for delay and underperformance will be the same as originally contemplated by the parties at the time of entering into the EPC Contract.

In addition, if the EPC Contract excludes the parties' rights to claim their consequential or indirect losses, these clauses should be an exception to that exclusion. The rationale being that the rates of liquidated damages are likely to include an element of consequential or indirect losses.

Force majeure

Force majeure clauses are almost always included in EPC Contracts. However, they are rarely given much thought unless and until one or more parties seek to rely on them. Generally, the assumption appears to be that 'the risk will not affect us' or 'the *force majeure* clause is a legal necessity and does not impact on our risk allocation under the contract'. Both of these assumptions are inherently dangerous, and, particularly in the second case, incorrect. Therefore, especially in the current global environment, it is appropriate to examine their application.

Force majeure is a civil law concept that has no real meaning under the common law. However, *force majeure* clauses are used in contracts because the only similar common law concept – The doctrine of frustration – is of limited application. For that doctrine to apply the performance of a contract must be radically different from what was intended by the parties. In addition, even if the doctrine does apply, the consequences are unlikely to be those contemplated by the parties. An example of how difficult it is to show frustration is that many of the leading cases relate to the abdication of King Edward VIII before his coronation and the impact that had on contracts entered into in anticipation of the coronation ceremony.

Given *force majeure* clauses are creatures of contract their interpretation will be governed by the normal rules of contractual construction. *Force majeure* provisions will be construed strictly and in the event of any ambiguity the *contra proferentem* rule will apply. *Contra proferentem* literally means 'against the party putting forward'. In this context, it means that the clause will be interpreted against the interests of the party that drafted and is seeking to rely on it. The parties may contract out of this rule.

The rule of *ejusdem generis*, which literally means ‘of the same class’, may also be relevant. In other words, when general wording follows a specific list of events, the general wording will be interpreted in light of the specific list of events. In this context it means that when a broad ‘catch-all’ phrase, (such as ‘anything beyond the reasonable control of the parties’) follows a list of more specific force majeure events the catch all phrase will be limited to events analogous to the listed events. Importantly, parties cannot invoke a force majeure clause if they are relying on their own acts or omissions.

The underlying test in relation to most *force majeure* provisions is whether a particular event was within the contemplation of the parties when they made the contract. The event must also have been outside the control of the contracting party. There are generally three essential elements to *force majeure*:

- it can occur with or without human intervention
- it cannot have reasonably been foreseen by the parties
- it was completely beyond the parties’ control and they could not have prevented its consequences.

Given the relative uncertainty surrounding the meaning of *force majeure* we favour explicitly defining what the parties mean. This takes the matter out of the hands of the courts and gives control back to the parties. Therefore, it is appropriate to consider how *force majeure* risk should be allocated.

Drafting force majeure clauses

The appropriate allocation of risk in project agreements is fundamental to negotiations between the Project Company and its Contractors. Risks generally fall into the following categories:

- risks within the control of the Project Company
- risks within the control of the Contractor
- risks outside the control of both parties.

The negotiation of the allocation of many of the risks beyond the control of the parties, for example, latent site conditions and change of law, is usually very detailed so that it is clear which risks are borne by the Contractor. The same approach should be adopted in relation to the risks arising from events of *force majeure*.

There are two aspects to the operation of *force majeure* clauses:

- the definition of *force majeure* events
- the operative clause that sets out the effect on the parties’ rights and obligations if a *force majeure* event occurs.

The events which trigger the operative clause must be clearly defined. As noted above, it is in the interests of both parties to ensure that the term *force majeure* is clearly defined.

The preferred approach for a Project Company is to define *force majeure* events as being any of the events in an exhaustive list set out in the contract. In this manner, both parties are aware of which events are force majeure events and which are not. Clearly, defining *force majeure* events makes the administration of the contract and, in particular, the mechanism within the contract for dealing with *force majeure* events simpler and more effective.

An example exhaustive definition is:

‘An Event of Force Majeure is an event or circumstance which is beyond the control and without the fault or negligence of the party affected and which by the exercise of reasonable diligence the party affected was unable to prevent provided that event or circumstance is limited to the following:

- a) riot, war, invasion, act of foreign enemies, hostilities (whether war be declared or not) acts of terrorism, civil war, rebellion, revolution, insurrection of military or usurped power, requisition or compulsory acquisition by any governmental or competent authority*
- b) ionising radiation or contamination, radio activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive assembly or nuclear component*
- c) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds;*
- d) earthquakes, flood, fire or other physical natural disaster, but excluding weather conditions regardless of severity*
- e) strikes at national level or industrial disputes at a national level, or strike or industrial disputes by labour not employed by the affected party, its subContractors or its suppliers and which affect an essential portion of the Works but excluding any industrial dispute which is specific to the performance of the Works or this Contract.’*

An operative clause will act as a shield for the party affected by the event of *force majeure* so that a party can rely on that clause as a defence to a claim that it has failed to fulfil its obligations under the contract.

An operative clause should also specifically deal with the rights and obligations of the parties if a *force majeure* event occurs and affects the project. This means the parties must consider each of the events it intends to include in the definition of *force majeure* events and then deal with what the parties will do if one of those events occurs.

An example of an operative clause is:

[] 1 Neither party is responsible for any failure to perform its obligations under this Contract, if it is prevented or delayed in performing those obligations by an Event of Force Majeure.

[].2 Where there is an Event of Force Majeure, the party prevented from or delayed in performing its obligations under this Contract must immediately notify the other party giving full particulars of the Event of Force Majeure and the reasons for the Event of Force Majeure preventing that party from, or delaying that party in performing its obligations under this Contract and that party must use its reasonable efforts to mitigate the effect of the Event of Force Majeure upon its or their performance of the Contract and to fulfil its or their obligations under the Contract.

[].3 Upon completion of the Event of Force Majeure the party affected must as soon as reasonably practicable recommence the performance of its obligations under this Contract. Where the party affected is the Contractor, the Contractor must provide a revised Programme rescheduling the Works to minimise the effects of the prevention or delay caused by the Event of Force Majeure.

[].4 An Event of Force Majeure does not relieve a party from liability for an obligation which arose before the occurrence of that event, nor does that event affect the obligation to pay money in a timely manner which matured prior to the occurrence of that event.

[].5 The Contractor has no entitlement and the Project Company has no liability for:

(a) any costs, losses, expenses, damages or the payment of any part of the Contract Price during an Event of Force Majeure

(b) any delay costs in any way incurred by the Contractor due to an Event of Force Majeure.'

In addition to the above clause, it is important to appropriately deal with other issues that will arise if a *force majeure* event occurs. For example, as noted above, it is common practice for a Contractor to be entitled to an extension of time if a *force majeure* event impacts on its ability to perform the works. Contractors also often request costs if a *force majeure* event occurs. In our view, this should be resisted. *Force majeure* is a neutral risk in that it cannot be controlled by either party. Therefore, the parties should bear their own costs.

Another key clause that relates to *force majeure* type events is the Contractor's responsibility for care of the works and the obligation to reinstate any damage to the works prior to completion. A common example clause is:

[].1 The Contractor is responsible for the care of the Site and the Works from when the Project Company makes the Site available to the Contractor until 5.00 pm on the Date of Commercial Operation

[].2 The Contractor must promptly make good loss from, or damage to, any part of the Site and the Works while it is responsible for their care

[].3 If the loss or damage is caused by an Event of Force Majeure, the Project Company may direct the Contractor to reinstate the Works or change the Works. The cost of the reinstatement work or any change to the Works arising from a direction by the Project Company under this clause will be dealt with as a Variation except to the extent that the loss or damage has been caused or exacerbated by the failure of the Contractor to fulfil its obligations under this Contract

[].4 Except as contemplated in clause [].3, the cost of all reinstatement Works will be borne by the Contractor.'

This clause is useful because it enables the Project Company to, at its option, have the damaged section of the project rebuilt as a variation to the existing EPC Contract. This will usually be cheaper than recontracting for construction of the damaged sections of the works.

Operation and maintenance

Operating and maintenance manuals

The Contractor is usually required to prepare a detailed operating and maintenance manual (**O&M manual**). The EPC Contract should require the Contractor to prepare a draft of the O&M manual within a reasonable time to enable the Project Company, the Operator and possibly the Lenders to provide comments which can be incorporated into a final draft at least six months before the start of commissioning.

The draft should include all information that may be required for start-up, all modes of operation during normal and emergency conditions and maintenance of all systems of the facility.

Operating and maintenance personnel

It is standard for the Contractor to be obliged to train the operations and maintenance staff supplied by the Project Company. The cost of this training will be built into the contract price. It is important to ensure the training is sufficient to enable such staff to be able to efficiently, prudently, safely and professionally operate the facility upon commercial operation. Therefore, the framework for the training should be described in the Appendix dealing with the scope of work (in as much detail as possible). This should include the standards of training and the timing for training.

The Project Company's personnel trained by the Contractor will also usually assist in the commissioning and testing of the facility. They will do this under the direction and supervision of the Contractor. Therefore, absent specific drafting to the contrary, if problems arise during commissioning and/or testing the Contractor can argue they are entitled to an extension of time etc. We recommend inserting the following clause:

'[].1 The Project Company must provide a sufficient number of competent and qualified operating and maintenance personnel to assist the Contractor to properly carry out Commissioning and the Commercial Operation Performance Tests.

[]2 Prior to the Date of Commercial Operation, any act or omission of any personnel provided by the Project Company pursuant to GC []1 is, provided those personnel are acting in accordance with the Contractor's instructions, directions, procedures or manuals, deemed to be an act or omission of the Contractor and the Contractor is not relieved of its obligations under this Contract or have any claim against the Project Company by reason of any act or omission.'

Spare parts

The Contractor is usually required to provide, as part of its scope of works, a full complement of spare parts (usually specified in the appendices (the scope of work or the specification) to be available as at the commencement of commercial operation.

Further, the Contractor should be required to replace any spare parts used in rectifying defects during the defects liability period, at its sole cost. There should also be a time limit imposed on when these spare parts must be back in the store. It is normally unreasonable to require the spare parts to have been replaced by the expiry of the defects liability period because that may, for some long lead time items, lead to an extension of the defects liability period.

The Project Company also may wish to have the option to purchase spares parts from the Contractor on favourable terms and conditions (including price) during the remainder of the concession period. In that case it would be prudent to include a term which deals with the situation where the Contractor is unable to continue to manufacture or procure the necessary spare parts. This provision should cover the following points:

- written notification from the Contractor to the Project Company of the relevant facts, with sufficient time to enable the Project Company to order a final batch of spare parts from the Contractor
- the Contractor should deliver to, or procure for the Project Company (at no charge to the Project Company), all drawings, patterns and other technical information relating to the spare parts
- the Contractor must sell to the Project Company (at the Project Company's request) at cost price (less a reasonable allowance for depreciation) all tools, equipment and moulds used in manufacturing the spare parts, to extent they are available to the Contractor provided it has used its reasonable endeavours to procure them.

The Contractor should warrant that the spare parts are fit for their intended purpose, and that they are of merchantable quality. As a minimum, this warranty should expire on the later of:

- the manufacturer's warranty period on the applicable spare part
- the expiry of the defects liability period.

The Project Company should be aware that the Contractor may be purchasing the spare parts from the Original Equipment Manufacturer (**OEM**). The OEM will have typically imposed non-negotiable warranties on the spare parts that the Contractor will try to pass-through to the Project Company. This should be resisted on the part of the Project Company. However, the Project Company should be prepared to pay higher prices for those spare parts to reflect the greater risk the Contractor will be accepting in place of the pass-through of the OEM warranties.

Interface issues

In some circumstances, a split contract structure may be used to achieve a lower overall contract price than would be achieved under an EPC Contract. For example, a structure with a BOP contract and an equipment supply contract may be used. However, if a split structure is used, it is critical that a single point of responsibility is provided. If not, the Project Company will be left with interface risk which will impact on bankability.

Matters that are critical to providing a single point of responsibility are:

- providing that no claim is available by the Contractor against the Project Company arising out of an act or omission of any other Contractor
- preventing split Contractors from having the ability to make a claim on the Project Company due to the default of one of the other contracting entities (e.g., equipment supply Contractor claiming against the Project Company for a default caused by the balance of plant Contractor).

If a split contract structure is used, we recommend inserting the following clauses:

No relief

[] Neither Contractor 1 nor Contractor 2 will be entitled to payment of any sum from the Project Company or to relief from any obligation to make payment of any sum to the Project Company or be entitled to relief from or reduction of any other liability, obligation or duty arising out of or in connection with the contracts including (without limitation):

[]1 any extension of time

[]2 any relief from liability for liquidated damages; []3 any relief from liability for any other damages; []4 any relief for deductions from payments

[]5 any relief from liability to rectify defects

[]6 any increase in the contract sum under the contracts

[]7 payment of any costs incurred

which arises out of or in connection with any act or omission of the other, whether pursuant to or in connection with any of the contracts or otherwise.

Horizontal defences

[] Contractor 1 and Contractor 2 each waive any and all rights, under contract, tort or otherwise at law, to assert any and all defences which either of Contractor 1 or Contractor 2 may have to a claim by the Project Company for the non-performance, inadequate performance or delay in performance under their respective Contract due to any non-performance or inadequate performance or delay in performance by the other party under its Contract.'

Dispute resolution

Dispute resolution provisions for EPC Contracts could fill another entire paper. There are numerous approaches that can be adopted depending on the nature and location of the project and the particular preferences of the parties involved.

However, there are some general principles which should be adopted. They include:

- ensuring that the dispute resolution process is aligned with that under the PPA
- having a staged dispute resolution process that provides for internal discussions and meetings aimed at resolving the dispute prior to commencing action (either litigation or arbitration)
- obliging the Contractor to continue to execute the works pending resolution of the dispute
- not permitting commencement of litigation or arbitration, as the case may be, until after commercial operation of the facility. This provision must make exception for the parties to seek urgent interlocutory relief
- providing for consolidation of any dispute with other disputes which arise out of or in relation to the construction of the facility. The power to consolidate should be at the Project Company's discretion.



Appendix 1

Example clauses

Part I – Extension of time regime

- [].1 The Contractor must immediately give notice to the Project Company of all incidents and/or events of whatsoever nature affecting or likely to affect the progress of the Works.
- [].2 Within 15 days after an event has first arisen the Contractor must give a further notice to the Project Company which must include:
- (a) the material circumstances of the event including the cause or causes
 - (b) the nature and extent of any delay
 - (c) the corrective action already undertaken or to be undertaken
 - (d) the effect on the critical path noted on the Programme
 - (e) the period, if any, by which in its opinion the Date for Commercial Operation should be extended
 - (f) a statement that it is a notice pursuant to this GC [].2.
- [].3 Where an event has a continuing effect or where the Contractor is unable to determine whether the effect of an event will actually cause delay to the progress of the Works so that it is not practicable for the Contractor to give notice in accordance with GC [].2, a statement to that effect with reasons together with interim written particulars (including details of the likely consequences of the event on progress of the Works and an estimate of the likelihood or likely extent of the delay) must be submitted in place of the notice required under GC [].2. The Contractor must then submit to the Project Company, at intervals of 30 days, further interim written particulars until the actual delay caused (if any) is ascertainable, whereupon the Contractor must as soon as practicable but in any event within 30 days give a final notice to the Project Company including the particulars set out in GC [].2.
- [].4 The Project Company must, within 30 days of receipt of the notice in GC [].2 or the final notice in GC [].3 (as the case may be), issue a notice notifying the Contractor's Representative of its determination as to the period, if any, by which the Date for Commercial Operation is to be extended.
- [].5 Subject to the provisions of this GC [], the Contractor is entitled to an extension of time to the Date for Commercial Operation as the Project Company assesses, where a delay to the progress of the Works is caused by any of the following events, whether occurring before, on or after the Date for Commercial Operation:
- (a) any act, omission, breach or default by the Project Company, the Project Company's Representative and their agents, employees and Contractors
 - (b) a Variation, except where that Variation is caused by an act, omission or default of the Contractor or its SubContractors, agents or employees
 - (c) a suspension of the Works pursuant to GC [], except where that suspension is caused by an act, omission or default of the Contractor or its SubContractors, agents or employees
 - (d) an Event of *Force Majeure*
 - (e) a Change of Law.
- [].6 Despite any other provisions of this GC [], and notwithstanding that the Contractor is not entitled to or has not claimed an extension of time to the Date for Commercial Operation, the Owner may, in its absolute sole and unfettered discretion, at any time grant an extension of the Date for Commercial Operation. The Owner has no obligation to grant, or to consider whether it should grant, an extension of time and is not required to exercise this discretion for the benefit of the Contractor.
- [].7 The Contractor must constantly use its best endeavours to avoid delay in the progress of the works.
- [].8 If the Contractor fails to submit the notices required under GCs [].1, [].2 and [].3 within the times required then:
- (a) the Contractor has no entitlement to an extension of time
 - (b) the Contractor must comply with the requirements to perform the Works by the Date for Commercial Operation

- (c) . any principle of law or equity (including those which might otherwise entitle the Contractor to relief and the 'Prevention Principle') which might otherwise render the Date for Commercial Operation immeasurable and liquidated damages unenforceable, will not apply
- [].9 It is a further condition precedent of the Contractor's entitlement to an extension of time that the critical path noted on the Programme is affected in a manner which might reasonably be expected to result in a delay to the Works reaching Commercial Operation by the Date for Commercial Operation.
- [].10 If there are two or more concurrent causes of delay and at least one of those delays would not entitle the Contractor to an extension of time under this GC [] then, to the extent of that concurrency, the Contractor is not entitled to an extension of time.
- [].11 The Project Company may direct the Contractor's Representative to accelerate the Works for any reason including as an alternative to granting an extension of time to the Date for Commercial Operation.
- [].12 The Contractor will be entitled to all extra costs necessarily incurred, by the Contractor in complying with an acceleration direction under GC [].11, except where the direction was issued as a consequence of the failure of the Contractor to fulfil its obligations under this Contract. The Project Company must assess and decide as soon as reasonably practical, the extra costs necessarily incurred by the Contractor.

Part II – Grid access regime

- [].1 The Contractor must co-ordinate the connection of the Facility to the Transmission Line and provide, in a timely manner, suitable termination facilities in accordance with Appendix 1. The Contractor must liaise with the Network Service Provider, government authorities and other parties to avoid delays in connecting the Facility to the Transmission Line.
- [].2 On the Date for First Synchronisation the Project Company must ensure that there is in place a Transmission Network which is capable of receiving the generated output the Facility is physically capable of producing at any given time.
- [].3 The Project Company's obligation to ensure that the Transmission Network is in place is subject to the Contractor being able (physically and legally) to connect the Facility to the Transmission Line and import and/or export power to the Transmission Network.
- [].4 If the Contractor notifies the Project Company that First Synchronisation is likely to take place before the Date for First Synchronisation, the Project Company must endeavour, but is under no obligation to ensure that the Transmission Network is in place, to enable First Synchronisation to take place in accordance with the Contractor's revised estimate of First Synchronisation.
- [].5 At the time of and following First Synchronisation the Project Company will ensure that the Contractor is permitted to export to the Transmission Network power which the Facility is physically capable of exporting, provided that:
 - (a) it is necessary for the Contractor to export that amount of power if the Contractor is to obtain Commercial Operation
 - (b) the Contractor has complied in all respects with its obligations under GC [].7
 - (c) in the reasonable opinion of the Project Company and/or the Network Service Provider the export of power by the Facility will not pose a threat to the safety of persons and/or property (including the Transmission Network).
- [].6 For the avoidance of doubt, the Project Company will not be in breach of any obligation under this Contract by reason only of the Contractor being denied permission to export power to the Transmission Network in accordance with the Grid Code.
- [].7 The Contractor must carry out the testing of the Works, in particular in relation to the connection of the Facility to the Transmission Network so as to ensure that the Project Company and the Contractor as a Participant (as defined in the Electricity Code) comply with their obligations under the Electricity Code in respect of the Testing of the Works,
- [].8 The Contractor must carry out the Testing of the Works, in particular in relation to the connection of the Facility to the Transmission Network, so as to ensure that:
 - (a) any interference to the Transmission Network is minimised
 - (b) damage to the Transmission Network is avoided.
- [].9 The Contractor must promptly report to the Project Company's Representative any interference with and damage to the Transmission Network which connects with the Facility.
- [].10 Without derogating from the Contractor's obligations under this Contract, in carrying out any test which requires the Contractor to supply electricity to the Transmission Network, the Contractor must:
 - (a) issue a notice to the Project Company's Representative at least 24 hours prior to the time at which it wishes to so supply, detailing the testing or commissioning and including the Contractor's best estimate of the total period and quantity (in MWh per half-hour) of that supply
 - (b) promptly notify the Project Company's Representative if there is any change in the information contained in such notice
 - (c) do all things necessary to assist the Project Company (including but not limited to cooperating with the Network Service Provider and complying with its obligations under GC 20.15), so that the Project Company can comply with its obligations under the National Electricity Code.

Part III – Performance testing and guarantee regime

1 Testing

Tests and inspections

1.1 The Contractor must, at its own expense, carry out at the place of manufacture and/or on the Site all tests and/or inspections of the Equipment and any part of the Works as specified in this Contract or as required by any applicable Laws, and as necessary to ensure the Facility operates safely and reliably under the conditions specified in the Schedule of Scope of Work and the Schedule of Tests.

[Note: Schedule of Tests should specify all the categories of tests other than the Tests (example: test at manufacturers plant, test on site, functional test etc.)]

1.2 The Contractor must also comply with any other requirements of the Owner in relation to testing and inspection.

1.3 The Owner and the Lenders' Representative are entitled to attend any test and/or inspection by its appointed duly authorised and designated inspector.

1.4 Whenever the Contractor is ready to carry out any test and/or inspection, the Contractor must give a reasonable advance notice to the Owner of the test and/or inspection and of the place and time. The Contractor must obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Owner's inspector and the Lenders' Representative to attend the test and/or inspection.

1.5 The Contractor must provide the Owner's Representative with a certified report of the results of any test and/or inspection within five days of the completion of that test or inspection.

1.6 If the Owner or the Lenders' Representative fails to attend the test and/or inspection, or if it is agreed between the parties that the Owner or the Lenders' Representative will not attend, then the Contractor may proceed with the test and/or inspection in the absence of the Owner's inspector and provide the Owner and the Lenders' Representative with a certified report of the results.

1.7 The Owner may require the Contractor to carry out any test and/or inspection not described in this Contract. The Contractor's extra costs necessarily incurred, which do not include head office or corporate overheads, profit or loss of profit, in the carrying out of the test and/or inspection will be added to the Contract Price only if the test shows that the relevant Works conform with the requirements of the Contract, but otherwise all costs will be borne by the Contractor.

1.8 If any Equipment or any part of the Works fails to pass any test and/or inspection, the Contractor must either rectify to the Owner's satisfaction or replace such Equipment or part of the Works and must repeat the test and/or inspection upon giving a notice under GC 1.4.

1.9 The Contractor must afford the Owner and the Lenders' Representative access at any time to any place where the Equipment is being manufactured or the Works are being performed in order to inspect the progress and the manner of manufacture or construction, provided that the Owner gives the Contractor reasonable prior notice.

1.10 The Contractor agrees that neither the execution of a test and/or inspection of Equipment or any part of the Works, nor the attendance by either or both the Owner and the Lenders' Representative nor the issue of any test report pursuant to GC 1.5 releases the Contractor from any other responsibilities under this Contract.

1.11 No part of the Works are to be covered up on the Site without carrying out any test and/or inspection required under this Contract and the Contractor must give reasonable notice to the Owner whenever any part of the Works are ready or about to be ready for test and/or inspection.

1.12 The Contractor must uncover any part of the Works or make openings in or through the same as the Owner may from time to time require at the Site and must reinstate and make good that part.

1.13 If any part of the Works have been covered up at the Site after compliance with the requirement of GC 1.12 and are found to be performed in accordance with the Contract, the Contractor's extra costs, which do not include head office or corporate overheads, profit or loss of profit, necessarily incurred in uncovering, making openings in or through, reinstating and making good the same will be added to the Contract Price.

Performance tests procedures and guidelines

1.14 The relevant Performance Tests must be conducted by the Contractor after Commissioning to ascertain whether the Facility can achieve Completion and after Completion to ascertain whether the Facility can meet the Performance Guarantees.

1.15 All Performance Tests must be conducted in a professional, timely, safe and environmentally responsible manner and in accordance with the Schedule of Scope of Work and the Schedule of Tests, all other terms and conditions of this Contract, applicable standards, Laws, government approvals and must be accomplished at no additional cost or expense to the Owner.

1.16 The Facility must not be operated during any Performance Test in excess of:

- (a) the limits allowed by any manufacturer to maintain its warranty

- (b) the limits imposed by the Law and government approvals applicable standards
- (c) the limits stated in the Schedule of Tests.

- 1.17 The Contractor agrees that the Owner and the Lenders' Representative will monitor the conduct of the Performance Testing to ensure compliance with the terms and conditions of this Contract.
- 1.18 The Contractor agrees that an inspection pursuant to GC 1.17 by the Owner and/or the Lenders' Representative does not release the Contractor from any other responsibilities under this Contract, including meeting the Performance Guarantees.
- 1.19 If a Performance Test is interrupted or terminated, for any reason, that Performance Test must be re-started from the beginning, unless otherwise approved by the Owner or the Lenders' Representative.
- 1.20 The Owner or the Contractor is entitled to order the cessation of any Performance Test if:
- (a) damage to the Works, the Facility or other property or personal injury
 - (b) breach of the conditions specified in the relevant environmental Laws or government approvals, is likely to result from continuation.
- 1.21 If the Contractor fails to pass a Performance Test (or any repetition in the event of prior failure) or if a Performance Test is stopped before its completion, that Performance Test must, subject to 24 hours prior notice having been given by the Contractor to the Owner and the Lenders' Representative, be repeated as soon as practicable. All appropriate adjustments and modifications are to be made by the Contractor with all reasonable speed and at its own expense before the repetition of any Performance Test.
- 1.22 The results of the Performance Tests must be presented in a written report, produced by the Contractor and delivered to the Owner and the Lenders' Representative within five days of the completion of the Tests. Those results will be evaluated by the Owner and the Lenders' Representative. In evaluation of the results, no additional allowance will be made for measurement tolerances over and above those specified in the applicable ISO test standard.

Sale of electricity during the performance tests

- 1.23 The Contractor acknowledges and agrees that:
- (a) the Owner is entitled to all energy, revenues and other benefits, including all Renewable Energy Certificates under the REC Act, carbon credits and all other 'green' renewable energy credits, that may be generated or derived from the Facility during the Performance Tests or otherwise
 - (b) nothing in this Contract imposes any restrictions on the Owner from selling any electricity generated during the Performance Tests.

2 Precommissioning, commissioning and tests on completion

Precommissioning

- 2.1 The Contractor must perform the Precommissioning of the Facility in accordance with the Owner's requirements and procedures in relation to Precommissioning as set out in the Schedule of Scope of Work.
- 2.2 As soon as all works in respect of Precommissioning are completed and, in the opinion of the Contractor, the Facility is ready for Commissioning, the Contractor must give notice to that effect to the Owner. As soon as reasonably practicable after receipt of that notice, the Owner must issue a notice to the Contractor specifying the date for commencement of Commissioning.

Commissioning

- 2.3 On the date specific in the notice issued by the Owner under clause 2.3, the Contractor must commence Commissioning of the Facility in accordance with the requirements and procedures in relation to Commissioning as set out in the Schedule of Scope of Work.

Performance tests

- 2.5
- (a) After the completion of Commissioning the Contractor must give the Owner at least ten days prior written notice that the Equipment, Works and Facility (or any component part of the Works and Facility) are ready for the Commercial Operation Performance Tests.
 - (b) The Owner must, as soon as reasonably practicable, after receipt of a notice under GC 2.5(a), issue a notice to the Contractor specifying the date for commencement of the Commercial Operation Performance Tests if such a date is not already identified in the Programme and the Schedule of Tests.

3 Commercial operation, post-commercial operation and final completion

Completion

- 3.1
- (a) The Contractor must notify the Owner at least [70] Days before the whole of the Works will, in the opinion of the Contractor reach the stage of Commercial Operation and be suitable for the issue of the Facility Completion Form by the Independent Engineer.
 - (b) As soon as the whole of the Works have, in the opinion of the Contractor, satisfied each of the preconditions for achieving Commercial Operation, including that the Facility Completion Form has been issued to the Owner by the Independent Engineer, the Contractor must give a notice to that effect to the Owner.

- (c) The Owner's Representative must, promptly, and no later than ten days after receipt of the Contractor's notice under GC 3.1(b), either issue a Certificate of Commercial Operation stating that the Facility has achieved Commercial Operation or notify the Contractor that the Facility has not achieved Commercial Operation and indicate any defects and/or deficiencies.
- (d) Despite any other provision of this Contract, no payment and no partial or entire use or occupancy of the Site, the Works or the Facility by the Owner in any way constitutes an acknowledgment by the Owner that Commercial Operation has occurred, nor does it operate to release the Contractor from or otherwise affect any of the Contractor's warranties, obligations or liabilities under or in connection with this Contract.
- (e) If the Owner's Representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct those defects and/or deficiencies and the procedures described in this GCs 3.1 must be repeated until the Owner issues a Certificate of Commercial Operation.
- (f) Upon the issue of the Certificate of Commercial Operation, the Contractor must handover care, custody and control of the Facility to the Owner.

Post-commercial operation performance tests

3.2

- (a) The Contractor must give the Owner prior written notice of when it intends to carry any of the Post Commercial Operation Performance Tests at the times and in accordance with the requirements set out in the Schedule of Tests.
- (b) As soon as reasonably practicable after receipt of a notice under GC 3.2(a), the Owner must issue a notice to the Contractor specifying the date for commencement of the Post Commercial Operation Performance Tests at the times and in accordance with the Schedule of Tests.

Final completion

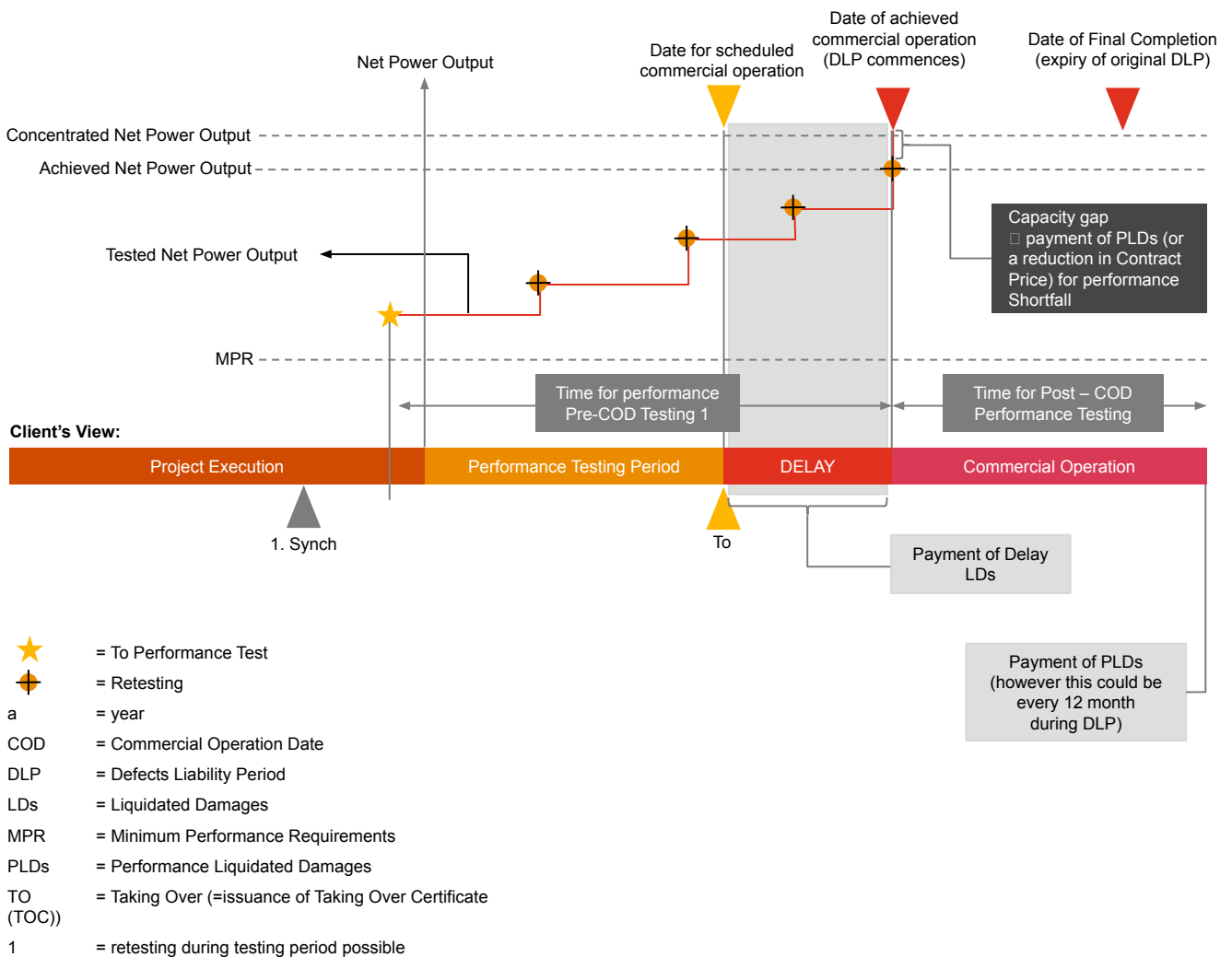
3.3

- (a) As soon as the Facility, in the opinion of the Contractor, reaches the stage of Final Completion the Contractor must give a notice to the Owner.
- (b) The Owner's Representative must, promptly, and no later than ten days after receipt of the Contractor's notice under GC 3.6(a), either issue a Certificate of Final Completion stating that the Facility has reached Final Completion or notify the Contractor of any defects and/or deficiencies.
- (c) If the Owner's Representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct those defects and/or deficiencies and the procedures described in GCs 3.6(a) and (b) must be repeated until the Owner issues a Certificate of Final Completion.
- (d) Despite any other provision of this Contract, no partial or entire use or occupancy of the Site, the Works or the Facility by the Owner, whether during the Tests after Completion or otherwise, in any way constitutes an acknowledgment by the Owner that Final Completion has occurred, nor does it operate to release the Contractor from any of its warranties, obligations or liabilities under this Contract including the satisfactory performance of its obligations during the Defects Liability Period, the carrying out of the Tests after Completion and meeting the Performance Guarantees.

Appendix 2

Diagrammatic representation of performance testing, performance guarantee and compensation arrangements for a sample solar PV project

Diagrammatic representation of performance testing, performance guarantee and compensation arrangements for a sample solar PV project





EPC and EPCM
delivery models

12 Engineering, Procurement and Construction (EPC) scope definition

Investing in Energy Transition Projects
March 2023



Role of the Scope of Work

Content

The Scope of Works (**SOW**) is among the most critical documents prepared in the design and construction process.

It defines the design and construction activities and responsibilities of the Contractor and others, including:

- fitness for purpose criteria for the project
- the Contractor's scope of work and design
- the minimum standards to be achieved
- technical criteria to be satisfied
- other project-specific obligations to be fulfilled by the Contractor
- the testing and commissioning process
- where relevant, how the Contractor's activities must interface with the activities of other designers and contractors.

Risk

Ill-defined scope obligations are among the primary causes of project failure.

Unfortunately, Principals often select a contract delivery method for a project and commence preparing the contract documents without identifying their goals and objectives at an early stage. Hence, those responsible for developing the contract documents do not have a clear understanding of what the Principal wants from the final product. It is also not uncommon for lawyers acting for a Principal to prepare the general conditions in isolation from the Principal's technical consultants responsible for the Principal's requirements and other technical documents.

This leads to inconsistencies between the various components of the construction contract and uncertainty as to the extent of the Contractor's obligations. It also increases the risk of important aspects of the Contractor's obligations not being comprehensively described in either the general conditions or the Principal's requirements and leads to a misalignment of the parties' expectations, which is a common cause of disputes and costly variations.

Implications for form of contract

The level of scope certainty as at the date of contract execution will also dictate the terms of the contract, both in relation to the contract type and the specific contract terms.

It is important for the parties not only to understand the level of scope certainty as at contract execution, but also the pathway to scope certainty beyond the date of contract.

Uncertain scope is difficult to price and programme. It is essential that the parties are of the level of certainty and carefully and realistically allocate responsibility and risk for the development of the scope to the point where procurement, detailed design at shop drawing level and actual construction can take place with confidence.

Disaggregated contracting

The threshold issue in the preparation of the SOW is whether the overall project is to be delivered through a single EPC contract or through a combination of contracts. The latter approach is usually described as a disaggregated model.

The fundamental risk with disaggregated contracting is the lack of a single point of responsibility. The interfaces between the various scopes that must be combined to make up the whole of the project must be managed and each SOW must be coordinated with the other SOW's so that the project fulfils the Principal's requirements.



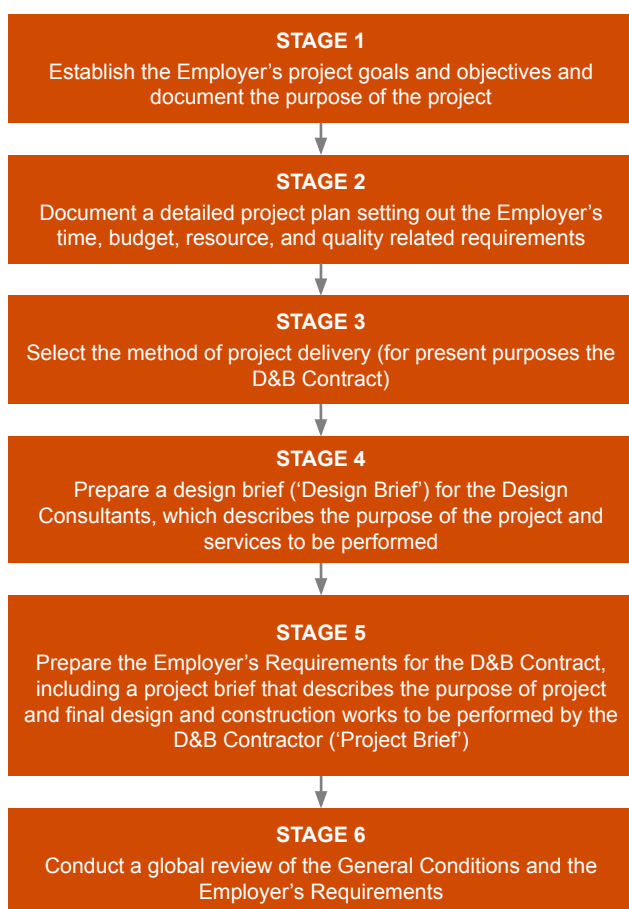
Key steps in preparing the SOW

The following guiding principles are a useful guide to the preparation of the SOW.

- Allocate sufficient time and resources to conduct market research, gather information and identify its overall requirements for the project.
- Document the project goals, objectives and purpose at the outset, so that those responsible for developing the contract documents have a clear understanding of what the Principal wants from the final product and what it expects the Contractor to deliver.
- Document the Principal's requirements in a manner so that it articulates precisely and consistently what must be designed and/or constructed by the Contractor and who will be responsible for design and other prior works (if any) undertaken by the Principal.
- Undertake a global review of the contract documents, utilising the combined knowledge of the Principal's project management team, expert technical consultants and lawyers to ensure consistent and clear drafting throughout the contract and certainty in relation to the project goals, objectives and purpose.

That process should be undertaken in the context of the requirements of the business case that has been approved, especially in relation to programme and budget.

The key stages in developing the Principal's requirements for an EPC Contract are:



Each stage of this process will be described in further detail below.

Stage 1: Establishing the project goals, objectives and purpose of the project

Prior to choosing the contract delivery method and attempting to articulate the Principal's requirements, the Principal must establish its goals and the purpose of the project. This will assist the Principal to consider and prioritise its goals and objectives at an early stage and will ultimately form the basis of the Principal's requirements to be included in the EPC Contract.

This will include consideration of the impact the project will have on its resources and existing operations and the commercial, technical, quality and timing requirements. It does not matter if the requirements cannot be finalised at this point because these requirements will be updated as the design and planning progresses.

The factors that the Principal must consider at this early stage include:

- the overall timing of the project, including understanding the Principal's current business market, where the market will be when the Principal intends to sell the product generated by the project and at what point in the boom/bust cycle the construction industry is at the time of the project
- key technology options
- supply chain constraints
- the specific timing requirements, including the critical stages and milestones for the project and when they are required to be completed
- budgetary restrictions and the Principal's economic and commercial drivers
- availability of both internal and external resources required to complete the project
- the external requirements of customers and other relevant parties and authorities.

Determining the target market and the requirements of customers and other external parties, in addition to the Principal's internal requirements, is critical during this stage. For example, in the property development sector, the external requirements of the residential and commercial sales contracts, tenancy agreements, relevant government authorities, Financiers (if any) and arrangements with utilities and services providers will all form the basis from which the Principal's requirements must be developed.

Analysing these external agreements and requirements is critical to the Design and Construct (D&C) Contract procurement process because they contain concessions which have been made by the Principal and which oblige the Principal to ensure that the project is designed and constructed in order to fulfil certain requirements. This will directly affect the D&C Contract and the Principal's requirements. Examples include:

- timing of construction
- approvals for commencement of the works
- labour, safety, environmental and development guidelines

- access restrictions
- design approval process
- construction methodology
- the standard and quality of materials and finishes
- performance requirements and outputs (if any)
- the pricing and approval of variations and extensions of time and financier step-in rights
- interface requirements with utilities and service providers
- the requirements for completion and certification.

It is therefore essential that the Principal determines what its obligations are in order to meet these external requirements from the outset. It can then communicate them to those responsible for developing the contract documents and, in turn, build those specific obligations into the Principal's requirements and ultimately pass on those obligations to the extent feasible to the consultants and the EPC Contractor.

Stage 2: Document a project plan

Once the Principal has established its internal and external requirements, it then needs to prepare a detailed plan for the delivery of the project that articulates those requirements. The plan should include:

- a clear statement of the purpose of the project
- the goals and objectives, including development time, the development cost, the whole of life cost, functionality and design life
- key project risks
- a resources plan that identifies internal resources and where external resources are required to produce the contract documentation and deliver the project
- budgets
- an overall development Programme and milestones
- any other specific requirements of the Principal
- the inputs for which the Principal is responsible, either through its own resources or by contracting with others.

Generally, it is not until the completion of this stage that the Principal will be in a position to consider the appropriate method of project delivery.

Stage 3: Selecting the method of project delivery

There are numerous project delivery options for the Principal to choose from including:

- design by the Principal and construction by a Contractor
- preliminary design by the Principal and final design and construction by a Contractor
- total design and construction by a Contractor

- design by Principal, construction by trade Contractors and management of project delivery by a construction manager
- design commenced by Principal: design completion and construction by Contractor.

The selection of the most appropriate method requires careful thought and consideration of many of the factors identified in stages 1 and 2.

This paper will not attempt to provide an analysis of the various project delivery methods. However, for the purposes of illustrating stages 4 and 5 of the process, we will identify some of the issues (not exhaustive) to be considered by the Principal when preparing the contract documents for the project delivery method referred to in item (b) above. Here, the Principal elects to commence preliminary design using the Design Consultants engaged under separate agreements (**Consultancy Agreements**) before engaging the D&C Contractor to perform the final design and construction.

Stages 4 and 5 below focus on developing the two key construction-related documents for this method of project delivery, which are:

- the design brief for the preliminary design to be carried out by the Design Consultants (**Design Brief**)
- the Principal's requirements for a EPC Contract, the SOW.

Given that the scope and risk profiles will vary for each project and across construction sectors, it is not possible to provide a comprehensive list of all the issues the Principal should consider when preparing the Design Brief and the Principal's requirements. However, the following sections will highlight some of the important issues that should be considered when preparing those documents.

Again, it should be noted that regardless of the type of project or the specific risk profile, it is still essential for the Principal to clearly articulate the requirements it has developed during stages 1 to 3 in both the Design Brief and the Principal's requirements. This must be in a manner that is consistent with the general conditions and clearly describes the obligation of the respective parties.

Stage 4: Prepare the design brief for the consultancy agreements

Using the information compiled during stages 1 to 4, the Principal should prepare and include a Design Brief in the Consultancy Agreements. This is in addition to the contract documents which specify the actual scope of services and deliverables for each of the Design Consultants.

It is in this Design Brief that the Principal articulates its goals and objectives, including its time, cost, quality and other requirements and how the Design Consultants are to comply with those requirements so that the Principal can measure and enforce the Design Consultant's obligations.

The Design Brief will develop as the design develops, but one must be included at the outset in all of the Consultancy Agreements. The ultimate goal in the EPC Contract project delivery method is to have the EPC Contractor assume an overall fitness for purpose obligation for the final design and construction of the project and for it to become responsible for the preliminary design prepared by the Design Consultants on execution of the EPC Contract. Therefore, it is critical that the Design Brief prepared for the Consultancy Agreements is consistent with the Principal's requirements to be provided to the EPC Contractor.

Examples of other important aspects to be considered by the Principal when preparing the contract documents which specify the actual scope of services and deliverables for each of the Consultants include:

- the building information system to be utilised
- a clear description of the deliverables, coordination and interface obligations and the timing for the provisions of the services, for each of the Design Consultants, during each phase of the design
- the design Programme for the performance of the services which must be consistent with the Principal's overall development Programme and timing requirements described in stage 2 above
- administrative issues such as reporting and attendance at meetings and where applicable must be consistent with the D&C Contract
- a statement that each Design Consultant confirms that it understands the Principal's goals and objectives and the Design Brief
- interface requirements.

Often these obligations would be documented in the schedule of scope of services.

Stage 5: Prepare the Principal's requirements for the D&C contract

It is fundamental to the success of the project to identify precisely what must be designed and then constructed by the D&C Contractor and the performance criteria that must be satisfied. The particulars of that essential element of the procurement process must be contained in the Principal's requirements, including the requirements of external parties identified in stages 1 and 2.

The level of detail contained in the Principal's requirements will vary depending on the timing of its preparation and the extent of design completed prior to the formation of the D&C Contract. Clearly, the later the Principal's requirements are prepared, more are the details that can be incorporated. The preparation of the Principal's requirements during this stage is an excellent test to ascertain whether the Principal is in a position to sensibly articulate its requirements for the project. If it cannot describe its requirements with certainty in the Principal's requirements, then logically the contract procurement process has not reached a point where the D&C Contract can sensibly be distributed to tenderers.

The contents of the Principal's requirements will obviously vary depending on the nature of the project, the specific scope of work and risk profile. The information compiled during stages 1 to 4 will form the basis of which the Principal's requirements will be further developed and finally articulated. For instance, the Design Brief referred to in stage 4 will be further developed with the assistance of the Design Consultants and form an integral component of the Principal's requirements for the D&C Contract.

Examples of key aspects to be considered by the Principal and articulated in the Principal's requirements for any D&C Contract include:

- a list of the Principal's goals and objectives for the project. The emphasis in this regard, and at this critical stage, is on providing detailed and measurable objectives, rather than general objectives or motherhood statements.
- the obligations that must be satisfied by the Principal under separate arrangements with external parties that are to be passed on to the D&C Contractor must be specified in detail. These obligations will include development and planning approvals, environmental approvals, agreements for lease, sale agreements, agreements with adjacent lands and the requirements of banks and Lenders. Fundamentally, in preparing the Principal's requirements, the Principal must ask itself whether it has procured the D&C Contractor to fulfil all of the Principal's own relevant obligations with external parties.
- the Principal's future operational expenditure. The Principal must ensure that its requirements, in terms of operational expenditure once the project is taken over by it, including future concession or off-take agreements and arrangements with service and utility providers, are also specified. This is important, not only in relation to interface obligations, but also because reduced capital expenditure through design and selection of materials, which might be a source of savings for the D&C Contractor, will often only be achieved at the expense of increased future operating expenses. These are, of course, borne by the Principal.
- relevant industry standards and criteria. However, considerable care must be taken before specifying a benchmark existing project or using an existing Principal's requirements document for another project as the required standard to be achieved. It will be rare that any other project will encapsulate and be consistent with all of the Principal's specific requirements of its project. The Principal must also consider the commercial implications of using an existing project to set a minimum benchmark. The D&C Contractor will inevitably assess the risk of uncertainty between the actual required standard and the minimum benchmark and pass this cost onto the Principal in the contract price.

- quality of equipment and materials. For example, in a commercial or residential building project, the standard of finishes, floor coverings and sound proofing should be specified, as should the telecommunications and security requirements and ecologically sustainable development (ESD) requirements. However, particular care must be taken if the Principal intends to prescribe a product. Prescribing specific items can lead to difficulties in enforcing the D&C Contract in relation to fitness for purpose and design warranties. Rather than the Principal specifying a particular product, it may be preferable for it to describe the type, appearance and purpose of the product. The reason for this is, if the Principal prescribes a specific product and a defect is found in that product after it is installed, then it will have difficulty rejecting the product on a fitness for purpose basis.

The question should be which party is to be responsible if the material or equipment ultimately does not perform as required? If the Principal wants the answer to be the D&C Contractor, then it should not tell the D&C Contractor what specific product to use. The types of description that should be avoided include sizes, thickness, strength, suppliers and models. Of course, if the Principal has a specific requirement and wishes to use a particular product and in turn take the risk of that product performing, then it must clearly set out that requirement. For a residential development project, for example, it will often be in the interests of both parties to carefully draft a mechanism in the D&C Contract providing for the construction of a prototype villa or apartment so that issues of specified finishes and design functionality can be worked through at an early point in the design and construction process.

- Separable portions, milestones, Programme and staging requirements for the project, particularly where the development is to occur adjacent to operating buildings and/or facilities or the Principal's external obligations dictate staged completion.
- The scope and extent of the works to be clearly delineated. The Principal must consider whether some of the works will be carried out by others and then consider the critical issue of the interaction and interface between those parties. This is a common cause of disputes and variation claims for delay.
- The scope of the D&C Contractor's design obligations and the existing design prepared by the Design Consultants. An issue that is peculiar to this type of D&C Contract delivery method involving the novation of the Principal's Design Consultants to the D&C Contractor is the status of the design work completed by those Design Consultants on behalf of the Principal (**Existing Design**). The purpose for using a D&C Contract delivery process is that the D&C Contractor is solely responsible for the final design of the project under the D&C Contract. However, a key question is, 'What happens to the Existing Design?' If the Existing Design contains elements that the Principal absolutely must have included in the final design, then these elements must be transferred to the Principal's requirements.

The Existing Design can be considered as a work in progress that the EPC Contractor can develop and change as the final design development proceeds.

However, to avoid disputes over design responsibility, the general conditions and Principal's requirements must be consistent on this point. The general conditions should provide that the D&C Contractor warrants and takes responsibility for any Existing Design included in the Principal's requirements, so that the Principal can enforce the D&C Contractor's overall design obligations and fitness for purpose warranties. It is possible to place overall design responsibility on the D&C Contractor while still ensuring the Principal retains control of the design process by incorporating carefully drafted design review regimes.

Alternatively, it is also possible to prohibit any changes by the D&C Contractor to the Existing Design, but this removes a fundamental commercial benefit to the D&C Contractor to value engineer its design and make allowance in its price for the cost savings it believes it can achieve by developing the design to suit its construction methods. It also potentially limits the design promises made by the D&C Contractor and must therefore be considered in that context. This balancing act between the requirements of the Principal to control the design and the commercial driver of the D&C Contractor is a very important dynamic to understand and should be foremost in the Principal's mind when selecting the project delivery method during stage 3 and then when deciding on the level of detail to be included in the Principal's requirements.

- Design documents and maintenance manuals to be provided by the D&C Contractor, including the form of the documents.
- Performance requirements for the works identified during stages 1 to 4. These are essential for a D&C Contract arrangement and they must be exhaustively specified. For example, the Principal's requirements for the construction of a high-rise building may include detailed performance requirements for air conditioning, lifts and other services, net lettable areas, environmental ratings, apartment sizes and car park numbers. These performance requirements should be carefully and thoroughly described, along with how satisfaction of those requirements will be determined. Consideration must be given to:
 - designing for whole of life requirements and the method of design review and approval
 - specific fitness for purpose requirements and a description of how satisfaction will be determined by the Principal
 - compliance with technical standards and specifications
 - performance guarantees and performance liquidated damages (if any)
 - the completion, testing and commissioning requirements. These include Principal supplied resources (both personnel and materials), responsibility for output (which can be blurred if the Principal provides resources), provision of input material (including quantity and quality) and provision for delayed testing if input material is not available.

- physical limits of the works including a description of the site boundaries and any connection points for services and access restrictions
- a list of exclusions that have not been included in the D&C Contractor's scope of work
- interface obligations with existing plant and/or auxiliary works
- interaction between the D&C Contractor and other Contractors
- interface obligations with adjoining property Principals
- plant or material to be supplied by the Principal
- training the D&C Contractor must provide to Principal's personnel
- future Operator/Principal access requirements for maintenance and repairs
- permits or approvals that the D&C Contractor is required to obtain
- an exclusive list of Principal's responsibilities such as obtaining planning approvals and supplying facilities, equipment or materials
- project-safety, quality and coordination policies, plans or procedures which the D&C Contractor is required to comply with or prepare
- approved working hours and any requirements or restrictions as to working hours
- defect rectification: Period and access requirements
- subcontractor and supplier warranties for specific works or materials or services for which the Principal wants a direct ongoing contractual relationship with the subcontractor, manufacturer or supplier in relation to performance and defect rectification.

Stage 6: Global review of the D&C contract documents

Ideally, the Principal's requirements and the general conditions should not be prepared in isolation. Unfortunately they often are, despite the significant costs to the Principal in procuring the commercial, technical and legal expertise required to perform this task. It is also not uncommon for the Principal's requirements or documents prepared by the D&C Contractor (Contractor's Proposal) to be simply attached to the general conditions and distributed as the tender documents without a thorough global review of all components of the D&C Contract.

In practice the contract documentation, including the Principal's requirements, will continue to evolve during the tender process and negotiations until the D&C Contract is executed. However, failing to undertake a review of the entire D&C Contract prior to going to tender increases the risk of ambiguity and uncertainty existing between the Principal's requirements and the general conditions and various components of the Principal's requirements. This will inevitably lead to a disputes and costly variations.

The Principal cannot rely on inconsistencies or ambiguities being identified or raised by the D&C Contractor during the negotiation process. In fact, often Contractors will specifically look for ambiguity in contract documents during the tender process and internally identify ways to take advantage of any uncertainty during the performance of the works. For the same reason, the Principal should not include documents in the D&C Contract which have been prepared by the D&C Contractor, without a thorough review for consistency with the Principal's requirements and general conditions.

Another common cause of uncertainty is the use of unclear and inconsistent language in the Principal's requirements. The drafting must definitively articulate the Principal's requirements and the obligations of the parties. Using general motherhood statements or legalistic wording, rather than simple plain English drafting, will not only lead to uncertainty, costly disputes and/or variations, but also makes it more difficult and time consuming for the Principal's project delivery team to determine what is to be constructed and to administer and enforce the D&C Contract.

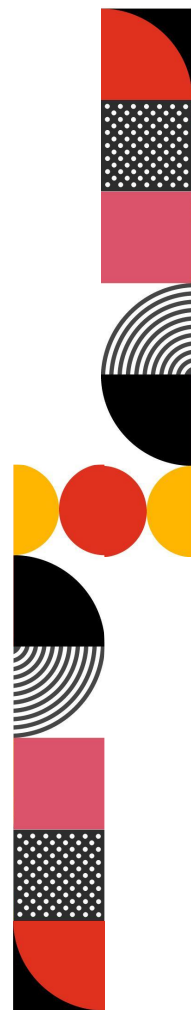
The following paragraph, taken from an existing D&C Contract used on an actual project, provides an example of drafting that fails to definitively describe the required scope, standard or duration of the D&C Contractor's design obligations in relation to designing temporary facilities and services:

The Contractor shall provide good quality design services and the like for temporary facilities necessary which may be in use for a few years pending completion of final permanent building works or infrastructure/roads to the project and which will need to be compatible with the buildings in normal use for that time.

The D&C Contractor's obligations under the above paragraph are uncertain. An alternative drafting style that more definitively describes the D&C Contractor's obligations might be:

The Consultant must design all temporary facilities required at the site to ensure that all services to existing buildings are maintained for the duration of the project and for a period not less than three years after the completion of the project. The temporary facilities must be compatible and, fully interface with, all existing buildings at the site.

While it is acknowledged that there are usually ambitious deadlines and budget restrictions imposed by Principals in relation to the contract procurement process, the global review, irrespective of the contract value, is critical. The review must combine input from the Principal's project management team, technical consultants and legal advisors. It must also be centrally managed by personnel with the requisite skill set and combined expertise in contract procurement, contract administration, project delivery and legal drafting.





EPC and EPCM
delivery models

13 Engineering, Procurement and Construction (EPC) Contracts in the power sector

Investing in Energy Transition Projects
March 2023



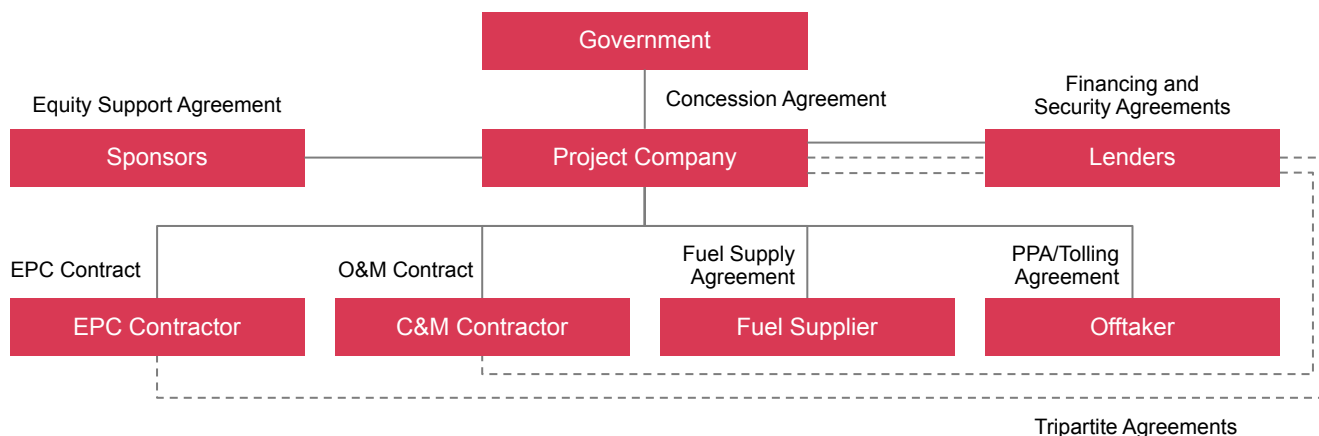
Purpose

The purpose of this paper will only focus on the use of EPC Contracts in the power sector.

Basic features of a power project

The contractual structure

The diagram below illustrates the basic contractual structure of a project-financed power project using an EPC Contract.



The detailed contractual structure will vary from project to project. However, most projects will have the basic structure illustrated above. As can be seen from the diagram, the Project Company¹ will usually enter into agreements which cover the following elements:

- **An agreement which gives the Project Company the right to construct and operate the power station and sell electricity generated by the power station**

Traditionally this was a concession agreement (or project agreement) with a relevant government entity granting the Project Company a concession to build and operate the power station for a fixed period of time (usually between 15 and 25 years), after which it was handed back to the government. This is why these projects are sometimes referred to as build operate transfer (BOT) or build own operate transfer (BOOT) projects².

However, following the deregulation of electricity industries in many countries, merchant power stations are now being constructed. A merchant power project is a project which sells electricity into an electricity market and takes the market price for that electricity. Merchant power projects do not normally require an agreement between the Project Company and a government entity to be constructed. Instead, they need simply to obtain the necessary planning, environmental and building approvals. The nature and extent of these approvals will vary from place to place. In addition, the Project Company will need to obtain the necessary approvals and licences to sell electricity into the market.

- **In traditional project-financed power projects (as opposed to merchant power projects) there is a power purchase agreement (PPA) between the Project Company and relevant authority, where the local government authority undertakes to pay for a set amount of electricity every year of the concession, subject to availability, regardless of whether it actually takes that amount of electricity (referred to as a take or pay obligation).**

Sometimes a tolling agreement is used instead of a PPA. A tolling agreement is an agreement under which the power purchaser directs how the plant is to be operated and despatched. In addition, the power purchaser is responsible for the provision of fuel. This eliminates one risk variable (for the Project Company) but also limits its operational flexibility.

In the absence of a PPA, project companies developing a merchant power plant and Lenders do not have the same certainty of cash flow as they would if there was a PPA. Therefore, merchant power projects are generally considered higher risk than non-merchant projects.³ This risk can be mitigated by entering into hedge agreements.

Project companies developing merchant power projects often enter into synthetic PPAs or hedge agreements to provide some certainty of revenue. These agreements are financial hedges as opposed to physical sales contracts. Their impact on the EPC Contract is discussed in more detail below.

¹ Power projects undertaken by the private sector and, more particularly, by non-utility companies are also referred to as independent power projects. They are undertaken by independent power producers (IPPs).

² However, because merchant power projects are generally undertaken in more sophisticated and mature markets there is usually a lower level of country or political risk. Conversely, given the move towards privatisation of electricity markets in various countries, this may no longer be the case.

- **An infrastructure contract governing the construction of the power station**

There are a number of contractual approaches that can be taken to construct a power station. An EPC Contract is one approach. Another option is to have a supply contract, a design agreement and an infrastructure contract with or without a project management agreement. The choice of contracting approach will depend on a number of factors including the time available, the Lenders' requirements and the identity of the Contractor(s). The major advantage of the EPC Contract over the other possible approaches is that it provides for a single point of responsibility. This is discussed in more detail below.

Almost all large, private sector, power projects use an EPC Contract.

- **An agreement governing the operation and maintenance of the power station**

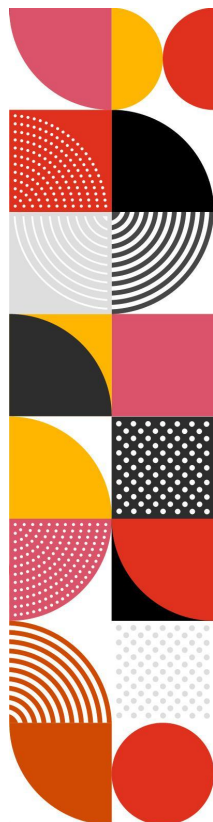
This is usually a long-term Operating and Maintenance agreement (**O&M agreement**) with an Operator for the operation and maintenance of the power station. The term of the O&M agreement will vary from project to project. The Operator will usually be a Sponsor especially if one of the Sponsors is an independent power producer (**IPP**) or utility company whose main business is operating power stations. Therefore, the term of the O&M agreement will likely match the term of the concession agreement. In some financing structures the Lenders will require the Project Company itself to operate the facility. In those circumstances the O&M agreement will be replaced with a technical services agreement under which the Project Company is supplied with the know-how necessary for its own employees to operate the facility.

- **An agreement governing the supply of fuel to the power station**

This is usually a fuel supply agreement, often with the local government authority that regulates the supply of the fuel used to run the power station (for example, coal, fuel oil, gas etc.). Obviously, if there is a tolling agreement there is no separate fuel supply agreement. In addition, in some markets and for particular types of projects the Project Company may decide not to enter into a long-term fuel supply agreement but instead elect to purchase fuel in the spot market. This will usually only be feasible for peaking plants and in locations with ample supplies of the necessary fuel. For hydro and wind projects there is also no need for a fuel supply agreement. However, this paper focuses on thermal plants. Many of the issues discussed will be applicable to hydro and wind projects, however, those projects have additional risks and issues that need to be taken into account.

- **Financing and security agreements with the Lenders to finance the development of the project**

The infrastructure contract is only one of a suite of documents on a power project. Importantly, the Project Company operates the project and earns revenues under contracts other than the infrastructure contract. Therefore, the infrastructure contract must, where practical, be tailored so as to be consistent with the requirements of the other project documents. As a result, it is vital to properly manage the interfaces between the various types of agreements. These interface issues are discussed in more detail later.



Bankability

A bankable contract is a contract with a risk allocation between the Contractor and the Project Company that satisfies the Lenders. Lenders focus on the ability (or more particularly the lack thereof) of the Contractor to claim additional costs or extensions of time as well as the security provided by the Contractor for its performance. The less comfortable the Lenders are with these provisions the greater amount of equity support the Sponsors will have to provide. In addition, Lenders will have to be satisfied as to the technical risk. Obviously price is also a consideration but that is usually considered separately to the bankability of the contract because the contract price (or more accurately the capital cost of the power station) goes more directly to the bankability of the project as a whole.

Before examining the requirements for bankability it is worth briefly considering the appropriate financing structures and lending institutions. The most common form of financing for infrastructure projects is project financing. Project financing is a generic term that refers to financing secured only by the assets of the project itself. Therefore, the revenue generated by the project must be sufficient to support the financing. Project financing is also often referred to as either non-recourse financing or limited recourse financing.

The terms non-recourse and limited recourse are often used interchangeably, however, they mean different things. Non-recourse means there is no recourse to the project Sponsors at all and limited recourse means, as the name suggests, there is limited recourse to the Sponsors. The recourse is limited both in terms of when it can occur and how much the Sponsors are forced to contribute. In practice, true non-recourse financing is rare. In most projects the Sponsors will be obliged to contribute additional equity in certain defined situations.

Traditionally project financing was provided by commercial Lenders. However, as projects became more complex and financial markets more sophisticated project finance also developed. Whilst commercial Lenders still provide finance, governments now also provide financing either through export credit agencies⁴ or trans or multi-national organisations like the World Bank, the Asian Development Bank and European Bank for Reconstruction. In addition, as well as bank borrowings Sponsors are also using more sophisticated products like credit wrapped bonds, securitisation of future cash flows and political risk insurance to provide a portion of the necessary finance.

In assessing bankability Lenders will look at a range of factors and assess a contract as a whole. Therefore, in isolation it is difficult to state whether one approach is or is not bankable. However, generally speaking the Lenders will require the following:

- a fixed completion date
- a fixed completion price
- no or limited technology risk
- output guarantees
- liquidated damages for both delay and performance
- security from the Contractor and/or its parent
- large caps on liability (ideally, there would be no caps on liability, however, given the nature of EPC Contracting and the risks to the Contractors involved there are almost always caps on liability)
- restrictions on the ability of the Contractor to claim extensions of time and additional costs.

An EPC Contract delivers all of the requirements listed above in one integrated package. This is one of the major reasons why they are the predominant form of infrastructure contract used on large-scale project financed infrastructure projects.

³ Export credit agencies are bodies that provide finance on the condition that the funds are used to purchase equipment manufactured in the country of the export credit agency.

Basic features of an EPC Contract

The key clauses in any infrastructure contract are those which impact on:

- time
- cost
- quality.

The same is true of EPC Contracts. However, EPC Contracts tend to deal with issues with greater sophistication than other types of infrastructure contracts. This is because, as mentioned above, an EPC Contract is designed to satisfy the Lenders' requirements for bankability. EPC Contracts provide for:

- **A single point of responsibility:** The Contractor is responsible for all design, engineering, procurement, construction, commissioning and testing activities. Therefore, if any problems occur the Project Company need only look to one party – the Contractor – to fix both the problem and provide compensation. As a result, if the Contractor is a consortium comprising several entities the EPC Contract must state that those entities are jointly and severally liable to the Project Company.
- **A fixed contract price:** Risk of cost overruns and the benefit of any cost savings are to the Contractor's account. The Contractor usually has a limited ability to claim additional money which is limited to circumstances where the Project Company has delayed the Contractor or has ordered variations to the works.
- **A fixed completion date:** EPC Contracts include a guaranteed completion date that is either a fixed date or a fixed period after the commencement of the EPC Contract. If this date is not met the Contractor is liable for delay liquidated damages (**DLDs**). DLDs are designed to compensate the Project Company for loss and damage suffered as a result of late completion of the power station. To be enforceable in common law jurisdictions, DLDs must be a genuine pre-estimate of the loss or damage that the Project Company will suffer if the power station is not completed by the target completion date. The genuine pre-estimate is determined by reference to the time the contract was entered into.

DLDs are usually expressed as a rate per day which represents the estimated extra costs incurred (such as extra insurance, supervision fees and financing charges) and losses suffered (revenue forgone) for each day of delay.

In addition, the EPC Contract must provide for the Contractor to be granted an extension of time (**EOT**) when it is delayed by the acts or omissions of the Project Company. The EOT mechanism and reasons why it must be included are discussed later.

- **Performance guarantees:** The Project Company's revenue will be earned by operating the power station. Therefore, it is vital that the power station performs as required in terms of output, efficiency and reliability. Therefore, EPC Contracts contain performance guarantees backed by performance liquidated damages (**PLDs**) payable by the Contractor if it fails to meet the performance guarantees.

PLDs must also be a genuine pre-estimate of the loss and damage that the Project Company will suffer over the life of the project if the power station does not achieve the specified performance guarantees. As with DLDs, the genuine pre-estimate is determined by reference to the time the contract was signed.

PLDs are usually a net present value (**NPV**) (less expenses) calculation of the revenue forgone over the life of the project.

For example, if the output of the plant is five MW less than the specification, the PLDs are designed to compensate the Project Company for the revenue forgone over the life of the project by being unable to sell that five MW.

PLDs and the performance guarantee regime and its interface with the DLDs and the delay regime are discussed in more detail below.

- **Caps on liability:** As mentioned above most EPC Contractors will not, as a matter of company policy, enter into contracts with unlimited liability. Therefore, EPC Contracts for power projects cap the Contractor's liability at a percentage of the contract price. This varies from project to project, however, an overall liability cap of 100% of the contract price is common. In addition, there are normally sub-caps on the Contractor's liquidated damages liability. For example, DLDs and PLDs might each be capped at 20 percent of the contract price with an overall cap on both types of liquidated damages of 30 percent of the contract price.

There will also likely be a prohibition on the claiming of consequential damages. Put simply consequential damages are those damages which do not flow directly from a breach of contract but which were in the reasonable contemplation of the parties at the time the contract was entered into. This used to mean heads of damage like loss of profit. However, loss of profit is now usually recognised as a direct loss on project-financed projects and, therefore, would be recoverable under a contract containing a standard exclusion of consequential loss clause. Nonetheless, care should be taken to state explicitly that liquidated damages can include elements of consequential damages. Given the rate of liquidated damages is pre-agreed most Contractors will not object to this exception.

In relation to both caps on liability and exclusion of liability it is common for there to be some exceptions. The exceptions may apply to either or both the cap on liability and the prohibition on claiming consequential losses. The exceptions themselves are often project specific, however, some common examples include cases of fraud or wilful misconduct, situations where the minimum performance guarantees have not been met and the cap on DLDs has been reached and breaches of the intellectual property warranties.

- **Security:** It is standard for the Contractor to provide performance security to protect the Project Company if the Contractor does not comply with its obligations under the EPC Contract. The security takes a number of forms including:
 - a bank guarantee for a percentage, normally in the range of 5–15%, of the contract price. The actual percentage will depend on a number of factors including the other security available to the Project Company, the payment schedule (because the greater the percentage of the contract price unpaid by the Project Company at the time it is most likely to draw on security, for example, to satisfy DLD and PLD obligations the smaller the bank guarantee can be), the identity of the Contractor and the risk of it not properly performing its obligations, the price of the bank guarantee and the extent of the technology risk
 - retention, for example, withholding a percentage (usually 5–10%) of each payment. Provision is often made to replace retention monies with a bank guarantee (sometimes referred to as a retention guarantee (bond))
 - advance payment guarantee, if an advance payment is made
 - a parent company guarantee – this is a guarantee from the ultimate parent (or other suitably related entity) of the Contractor which provides that it will perform the Contractor's obligations if, for whatever reason, the Contractor does not perform.
- **Variations:** The Project Company has the right to order variations and agree to variations suggested by the Contractor. If the Project Company wants the right to omit works either in their entirety or to be able to engage a different Contractor this must be stated specifically. In addition, a properly drafted variations clause should make provision for how the price of a variation is to be determined. In the event the parties do not reach agreement on the price of a variation the Project Company or its representative should be able to determine the price. This determination is subject to the dispute resolution provisions. In addition, the variations clause should detail how the impact, if any, on the performance guarantees is to be treated. For some larger variations the Project Company may also wish to receive additional security. If so, this must also be dealt with in the variations clause.
- **Defects liability:** The Contractor is usually obliged to repair defects that occur in the 12 to 24 months following completion of the performance testing. Defects liability clauses can be tiered. That is the clause can provide for one period for the entire power station and a second, extended period, for more critical items.
- **Intellectual property:** The Contractor warrants that it has rights to all the intellectual property used in the execution of the works and indemnifies the Project Company if any third parties' intellectual property rights are infringed.
- **Force majeure:** The parties are excused from performing their obligations if a *force majeure* event (FM) occurs. This is discussed in more detail below.
- **Suspension:** The Project Company usually has right to suspend the works.
- **Termination:** This sets out the contractual termination rights of both parties. The Contractor usually has very limited contractual termination rights. These rights are limited to the right to terminate for non-payment or for prolonged suspension or prolonged FM and will be further limited by the tripartite or direct agreement between the Project Company, the Lenders and the Contractor. The Project Company will have more extensive contractual termination rights. They will usually include the ability to terminate immediately for certain major breaches or if the Contractor becomes insolvent and the right to terminate after a cure period for other breaches. In addition, the Project Company may have a right to terminate for convenience. It is likely the Project Company's ability to exercise its termination rights will also be limited by the terms of the financing agreements.
- **Performance specification:** Unlike a traditional infrastructure contract, an EPC Contract usually contains a performance specification. The performance specification details the performance criteria that the Contractor must meet. However, it does not dictate how they must be met. This is left to the Contractor to determine. A delicate balance must be maintained. The specification must be detailed enough to ensure the Project Company knows what it is contracting to receive but not so detailed that if problems arise the Contractor can argue they are not its responsibility.

Whilst there are, as described above, numerous advantages to using an EPC Contract, there are some disadvantages. These include the fact that it can result in a higher contract price than alternative contractual structures. This higher price is a result of a number of factors not least of which is the allocation of almost all the construction risk to the Contractor. This has a number of consequences, one of which is that the Contractor will have to factor into its price the cost of absorbing those risks. This will result in the Contractor building contingencies into the contract price for events that are unforeseeable and/or unlikely to occur. If those contingencies were not included the contract price would be lower. However, the Project Company would bear more of the risk of those unlikely or unforeseeable events. Sponsors have to determine, in the context of their particular project, whether the increased price is worth paying.

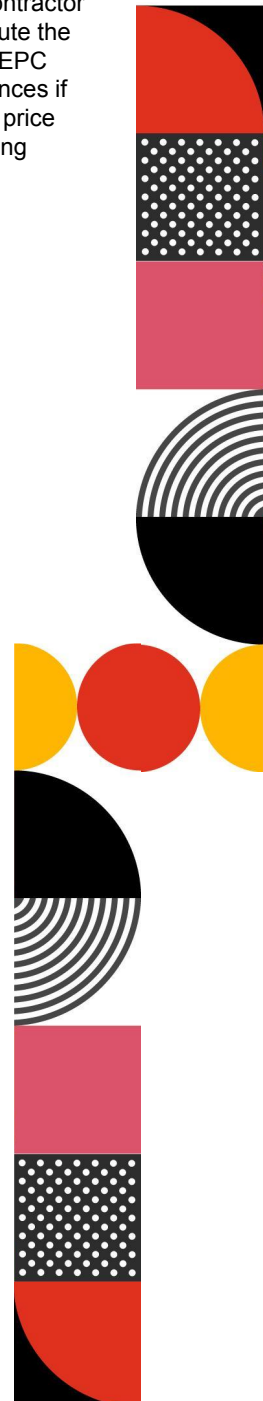
As a result, Sponsors and their advisers must critically examine the risk allocation on every project. Risk allocation should not be an automatic process. Instead, the Project Company should allocate risk in a sophisticated way that delivers the most efficient result. For example, if a project is being undertaken in an area with unknown geology and without the time to undertake a proper geotechnical survey, the Project Company may be best served by bearing the site condition risk itself as it will mean the Contractor does not have to price a contingency it has no way of quantifying. This approach can lower the risk premium paid by the Project Company. Alternatively, the opposite may be true. The Project Company may wish to pay for the contingency in return for passing off the risk which quantifies and caps its exposure. This type of analysis must be undertaken on all major risks prior to going out to tender.

Another consequence of the risk allocation is the fact that there are relatively few construction companies that can and are willing to enter into EPC Contracts. As mentioned in the introduction some bad publicity and a tightening insurance market have further reduced the pool of potential EPC Contractors. The scarcity of EPC Contractors can also result in relatively high contract prices.

Another major disadvantage of an EPC Contract becomes evident when problems occur during construction. In return for receiving a guaranteed price and a guaranteed completion date, the Project Company cedes most of the day-to-day control over the construction. Therefore, project companies have limited ability to intervene when problems occur during construction. The more a Project Company interferes the greater the likelihood of the Contractor claiming additional time and costs. In addition, interference by the Project Company will make it substantially easier for Contractors to defeat claims for liquidated damages and defective works.

Obviously, ensuring the project is completed satisfactorily is usually more important than protecting the integrity of the contractual structure. However, if a Project Company interferes with the execution of the works they will, in most circumstances, have the worst of both worlds. They will have a contract that exposes them to liability for time and costs incurred as a result of their interference without any corresponding ability to hold the Contractor liable for delays in completion or defective performance. The same problems occur even where the EPC Contract is drafted to give the Project Company the ability to intervene. In many circumstances, regardless of the actual drafting, if the Project Company becomes involved in determining how the Contractor executes the works then the Contractor will be able to argue that it is not liable for either delayed or defective performance.

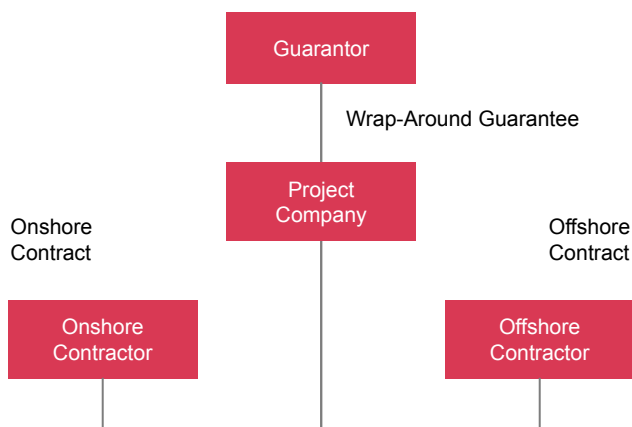
As a result, it is vitally important that great care is taken in selecting the Contractor and in ensuring the Contractor has sufficient knowledge and expertise to execute the works. Given the significant monetary value of EPC Contracts, and the potential adverse consequences if problems occur during construction, the lowest price should not be the only factor used when selecting Contractors.



Split EPC Contracts

One common variation, particularly in Asia, on the basic EPC structure illustrated above is a split EPC Contract. Under a split EPC Contract, the EPC Contract is, as the name implies, split into two or more separate contracts.

The basic split structure (illustrated below) involves splitting the EPC Contract into an onshore infrastructure contract and an offshore supply contract.^{5 6}



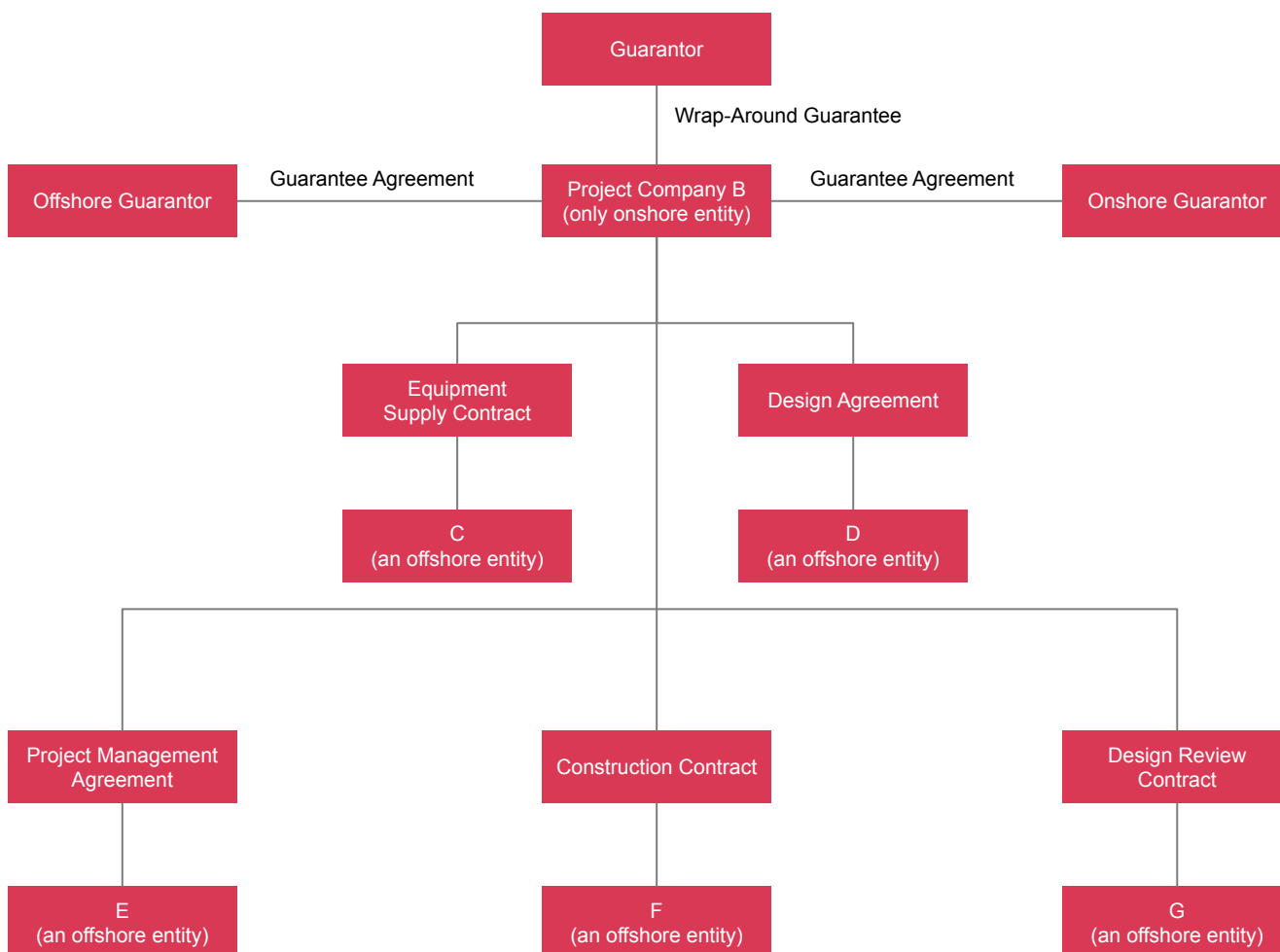
There are two main reasons for using a split contract. The first is because it can result in a lower contract price as it allows the Contractor to make savings in relation to onshore taxes, in particular on indirect and corporate taxes in the onshore jurisdiction. The second is because it may reduce the cost of complying with local licensing regulations by having more of the works, particularly the design works, undertaken offshore. In addition, in some countries which impose restrictions on who can carry out certain activities like engineering and design services, splitting the EPC Contract can also be advantageous because it can make it easier to repatriate profits. Below is a diagram illustrating a more complex split EPC structure we have used previously that dealt with both tax and licensing issues.



⁴ For the purposes of this paper, we have assumed the EPC Contract will be governed by the law of a common law jurisdiction. Where there are differences between jurisdictions we have adopted the English law approach. Therefore, if an EPC Contract is governed by a law other than English law you will need to seek advice from local counsel to ensure the contract is enforceable in the relevant jurisdiction. For further information on liability in EPC Contracts under English law refer to our paper outlined 'Key issues for loss and liability'.

⁵ We have prepared a paper that deals with the variations and complications in split EPC Contracts. You should consult that paper, or ask us for a copy, if you want more information on this topic.

Example split EPC Structure



Whilst a split EPC Contract can result in costs savings, there are risks to the Project Company in using such a structure. These mainly arise because of the derogation from the principle of a single point of responsibility.

Unlike a standard EPC Contract, the Project Company cannot look only to a single Contractor to satisfy all the contractual obligations (in particular, design, construction and performance). Under a split structure, there are at least two entities with those obligations. Therefore, a third agreement, a wrap-around guarantee,⁷ is used to deliver a single point of responsibility despite the split.

Under a wrap-around guarantee, an entity, usually either the offshore supplier or the parent company of the Contracting entities, guarantees the obligations of both Contractors. This delivers a single point of responsibility to the Project Company and the Lenders. The Contracting entities will then enter into a separate agreement to determine how, as between themselves, liability is to be apportioned. However, that agreement is not relevant for the purposes of this paper.

In addition, the wrap-around guarantee will, if properly drafted, prevent the various Contractors from relying on the defaults of the other parties to avoid performing their contractual obligations – a tactic known as a horizontal defence. The wrap-around guarantee should also prevent a Contractor from relying on the Project Company’s default where the Project Company’s default was a result, either directly or indirectly, of the non-performance, under-performance or delay in performance of any of the other Contractors under their respective contracts.

⁶ This is also called a coordination agreement, an administration agreement or an umbrella deed.

In addition to horizontal defences, the wrap-around guarantee should deal with the following matters:

- **Guarantees and indemnities:** The Guarantor must guarantee the performance of the totality of the works and the ability of the separate parts to work seamlessly.
- **Liquidated damages:** This is linked to the issue of horizontal defences discussed above. The wrap-around guarantee must ensure that liquidated damages are paid regardless of which Contractor is late and which Contractor fails to perform. Similarly, the aggregate cap of liability in the wrap-around guarantee must override any caps on liability in the split contracts themselves.
- **Provision of a performance bond by the Guarantor or its parent:** It is usually prudent to have the Guarantor provide security for their obligations under the wrap-around guarantee. This may be in addition to or in replacement of the security provided under the EPC Contracts themselves. It will depend on the particular requirements of each project.
- **Liability (and limitation of liability) of the Guarantor:** The Guarantor's liability should be equal to the aggregate liability of the contracting entities under the split EPC Contracts.
- **Duration of the wrap-around guarantee:** The wrap-around guarantee should remain in force for as long as possible to offer the Project Company additional protection in the event latent defects occur. In any event, it should remain in force until the expiry of the defects liability period or the resolution of any dispute arising out of or in connection with the construction of the facility, whichever is the later.
- **Dispute resolution:** The procedures should be identical to those in the project documents and allow the Project Company to consolidate claims.
- **Termination:** Termination of an EPC Contract should automatically terminate the other EPC Contract(s) and the wrap-around guarantee (except in respect of accrued liability).
- **Tax indemnity:** Ideally the Contractor(s) should indemnify the Project Company for any taxes or penalties payable as a result of the split.

In addition, the wrap-around guarantee should contain provisions dealing with the practical consequences of splitting the contract and how the contracts and the project should be administered. For example, there should also be clauses dealing with more mundane issues like notices. Notices issued under one contract should be deemed to be notices under the other contracts.

Whenever an EPC Contract is split the primary driver of both of the general structure of the split and the particular drafting approach must be achieving a tax effective structure. Therefore, tax advice from experts in the relevant jurisdiction must be obtained and those experts must review the split contracts and the wrap-around guarantee.

The hidden dangers of split EPC Contracts

The split structure offers reduced taxation obligations on the Contractor by allowing the Contractor to avoid local taxes on equipment and materials purchased from 'offshore'. The savings result in a reduced project capital cost, which in turn may be passed onto the Project Company and its Lenders.

The concept of splitting EPC Contracts

As stated above, under the classic split, the EPC Contract is divided into two separate contracts, commonly referred to as the 'onshore contract' and the 'offshore contract'. The responsibilities of the offshore Contractor will usually be restricted to:

- the supply of design and engineering services
- the supply of plant, equipment and materials (equipment) sourced from outside the host country.

The responsibilities of the onshore Contractor will usually be restricted to:

- the installation of equipment sourced from outside the host country and procured under the offshore contract, once the equipment has reached its onshore destination
- the construction, testing, commissioning and other onsite activities (including some onshore design and engineering services) associated with the works
- the supply of equipment sourced from within the host country.

It will also be necessary to consider the splitting of obligations to provide training and supply spare parts.

To complete the split structure, an agreement is required to coordinate and wrap the obligations of the onshore and offshore Contractors to the Project Company. This way, any gaps that arise as a result of the split structure are appropriately covered and the Project Company's recourse, in the event of a failure in the performance of either the onshore Contractor or the offshore Contractor, will only be to a single entity – The Guarantor (as would have been the case in the traditional EPC Contract form). In some structures the offshore Contractor will also be the Guarantor.

Why split EPC Contracts?

In a word: tax. The split structure is designed to avoid or reduce the profit element of any equipment supplied from outside the host country, or any design work performed outside the host country, becoming subject to local taxes. The classes of taxes, both direct and indirect, to which an EPC Contractor and a Project Company may be exposed in the host country include value added taxes; withholding taxes; technology transfer taxes; import and stamp duties; local construction and property licence fees and duties; and onshore income or profits tax.

Other commercial considerations may drive the split structure, such as avoidance of local 'red tape' requirements and costs associated with obtaining permits, approvals and submitting designs to local government authorities in the host country.

Caveat on splitting EPC Contracts

Splitting EPC Contracts will not be appropriate for every project. Appropriate local taxation advice and legal advice should always be sought before deciding whether to split the EPC Contract into two or more contracts to take advantage of taxation savings and other commercial benefits. Different legal and tax jurisdictions will have their own specific requirements which will impact on the structure. For example, in some jurisdictions a mere reference in the onshore contract to the offshore contract (or vice-versa) may defeat the tax advantages that the split structure is intended to achieve.

The legal issues associated with splitting EPC Contracts

Specifications: Where two separate specifications are prepared, the Project Company should thoroughly review the specifications to ensure that there are no inconsistencies and that when combined, they cover the entire works. Any 'gaps' produced as a result in splitting the specification should be covered in the umbrella agreement. If one specification is adopted to cover the whole of the works, then it should be made clear that the offshore Contractor's scope of work includes all activities associated with the supply of design and engineering services and the supply of equipment sourced from outside the host country. The onshore Contractor's scope of work will include all remaining activities necessary for the proper completion of the works.

Timing and performance issues: Where the split structure results in split liquidated damages and EOT regimes, the Project Company will need to scrutinise the regimes in each contract to ensure they are consistent and interact logically and correctly.

Quality issues: The Project Company should ensure that the overall design obligations are assumed by one Contractor, usually the onshore Contractor which has established a presence in the host country. The Guarantor under the umbrella agreement should then provide a guarantee for the Contractor's design obligations.

Coordination issues: The onshore contract should provide that the onshore Contractor is responsible for all equipment sourced from offshore from the moment the offshore Contractor ceases to be responsible for that same equipment and in the same way that the offshore Contractor is responsible under the offshore contract for the equipment.

Residual legal issues: The Project Company should also address the following issues with a split structure:

- caps on liability and liquidated damages
- termination and suspension
- variations/change orders
- confidentiality issues
- governing law
- FM.

The umbrella agreement

In terms of providing the necessary legal protection to the Project Company, the most important document is the umbrella agreement (also known as a 'wrap around guarantee agreement', 'coordination and administration agreement', 'supplemental agreement' or 'guarantee agreement'). The umbrella agreement will, if properly drafted, provide the Project Company with a single point of responsibility and more importantly, prevent the various Contractors from relying on each other's defaults to avoid performing their contractual obligations – a tactic known as a 'horizontal defence'. The umbrella agreement should also prevent a Contractor from relying on the Project Company's default where the Project Company's only default was a result, either directly or indirectly, of the non-performance, inadequate performance or delay in performance of any of the other Contractors under their respective contract. In addition to horizontal defences, the umbrella agreement should deal with the following matters:

- guarantees and indemnities
- liquidated damages
- the performance bond by the Guarantor's parent
- liability (and limitation of liability) of the Guarantor
- duration of the umbrella agreement
- dispute resolution – it should be identical to the project documents and allow the Project Company to consolidate claims.

Conclusion on splitting an EPC Contract

The splitting of works between two or more contracts is usually driven by tax and other commercial considerations. Provided appropriate taxation and legal advice is sought and received, and it should be in every case, and provided all associated legal issues are adequately addressed in the split contracts and co-ordinated and 'wrapped' in the umbrella agreement, the taxation and other commercial benefits offered under the split structure should flow through to the Project Company and its Lenders.



Key power specific clauses in power EPC Contracts

General interface issues

As noted earlier, an EPC Contract is one of a suite of agreements necessary to develop a power project. Therefore, it is vital that the EPC Contract properly interfaces with those other agreements. In particular, care should be taken to ensure the following issues interface properly:

- commencement and completion dates
- liquidated damages amounts and trigger points
- caps on liability
- indemnities
- entitlements to extensions of time
- insurance
- FM
- intellectual property.

Obviously, not all these issues will be relevant for all agreements. In addition to these general interface issues that apply to most types of projects, there are also power project issues that must be considered. These issues are mainly concerned with the need to burn fuel and export power. They are discussed in more detail below.

Those major power-specific interface issues are:

- Contractor's access to the transmission grid to allow timely completion of construction, commissioning and testing (grid access)
- consistency of commissioning and testing regimes
- fuel specification requirements
- interface issues between the relevant government agencies and System Operator and the Contractor. In particular, whilst the Project Company must maintain a long-term or comfortable relationship with either the government or the System Operator the Contractor does not.

Grid access

Clearly, EPC Contracts will not provide for the handover of the power station to the Project Company and the PPA will not become effective until all commissioning and reliability trialling has been successfully completed. This raises the important issue of the Contractor's grid access and the need for the EPC Contract to clearly define the obligations of the Project Company in providing grid access.

Lenders need to be able to avoid the situation where the Project Company's obligation to ensure grid access is uncertain. This will result in protracted disputes with the Contractor concerning the Contractor's ability to place load onto the grid system and to obtain extensions of time in situations where delay has been caused as a result of the failure or otherwise of the Project Company to provide grid access.

Grid access issues arise at two differing levels, namely:

- the obligation to ensure that the infrastructure is in place
- the obligation to ensure that the Contractor is permitted to export power.

With respect to the obligation to ensure that the infrastructure is in place, the Project Company is the most appropriate party to bear this risk vis-à-vis the Contractor, since the Project Company usually either builds the infrastructure itself or has it provided through the relevant concession agreement. Issues that must be considered include:

- What are the facilities that are to be constructed and how will these facilities interface with the Contractor's works? Is the construction of these facilities covered by the PPA, concession agreement or any other infrastructure agreement? If so, are the rights and obligations of the Project Company dealt with in a consistent manner?
- What is the timing for completion of the infrastructure – will it fit in with the timing under the EPC Contract?

With respect to the Contractor's ability to export power, the EPC Contract must adequately deal with this risk and satisfactorily answer the following questions to ensure the smooth testing, commissioning and entering of commercial operation:

- What is the extent of the grid access obligation? Is it merely an obligation to ensure that the infrastructure necessary for the export of power is in place or does it involve a guarantee that the grid will take all power which the Contractor wishes to produce?
- What is the timing for the commencement of this obligation? Does the obligation cease at the relevant target date of completion? If not, does its nature change after the date has passed?
- What is the obligation of the Project Company to provide grid access in cases where the Contractor's commissioning/plant is unreliable – is it merely a reasonableness obligation?

- Is the relevant grid robust enough to allow for full testing by the Contractor – for example, the performance of full-load rejection testing?
- What is the impact of relevant national grid codes or legislation and their interaction with both the EPC Contract and the PPA?

Many EPC Contracts are silent on these matters or raise far more questions than they actually answer. Given that the Project Company's failure will stem from restrictions imposed on it under either or both the PPA or the concession agreement, the best answer is to back the Project Company's obligations under the EPC Contract (usually to provide an EOT or costs) with the PPA. This approach will not eliminate the risk associated with grid access issues but will make it more manageable.

A variety of projects we have worked on in Asia, particularly in China and the Philippines, have incurred significant amounts of time and costs in determining the grid access obligations under the EPC Contract. This experience has taught us that it is a matter which must be resolved at the contract formation stage. Therefore, we recommend inserting the clauses in Appendix 3 of this paper.

Interfacing of commissioning and testing regimes

It is also important to ensure the commissioning and testing regimes in the EPC Contract mirror the requirements for commercial operation under the PPA. Mismatches only result in delays, lost revenue and liability for damages under the PPA or concession agreement, all of which have the potential to cause disputes.

Testing/trialling requirements under both contracts must provide the necessary Project Company satisfaction under the EPC Contract and System Operator/offtaker satisfaction under the PPA. Relevant testing issues which must be considered include:

- Are differing tests/trialling required under the EPC Contract and the PPA? If so, are the differences manageable for the Project Company or likely to cause significant disruption?
- Is there consistency between obtaining handover from the Contractor under the EPC Contract and commercial operation? It is imperative to prescribe back-to-back testing under the relevant PPA and the EPC Contract which will result in a smoother progress of the testing and commissioning and better facilitate all necessary supervision and certification. It must not be forgotten that various certifications will be required at the Lender level. The last thing the Lenders will want is the process to be held up by their own requirements for certification. To avoid delays and disruption it is important that the Lenders' engineer is acquainted with the details of the project and, in particular, any potential difficulties with the testing regime. Therefore, any potential problems can be identified early and resolved without impacting on the commercial operation of the power station.

- Is the basis of the testing to be undertaken mirrored under both the EPC Contract and the PPA? For example, on what basis are various environmental tests to be undertaken? Are they to be undertaken on a per unit basis or a station output basis?
- What measurement methodology is being used? Are the correction factors to be applied under the relevant documents uniform? Are references to international standards or guidelines to a particular edition or version?
- Are all tests necessary for the Contractor to complete under the EPC Contract able to be performed as a matter of practice?

Significantly, if the relevant specifications are linked to guidelines such as the World Bank environmental guidelines, consideration must be given to changes which may occur in these guidelines. The EPC Contract reflects a snapshot of the standards existing at a time when that contract was signed. It may be a number of years post that date in which the actual construction of the project is undertaken thus allowing for possible mismatches should the legislative/guidelines have changed as regards to environmental concerns. It is important that there is certainty as to which standard applies for both the PPA and the EPC Contract. Is it the standard at the time of entering the EPC Contract or is it the standard which applies at the time of testing?

Consideration must therefore be given to the appropriate mechanism to deal with potential mismatches between the ongoing obligation of complying with laws, and the Contractor's obligation to build to a specification agreed at a previous time. Consideration must be given to requiring satisfaction of guidelines as amended from time to time. The breadth of any change of law provision will be at the forefront of any review.

The above issues raise the importance of the testing schedules to the EPC Contract and the PPA. The size and importance of the various projects to be undertaken must mean that the days where schedules are attached at the last minute without being subject to review are gone.

Discrepancies between the relevant testing and commissioning requirements will only serve to delay and distract all parties from the successful completion of testing and reliability trials.

These are all areas where lawyers can add value to the successful completion of projects by being alert to and dealing with such issues at the contract formation stage.

Fuel specification issues

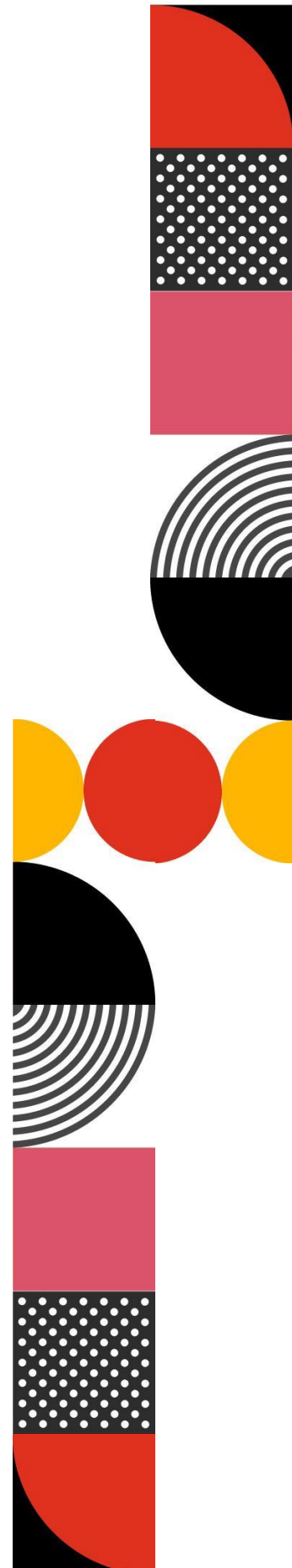
The nature of the fuel to be supplied to the Contractor under the EPC Contract is also another important issue. Where there is a tolling agreement, as opposed to a PPA, it is vitally important that an adequate review is done at the EPC Contract level to ensure that the fuel being provided under the tolling agreement meets the requirements of the EPC Contract. Similar consideration will need to be given to any Project Company where there is a PPA structure.

Differing fuel specification requirements can only result in delay, cost claims and EOT claims at the EPC Contract level. Fuel specification issues will be hidden away in the schedules. Again, watch out for those schedules.

In addition, where certain tests require specific types or quality of fuel the review should check that there are arrangements in place for that type of quality of fuel to be provided, for example, high sulphur fuel may be required to properly test the flue gas desulphurisation equipment.

Interface issues between the offtaker and the EPC Contractor

At a fundamental level, it is imperative that the appropriate party corresponds with the relevant offtaker or System Operator during construction on issues such as the provision of transmission facilities, fuel requirements, testing requirements and timing. The Project Company must ensure the EPC Contract states clearly that it is the appropriate party to correspond with the offtaker and the System Operator. Any uncertainty in the EPC Contract may unfortunately see the EPC Contractor dealing with the offtaker or the System Operator thus possibly risking the relationship of the Project Company with its customer. Significantly, it is the Project Company which must develop and nurture an ongoing and long-term relationship with the offtaker. On the other hand, it is the Contractor's prime objective to complete the project on time or earlier at a cost which provides it with significant profit. The clash of these conflicting objectives in many cases does not allow for such a smooth process. Again, the resolution of these issues at the EPC Contract formation stage is imperative.



Key performance clauses in power EPC Contracts

Rationale for imposing liquidated damages

Almost every infrastructure contract will impose liquidated damages for delay and impose standards in relation to the quality of construction. Most, however, do not impose PLDs. EPC Contracts impose PLDs because the achievement of the performance guarantees has a significant impact on the ultimate success of a project. Similarly, it is important that the power station commences operation on time because of the impact on the success of the project and because of the liability the Project Company will have under other agreements. This is why DLDs are imposed. DLDs and PLDs are both sticks used to motivate the Contractor to fulfil its contractual obligations.

The law of liquidated damages

As discussed above, liquidated damages must be a genuine pre-estimate of the Project Company's loss. If liquidated damages are more than a genuine pre-estimate they will be a penalty and unenforceable. There is no legal sanction for setting a liquidated damages rate below that of a genuine pre-estimate, however, there are the obvious financial consequences.

In addition to being unenforceable as a penalty, liquidated damages can also be void for uncertainty or unenforceable because they breach the Prevention Principle. Void for uncertainty means, as the term suggests, that it is not possible to determine how the liquidated damages provisions work. In those circumstances, a court will void the liquidated damages provisions. The Prevention Principle was developed by the courts to prevent Principals, for example, project companies, from delaying Contractors and then claiming DLDs. It is discussed in more detail below in the context of extensions of time.

Prior to discussing the correct drafting of liquidated damages clauses to ensure they are not void or unenforceable it is worth considering the consequences of an invalid liquidated damages regime. If the EPC Contract contains an exclusive remedies clause the result is simple – the Contractor will have escaped liability unless the contract contains an explicit right to claim damages at law if the liquidated damages regime fails. This is discussed in more detail below.

If, however, the EPC Contract does not contain an exclusive remedies clause the non-challenging party should be able to claim at law for damages they have suffered as a result of the challenging party's non- or defective – performance. What then is the impact of the caps in the now invalidated liquidated damages clauses?

Unfortunately, the position is unclear in common law jurisdictions, and a definitive answer cannot be provided based upon the current state of authority. It appears the answer varies depending upon whether the clause is invalidated due to its character as a penalty or because of uncertainty or unenforceability. Our view of the current position is set out below. We note that whilst the legal position is not settled the position presented below does appear logical.

- **Clause invalidated as a penalty:** When liquidated damages are unenforceable because they are a penalty (for example, they do not represent a genuine pre-estimate of loss), the liquidated damages or its cap will not act as a cap on damages claims at general law. We note that it is rare for a court to find liquidated damages are penalties in contracts between two sophisticated, well advised parties.
- **Clause invalidated due to acts of prevention by the Principal:** Where a liquidated damages clause is invalidated due to an act of prevention by the Principal for which the Contractor is not entitled to an EOT, the liquidated damages or its cap will not act as a cap on damages claims at general law.

A liquidated damages clause which is unworkable or too uncertain to ascertain what the parties intended is severed from the EPC Contract in its entirety and will not act as a cap on the damages recoverable by the Principal from the Contractor. Upon severance, the clause is, for the purposes of contractual interpretation, ignored.

However, it should be noted that the threshold test for rendering a clause void for uncertainty is high, and courts are reluctant to hold that the terms of a contract, in particular a commercial contract where performance is well advanced, are uncertain.

Drafting of liquidated damages clauses

Given the role liquidated damages play in ensuring EPC Contracts are bankable and the consequences detailed above of the regime not being effective, it is vital to ensure they are properly drafted to ensure Contractors cannot avoid their liquidated damages liability on a legal technicality.

Therefore, it is important, from a legal perspective, to ensure DLDs and PLDs are dealt with separately. If a combined liquidated damages amount is levied for late completion of the works, it risks being struck out as a penalty because it will overcompensate the Project Company. However, a combined liquidated damages amount levied for underperformance may under-compensate the Project Company.

Our experience shows that there is a greater likelihood of delayed completion than there is of permanent underperformance. One of the reasons why projects are not completed on time is Contractors are often faced with remedying performance problems. This means, from a legal perspective, if there is a combination of DLDs and PLDs, the liquidated damages rate should include more of the characteristics of DLDs to protect against the risk of the liquidated damages being found to be a penalty.

If a combined liquidated damages amount includes an NPV or performance element the Contractor will be able to argue that the liquidated damages are not a genuine pre-estimate of loss when liquidated damages are levied for late completion only. However, if the combined liquidated damages calculation takes on more of the characteristics of DLDs the Project Company will not be properly compensated if there is permanent underperformance.

It is also important to differentiate between the different types of PLDs to protect the Project Company against arguments by the Contractor that the PLDs constitute a penalty. For example, if a single PLDs rate is only focused on output and not efficiency, problems and uncertainties will arise if the output guarantee is met but one or more of the efficiency guarantees are not. In these circumstances, the Contractor will argue that the PLDs constitute a penalty because the loss the Project Company suffers if the efficiency guarantees are not met are usually smaller than if the output guarantees are not met. As a result, power project EPC Contracts normally impose two types of PLDs, one for output (for example, how many megawatts the power station produces) and one for heat rate (for example, how much fuel the power station burns to generate the required output of electricity).

Drafting of the performance guarantee regime

Now that it is clear that DLDs and PLDs must be dealt with separately it is worth considering, in more detail, how the performance guarantee regime should operate. A properly drafted performance testing and guarantee regime is important because the success or failure of the project depends, all other things being equal, on the performance of the power station.

The major elements of the performance regime are:

- testing
- guarantees
- liquidated damages.

Liquidated damages were discussed above. Testing and guarantees are discussed below.

Testing

Performance tests may cover a range of areas. Three of the most common are:

- **Functional tests:** These test the functionality of certain parts of the power station. For example, pumps, conveyors, pressure vessels etc. They are usually discrete tests which do not test the power station as a whole. Liquidated damages do not normally attach to these tests. Instead, they are absolute obligations that must be complied with. If not, the power station will not reach the next stage of completion (for example, mechanical completion or provisional acceptance).
- **Emissions tests:** These test compliance against environmental requirements. Again, these are normally absolute obligations because the consequences of failure can be as severe as being forced to shut down the power station. These tests should ensure the most stringent obligations imposed on the Project Company, whether by government regulations or by Lenders, are met. Emissions tests occur at various times, including during and after guarantee tests. Liquidated damages are sometimes levied if the Contractor fails the emissions tests. However, given emissions tests are usually related to environmental approvals, it is likely that the power station will not be able to operate if the emissions tests are failed. Therefore, passing the emissions tests is usually an absolute obligation not linked to liquidated damages.
- **Guarantee tests:** These test the ability of the power station to meet the performance criteria specified in the contract. There are often minimum and guaranteed levels of performance specified and, as discussed above, providing the minimum levels are met the consequence of failure is normally the payment of PLDs. Satisfaction of the minimum performance guarantees is normally an absolute obligation. The minimum performance guarantees should be set at a level of performance at which it is economic to accept the power station. Lender's input will be vital in determining what this level is. However, it must be remembered that Lenders have different interests to the Sponsors. Lenders will, generally speaking, be prepared to accept a power station that provides sufficient income to service the debt. However, in addition to covering the debt service obligations, Sponsors will also want to receive a return on their equity investment. If that will not be provided via the sale of electricity because the Contractor has not met the performance guarantees, the Sponsors will have to rely on the PLDs to earn their return. In some projects, the guarantee tests occur after handover of the power station to the Project Company. This means the Contractor no longer has any liability for DLDs during performance testing.

In our view, it is preferable, especially in project-financed projects, for handover to occur after completion of performance testing. This means the Contractor continues to be liable for DLDs until either the power station operates at the guaranteed level or the Contractor pays PLDs where the power station does not operate at the guaranteed level. Obviously, DLDs will be capped (usually at 20% of the contract price); therefore, the EPC Contract should give the Project Company the right to call for the payment of the PLDs and accept the power station. If the Project Company does not have this right the problem mentioned above will arise, namely, the Project Company will not have received its power station and will not be receiving any DLDs as compensation.

It is common for the Contractor to be given an opportunity to modify the power station if it does not meet the performance guarantees on the first attempt. This is because the PLD amounts are normally very large and most Contractors would prefer to spend the time and the money necessary to remedy performance instead of paying PLDs. Not giving Contractors this opportunity will likely lead to an increased contract price both because Contractors will over-engineer the power station and will build a contingency for paying PLDs into the contract price. The second reason is because in most circumstances the Project Company will prefer to receive a power station that operates at 100% capacity. The right to modify and retest is another reason why DLDs should be payable up to the time the performance guarantees are satisfied.

If the Contractor is to be given an opportunity to modify and retest the EPC Contract must deal with who bears the costs of the additional fuel and consumables required to undertake the retesting. The cost of the fuel in particular can be significant and should, in normal circumstances, be to the Contractor's account because the retesting only occurs if the performance guarantees are not met at the first attempt.

Technical issues

Ideally, the technical testing procedures should be set out in the EPC Contract. However, for a number of reasons, including the fact that it is often not possible to fully scope the testing Programme until the detailed design is complete, the testing procedures are usually left to be agreed during construction by the Contractor, the Project Company's representative or engineer and, if relevant, the Lenders' engineer. However, a properly drafted EPC Contract should include the guidelines for testing.

The complete testing procedures must, as a minimum, set out details of:

- **Testing methodology:** Reference is often made to standard methodologies, for example, the American Society of Mechanical Engineers methodology.
- **Testing equipment:** Who is to provide it, where it is to be located, how sensitive must it be?
- **Tolerances:** What is the margin of error?
- **Ambient conditions:** What atmospheric conditions are assumed to be the base case (testing results will need to be adjusted to take into account any variance from these ambient conditions)?

In addition, for power stations with multi-units the testing procedures must state those tests to be carried out on a per unit basis and those on an entirely plant basis.

Provision of consumables and fuel

The responsibility for the provision of consumables and fuel required to carry out the performance tests must be clearly set out in the EPC Contract. In general, the Project Company will be responsible for the provision of both consumables and fuel.

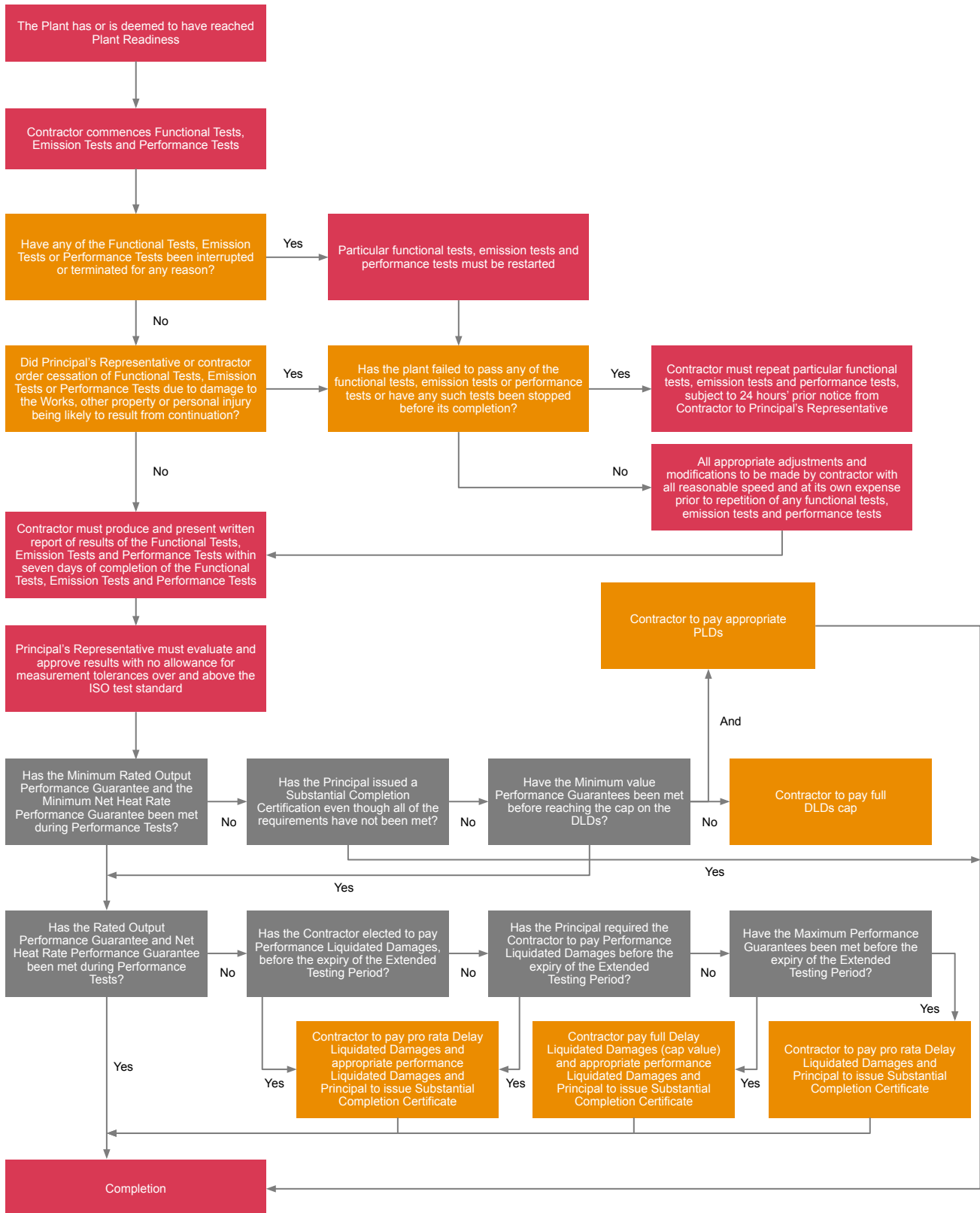
As the proper interpretation of the Project Company's obligation to supply consumables is often a matter of dispute between the Project Company and Contractor, it is important for the EPC Contract to precisely identify the quality and quantity of consumables to be provided as well as the time for provision of those consumables (which should be linked to the progress of the works rather than a specific date). The responsibility for the cost of providing consumables and fuel must also be clearly identified. An example of the performance testing and guarantee regime we have used on a number of projects is included in Appendix 1 to this paper.

These example clauses are only extracts from a complete contract and ideally should be read as part of that entire contract and, in particular, with the clauses that deal with DLDs, PLDs, liability, the scope of the Contractor's obligations, including any fitness for purpose warranties and termination. Nonetheless, they do provide an example of the way a performance testing and liquidated damages regime can operate.

The process is best illustrated diagrammatically. Refer to the flowcharts below to see how the various parts of the performance testing regime should interface.



Performance guarantees and testing



Key general clauses in EPC Contracts

– Delay and extensions of time

The Prevention Principle

As noted previously, one of the advantages of an EPC Contract is that it provides the Project Company with a fixed completion date. If the Contractor fails to complete the works by the required date it is liable for DLDs. However, in some circumstances the Contractor is entitled to an extension of the date for completion. Failure to grant an extension for a Project Company-caused delay can void the liquidated damages regime and set time at large. This means the Contractor is only obliged to complete the works within a reasonable time.

This is the situation under common law-governed^{8 9 10} contracts due to the Prevention Principle. The Prevention Principle was developed by the courts to prevent Principals, for example, project companies, from delaying Contractors and then claiming DLDs.

The legal basis of the Prevention Principle is unclear and it is uncertain whether you can contract out of the Prevention Principle. Logically, given most commentators believe the Prevention Principle is an equitable principle, explicit words in a contract should be able to override the principle. However, the courts have tended to apply the Prevention Principle even in circumstances where it would not, on the face of it, appear to apply. Therefore, there is a certain amount of risk involved in trying to contract out of the Prevention Principle. The more prudent and common approach is to accept the existence of the Prevention Principle and provide for it in the EPC Contract.

The Contractor's entitlement to an EOT is not absolute. It is possible to limit the Contractor's rights and impose preconditions on the ability of the Contractor to claim an EOT. A relatively standard EOT clause would entitle the Contractor to an EOT for:

- an act, omission, breach or default of the Project Company
- suspension of the works by the Project Company (except where the suspension is due to an act or omission of the Contractor)
- a variation (except where the variation is due to an act or omission of the Contractor)
- FM.

which causes a delay on the critical path¹¹ and for which the Contractor has given notice within the period specified in the contract. It is permissible (and advisable) from the Project Company's perspective to make both the necessity for the delay to impact the critical path and the obligation to give notice of a claim for an EOT conditions precedent to the Contractor's entitlement to receive an EOT. In addition, it is usually good practice to include a general right for the Project Company to grant an EOT at any time. However, this type of provision must be carefully drafted because some judges have held (especially when the Project Company's representative is an independent third party) the inclusion of this clause imposes a mandatory obligation on the Project Company to grant an EOT whenever it is fair and reasonable to do so, regardless of the strict contractual requirements. Accordingly, from the Project Company's perspective it must be made clear that the Project Company has complete and absolute discretion to grant an EOT, and that it is not required to exercise its discretion for the benefit of the Contractor.

Similarly, following some recent common law decisions, the Contractor should warrant that it will comply with the notice provisions that are conditions precedent to its right to be granted an EOT.

We recommend using the clause in Part 2 of Appendix 2 of this paper.

Concurrent delay

You will note that in the suggested EOT clause, one of the subclauses refers to concurrent delays. This is relatively unusual because most EPC Contracts are silent on this issue. For the reasons explained below we do not agree with that approach.

A concurrent delay occurs when two or more causes of delay overlap. It is important to note that it is the overlapping of the causes of the delays not the overlapping of the delays themselves. In our experience, this distinction is often not made. This leads to confusion and sometimes disputes. More problematic is when the contract is silent on the issue of concurrent delay and the parties assume the silence operates to their benefit. As a result of conflicting case law it is difficult to determine who, in a particular fact scenario, is correct. This can also lead to protracted disputes and outcomes contrary to the intention of the parties.

⁷ This discussion assumes the Project Company will be entering into either a PPA or a tolling agreement. However, some of these issues will also be relevant if the Project Company is entering into hedging agreements for a merchant project. For example, those hedge agreements will likely mandate a date by which the power station must be capable of commercial operation. Failure to comply with this requirement will incur monetary liability. Similarly there may be availability requirements and certain performance guarantees imposed by the hedge. These requirements must be flowed through to the EPC Contract.

⁸ These clauses will have to be modified to ensure compliance with the relevant regulatory regime.

⁹ It can arise in civil law countries as well. It will depend on the relevant provisions of the code in those countries. For example, the PRC contract law contains articles that entitle a Contractor to an EOT for employer-caused delays.

¹⁰ The critical path is the path on the construction Programme that shows the dates by which certain activities must be completed by in order to achieve completion by the specified date.

There are a number of different causes of delay which may overlap with delay caused by the Contractor. The most obvious causes are the acts or omissions of a Project Company.

A Project Company often has obligations to provide certain materials or infrastructure to enable the Contractor to complete the works. The timing for the provision of that material or infrastructure (and the consequences for failing to provide it) can be affected by a concurrent delay.

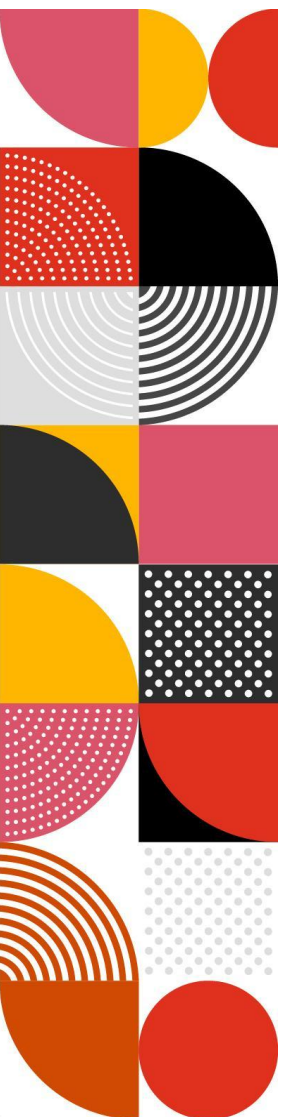
For example, the Project Company is usually obliged, as between the Project Company and the Contractor, to provide a transmission line to connect to the power station by the time the Contractor is ready to commission the power station. Given the construction of the transmission line can be expensive, the Project Company is likely to want to incur that expense as close as possible to the date commissioning is due to commence. For this reason, if the Contractor is in delay the Project Company is likely to further delay incurring the expense of building the transmission line. In the absence of a concurrent delay clause, this action by the Project Company, in response to the Contractor's delay, could entitle the Contractor to an EOT.

Concurrent delay is dealt with differently in the various international standard forms of contract. Accordingly, it is not possible to argue that one approach is definitely right and one is definitely wrong. In fact, the right approach will depend on which side of the table you are sitting.

In general, there are three main approaches for dealing with the issue of concurrent delay. These are:

- **Option one:** The Contractor has no entitlement to an EOT if a concurrent delay occurs.
- **Option two:** The Contractor has an entitlement to an EOT if a concurrent delay occurs.
- **Option three:** The causes of delay are apportioned between the parties and the Contractor receives an EOT equal to the apportionment. For example, if the causes of a 10-day delay are apportioned 60:40 between the Project Company and Contractor, the Contractor would receive a six-day EOT.

Each of these approaches is discussed in more detail below.



Option one: Contractor not entitled to an extension of time for concurrent delays

A common, Project Company friendly, concurrent delay clause for this option one is:

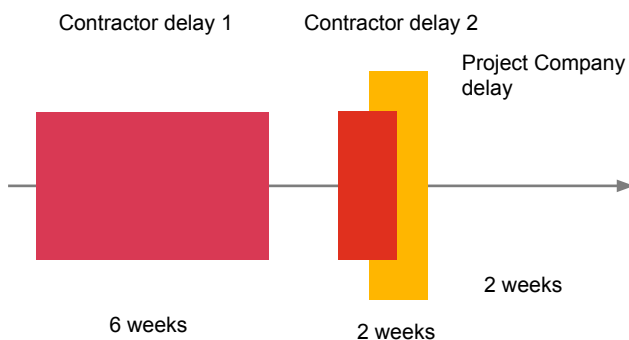
If more than one event causes concurrent delays and the cause of at least one of those events, but not all of them, is a cause of delay which would not entitle the Contractor to an extension of time under [EOT clause], then to the extent of the concurrency, the Contractor will not be entitled to an extension of time.

Nothing in the clause prevents the Contractor from claiming an EOT under the general EOT clause. What the clause does do is to remove the Contractor's entitlement to an EOT when there are two or more causes of delay and at least one of those causes would not entitle the Contractor to an EOT under the general EOT clause.

For example, if the Contractor's personnel were on strike and during that strike the Project Company failed to approve drawings, in accordance with the contractual procedures, the Contractor would not be entitled to an EOT for the delay caused by the Project Company's failure to approve the drawings.

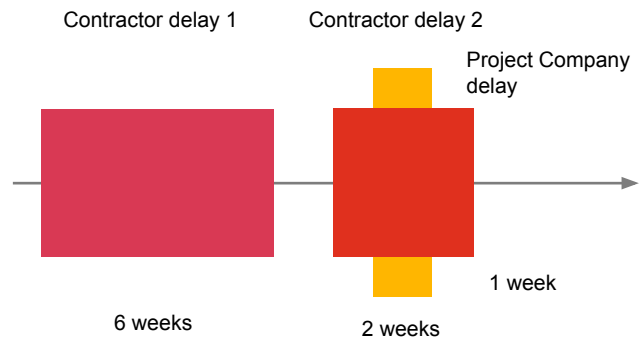
The operation of this clause is best illustrated diagrammatically.

Example 1: Contractor not entitled to an EOT for Project Company-caused delay



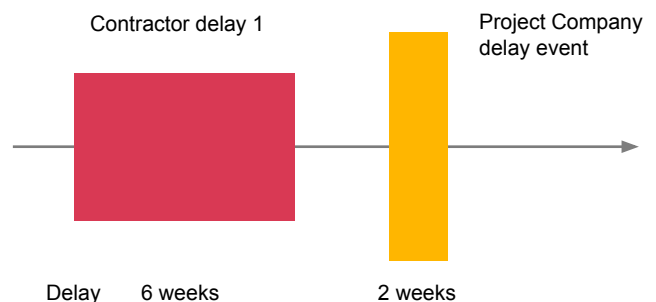
In this example, the Contractor would not be entitled to any EOT because the Contractor delay 2 overlaps entirely with the Project Company delay. Therefore, using the example clause above, the Contractor is not entitled to an EOT to the extent of the concurrency. As a result, at the end of the Contractor delay 2 the Contractor would be in eight weeks' delay (assuming the Contractor has not, at its own cost and expense accelerated the works).

Example 2: Contractor entitled to an EOT for Project Company-caused delay



In this example, where there is no overlap between the Contractor and Project Company delay events the Contractor would be entitled to a two week EOT for the Project Company delay. Therefore, at the end of the Project Company delay the Contractor will remain in six weeks' delay, assuming no acceleration.

Example 3: Contractor entitled to an EOT for a portion of the Project Company-caused delay



In this example, the Contractor would be entitled to a one week EOT because the delays overlap for one week. Therefore, the Contractor is entitled to an EOT for the period when they do not overlap, for example, when the extent of the concurrency is zero. As a result, after receiving the one week EOT, the Contractor would be in seven weeks' delay, assuming no acceleration.

From a Project Company's perspective, we believe, this option is both logical and fair. For example, if, in example 2, the Project Company delay was a delay in the approval of drawings and the Contractor delay was the entire workforce being on strike, what logic is there in the Contractor receiving an EOT? The delay in approving drawings does not actually delay the works because the Contractor could not have used the drawings given its workforce was on strike. In this example, the Contractor would suffer no detriment from not receiving an EOT. However, if the Contractor did receive an EOT it would effectively receive a windfall gain.

The greater number of obligations the Project Company has, the more reluctant the Contractor will likely be to accept option one. Therefore, it may not be appropriate for all projects.

Option two: Contractor entitled to an extension of time for concurrent delays

Option two is the opposite of option one and is the position in many of the Contractor friendly standard forms of contract. These contracts also commonly include EOT provisions to the effect that the Contractor is entitled to an EOT for any cause beyond its reasonable control which, in effect, means there is no need for a concurrent delay clause.

The suitability of this option will obviously depend on which side of the table you are sitting. This option is less common than option one but is nonetheless sometimes adopted. It is especially common when the Contractor has a superior bargaining position.



Option three: Responsibility for concurrent delays is apportioned between the parties

Option three is a middle ground position that has been adopted in some of the standard form contracts. For example, the Australian Standards construction contract AS4000 adopts the apportionment approach. The AS4000 clause states:

34.4 Assessment

When both non-qualifying and qualifying causes of delay overlap, the superintendent shall apportion the resulting delay to WUC according to the respective causes' contribution.

In assessing each EOT the Superintendent shall disregard questions of whether:

- *WUC can nevertheless reach practical completion without an EOT*
- *the Contractor can accelerate, but shall have regard to what prevention and mitigation of the delay has not been effected by the Contractor.*

We appreciate the intention behind the clause and the desire for both parties to share responsibility for the delays they cause. However, we have some concerns about this clause and the practicality of the apportionment approach in general. It is easiest to demonstrate our concerns with an extreme example. For example, what if the qualifying cause of delay was the Project Company's inability to provide access to the site and the non-qualifying cause of delay was the Contractor's inability to commence the works because it had been black-banned by the unions? How should the causes be apportioned? In this example, the two causes are both 100% responsible for the delay.

In our view, an example like the above where both parties are at fault has two possible outcomes. Either:

- the delay is split down the middle and the Contractor receives 50% of the delay as an EOT or
- the delay is apportioned 100% to the Project Company and therefore the Contractor receives 100% of the time claimed.

The delay is unlikely to be apportioned 100% to the Contractor because a judge or arbitrator will likely feel that that is unfair, especially if there is a potential for significant liquidated damages liability. We appreciate the above is not particularly rigorous legal reasoning, however, the clause does not lend itself to rigorous analysis.

In addition, option three is only likely to be suitable if the party undertaking the apportionment is independent from both the Project Company and the Contractor.

Exclusive remedies and fail safe clauses

It is common for Contractors to request the inclusion of an exclusive remedies clause in an EPC Contract. However, from the perspective of a Project Company, the danger of an exclusive remedies clause is that it prevents the Project Company from recovering any type of damages not specifically provided for in the EPC Contract.

An EPC Contract is conclusive evidence of the agreement between the parties to that contract.

If a party clearly and unambiguously agrees that their only remedies are those within the EPC Contract, they will be bound by those terms. However, the courts have been reluctant to come to this conclusion without clear evidence of an intention of the parties to the EPC Contract to contract out of their legal rights. This means if the common law right to sue for breach of EPC Contract is to be contractually removed, it must be done by very clear words.

Contractor's perspective

The main reason for a Contractor insisting on a Project Company being subject to an exclusive remedies clause is to have certainty about its potential liabilities. The preferred position for a Contractor will be to confine its liabilities to what is specified in the EPC Contract. For example, an agreed rate of liquidated damages for delay and, where relevant, underperformance of the power station. A Contractor will also generally require the amount of liquidated damages to be subject to a cap and for the EPC Contract to include an overall cap on its liability.

Project Company's perspective

The preferred position for a Project Company is for it not to be subject to an exclusive remedies clause. An exclusive remedies clause limits the Project Company's right to recover for any failure of the Contractor to fulfil its contractual obligations to those remedies specified in the EPC Contract. For this reason, an exclusive remedies clause is an illogical clause to include in an EPC Contract from the perspective of a Project Company because it means that the Project Company has to draft a remedy or exception for each obligation – this represents an absurd drafting position. For example, take the situation where the EPC Contract does not have any provision for the recovery of damages other than liquidated damages. In this case, if the Contractor has either paid the maximum amount of liquidated damages or delivered the power station in a manner that does not require the payment of liquidated damages (for example, it is delivered on time and performs to specification) but subsequent to that delivery the Project Company is found to have a claim, say for defective

design which manifests itself after completion, the Project Company will have no entitlement to recover any form of damages as any remedy for latent defects has been excluded.

The problem is exacerbated because most claims made by a Project Company will in some way relate to performance of the power station and PLDs were expressed to be the exclusive remedy for any failure of the power station to perform in the required manner. For example, any determination as to whether the power station is fit for purpose will necessarily depend on the level and standard of the performance of the power station. In addition to claims relating to fitness for purpose, a Project Company may also wish to make claims for, amongst other things, breach of contract, breach of warranty or negligence. The most significant risk for a Project Company in an EPC Contract is where there is an exclusive remedies clause and the only remedies for delay and underperformance are liquidated damages. If, for whatever reason, the liquidated damages regimes are held to be invalid, the Project Company would have no recourse against the Contractor as it would be prevented from recovering general damages at law, and the Contractor would escape liability for late delivery and underperformance of the power station.

Fail-safe clauses

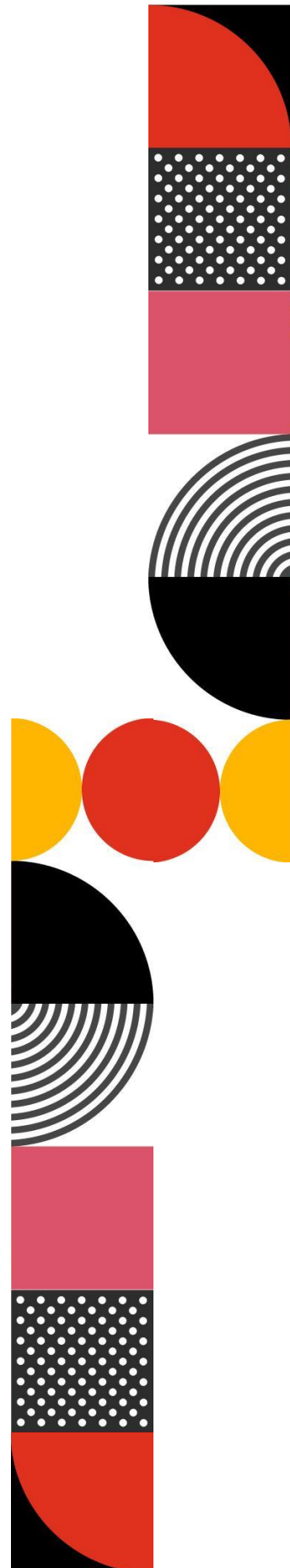
In contracts containing an exclusive remedies clause, the Project Company must ensure all necessary exceptions are expressly included in the EPC Contract. In addition, drafting must be included to allow the Project Company to recover general damages at law for delay and underperformance if the liquidated damages regimes in the EPC Contract are held to be invalid. To protect the position of a Project Company (if liquidated damages are found for any reason to be unenforceable and there is an exclusive remedies clause), we recommend the following clauses be included in the EPC Contract:

[.]1 If clause [delay liquidated damages] is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Project Company from claiming delay liquidated damages, the Project Company is entitled to claim against the Contractor damages at law for the Contractor's failure to complete the works by the date for practical completion.

[.]2 If [.]1 applies, the damages claimed by the Project Company must not exceed the amount specified in item [] of Appendix [] for any one day of delay and in aggregate must not exceed the percentage of the EPC Contract price specified in item [] of Appendix [].

These clauses (which would also apply to PLDs) mean that if liquidated damages are held to be unenforceable for any reason the Project Company will not be prevented from recovering general damages at law. However, the amount of damages recoverable at law may be limited to the amount of liquidated damages that would have been recoverable by the Project Company under the EPC Contract if the liquidated damages regime had not been held to be invalid (see discussion above). For this reason, the suggested drafting should be commercially acceptable to a Contractor as its liability for delay and underperformance will be the same as originally contemplated by the parties at the time of entering into the EPC Contract.

In addition, if the EPC Contract excludes the parties' rights to claim their consequential or indirect losses, these clauses should be an exception to that exclusion. The rationale being that the rates of liquidated damages are likely to include an element of consequential or indirect losses.



Force majeure

What is force majeure?

FM clauses are almost always included in EPC Contracts. However, they are rarely given much thought unless and until one or more parties seek to rely on them. Generally, the assumption appears to be that the risk will not affect us or the FM clause is a legal necessity and does not impact on our risk allocation under the contract. Both of these assumptions are inherently dangerous, and, particularly in the second case, incorrect. Therefore, especially in the current global environment, it is appropriate to examine their application.

FM is a civil law concept that has no real meaning under the common law. However, FM clauses are used in contracts because the only similar common law concept – the doctrine of frustration – is of limited application. For that doctrine to apply the performance of a contract must be radically different from what was intended by the parties. In addition, even if the doctrine does apply, the consequences are unlikely to be those contemplated by the parties. An example of how difficult it is to show frustration is that many of the leading cases relate to the abdication of King Edward VIII before his coronation and the impact that had on contracts entered into in anticipation of the coronation ceremony.

Given FM clauses are creatures of contract their interpretation will be governed by the normal rules of contractual construction. FM provisions will be construed strictly and in the event of any ambiguity the *contra proferentem* rule will apply. *Contra proferentem* literally means ‘against the party putting forward’. In this context, it means that the clause will be interpreted against the interests of the party that drafted and is seeking to rely on it. The parties may contract out of this rule.

The rule of *ejusdem generis* which literally means ‘of the same class’ may also be relevant. In other words, when general wording follows a specific list of events, the general wording will be interpreted in light of the specific list of events. In this context it means that when a broad catch-all phrase, such as ‘anything beyond the reasonable control of the parties’, follows a list of more specific FM events the catch-all phrase will be limited to events analogous to the listed events. Importantly, parties cannot invoke a FM clause if they are relying on their own acts or omissions.

The underlying test in relation to most FM provisions is whether a particular event was within the contemplation of the parties when they made the contract. The event must also have been outside the control of the contracting party. There are generally three essential elements to FM:

- it can occur with or without human intervention
- it cannot have reasonably been foreseen by the parties
- it was completely beyond the parties’ control and they could not have prevented its consequences.

Given the relative uncertainty surrounding the meaning of FM we favour explicitly defining what the parties mean. This takes the matter out of the hands of the courts and gives control back to the parties. Therefore, it is appropriate to consider how FM risk should be allocated.

Drafting force majeure clauses

The appropriate allocation of risk in project agreements is fundamental to negotiations between the Project Company and its Contractors. Risks generally fall into the following categories:

- risks within the control of the Project Company
- risks within the control of the Contractor
- risks outside the control of both parties.

The negotiation of the allocation of many of the risks beyond the control of the parties, for example, latent site conditions and change of law, is usually very detailed so that it is clear which risks are borne by the Contractor. The same approach should be adopted in relation to the risks arising from events of FM.

There are two aspects to the operation of FM clauses:

- the definition of FM events
- the operative clause that sets out the effect on the parties’ rights and obligations if a FM event occurs.

The events which trigger the operative clause must be clearly defined. As noted above, it is in the interests of both parties to ensure that the term FM is clearly defined.

The preferred approach for a Project Company is to define FM events as being any of the events in an exhaustive list set out in the contract. In this manner, both parties are aware of which events are FM events and which are not. Clearly, defining FM events makes the administration of the contract and, in particular, the mechanism within the contract for dealing with FM events simpler and more effective.

An example exhaustive definition is:

An event of force majeure is an event or circumstance which is beyond the control and without the fault or negligence of the party affected and which by the exercise of reasonable diligence the party affected was unable to prevent provided that event or circumstance is limited to the following:

- a) riot, war, invasion, act of foreign enemies, hostilities (whether war be declared or not) acts of terrorism, civil war, rebellion, revolution, insurrection of military or usurped power, requisition or compulsory acquisition by any governmental or competent authority*
- b) ionising radiation or contamination, radio activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive assembly or nuclear component*
- c) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds*
- d) earthquakes, flood, fire or other physical natural disaster, but excluding weather conditions regardless of severity*
- e) strikes at national level or industrial disputes at a national level, or strike or industrial disputes by labour not employed by the affected party, its subcontractors or its suppliers and which affect an essential portion of the works but excluding any industrial dispute which is specific to the performance of the works or this contract.*

An operative clause will act as a shield for the party affected by the event of FM so that a party can rely on that clause as a defence to a claim that it has failed to fulfil its obligations under the contract. An operative clause should also specifically deal with the rights and obligations of the parties if a FM event occurs and affects the project. This means the parties must consider each of the events it intends to include in the definition of FM events and then deal with what the parties will do if one of those events occurs.

An example of an operative clause is:

[].1 Neither party is responsible for any failure to perform its obligations under this contract, if it is prevented or delayed in performing those obligations by an event of force majeure.

[].2 Where there is an event of force majeure, the party prevented from or delayed in performing its obligations under this contract must immediately notify the other party giving full particulars of the event of force majeure and the reasons for the event of force majeure preventing that party from, or delaying that party in performing its obligations under this contract and that party must use its reasonable efforts to mitigate the effect of the event of force majeure upon its or their performance of the contract and to fulfil its or their obligations under the contract.

[].3 Upon completion of the event of force majeure the party affected must as soon as reasonably practicable recommence the performance of its obligations under this contract. Where the party affected is the Contractor, the Contractor must provide a revised Programme rescheduling the works to minimise the effects of the prevention or delay caused by the event of force majeure.

[].4 An event of force majeure does not relieve a party from liability for an obligation which arose before the occurrence of that event, nor does that event affect the obligation to pay money in a timely manner which matured prior to the occurrence of that event.

[].5 The Contractor has no entitlement and the Project Company has no liability for:

- a) any costs, losses, expenses, damages or the payment of any part of the contract price during an event for force majeure*
- b) any delay costs in any way incurred by the Contractor due to an event for force majeure.*

In addition to the above clause, it is important to appropriately deal with other issues that will arise if a FM event occurs. For example, as noted above, it is common practice for a Contractor to be entitled to an EOT if a FM event impacts on its ability to perform the works. Contractors also often request costs if a FM event occurs. In our view, this should be resisted. FM is a neutral risk in that it cannot be controlled by either party. Therefore, the parties should bear their own costs.

Another key clause that relates to FM type events is the Contractor's responsibility for care of the works and the obligation to reinstate any damage to the works prior to completion. A common example clause is:

[].1 The Contractor is responsible for the care of the site and the works from when the Project Company makes the site available to the Contractor until 5.00pm on the date of commercial operation.

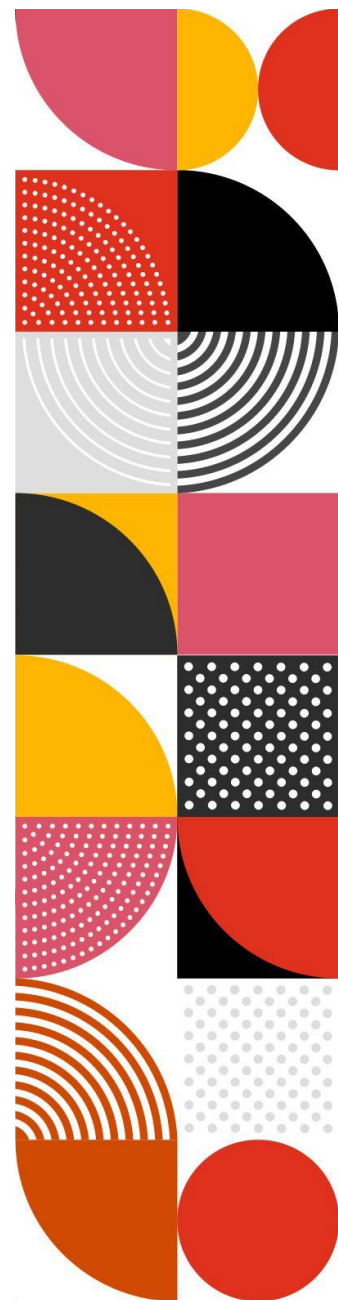
[].2 The Contractor must promptly make good loss from, or damage to, any part of the site and the works while it is responsible for their care.



[].3 If the loss or damage is caused by an event of force majeure, the Project Company may direct the Contractor to reinstate the works or change the works. The cost of the reinstatement work or any change to the works arising from a direction by the Project Company under this clause will be dealt with as a variation except to the extent that the loss or damage has been caused or exacerbated by the failure of the Contractor to fulfil its obligations under this contract.

[].4 Except as contemplated in clause [].3, the cost of all reinstatement works will be borne by the Contractor.

This clause is useful because it enables the Project Company to, at its option, have the damaged section of the project rebuilt as a variation to the existing EPC Contract. This will usually be cheaper than recontracting for construction of the damaged sections of the works.



Operation and maintenance

Operating and maintenance manuals

The Contractor is usually required to prepare a detailed operating and maintenance manual (**O&M manual**).

The EPC Contract should require the Contractor to prepare a draft of the O&M manual within a reasonable time to enable the Project Company, the Operator and possibly the Lenders to provide comments, which can be incorporated into a final draft at least six months before the start of commissioning.

The draft should include all information which may be required for start-up, all modes of operation during normal and emergency conditions and maintenance of all systems of the power station.

Operating and maintenance personnel

It is standard for the Contractor to be obliged to train the operations and maintenance staff supplied by the Project Company. The cost of this training will be built into the contract price. It is important to ensure the training is sufficient to enable such staff to be able to efficiently, prudently, safely and professionally operate the power station upon commercial operation. Therefore, the framework for the training should be described in the appendix dealing with the scope of work (in as much detail as possible). This should include the standards of training and the timing for training.

The Project Company's personnel trained by the Contractor will also usually assist in the commissioning and testing of the power station. They will do this under the direction and supervision of the Contractor. Therefore, absent specific drafting to the contrary, if problems arise during commissioning and/or testing the Contractor can argue they are entitled to an EOT etc. We recommend inserting the following clause:

[].1 The Project Company must provide a sufficient number of competent and qualified operating and maintenance personnel to assist the Contractor to properly carry out commissioning and the commercial operation performance tests.

[].2 Prior to the date of commercial operation, any act or omission of any personnel provided by the Project Company pursuant to GC [].1 is, provided those personnel are acting in accordance with the Contractor's instructions, directions, procedures or manuals, deemed to be an act or omission of the Contractor and the Contractor is not relieved of its obligations under this contract or have any claim against the Project Company by reason of any act or omission.

Spare parts

The Contractor is usually required to provide, as part of its scope of works, a full complement of spare parts (usually specified in the appendices (the scope of work or the specification) to be available as at the commencement of commercial operation.

Further, the Contractor should be required to replace any spare parts used in rectifying defects during the defects liability period, at its sole cost. There should also be a time limit imposed on when these spare parts must be back in the store. It is normally unreasonable to require the spare parts to have been replaced by the expiry of the defects liability period because that may, for some long lead time items, lead to an extension of the defects liability period.

The Project Company also may wish to have the option to purchase spare parts from the Contractor on favourable terms and conditions (including price) during the remainder of the concession period. In that case it would be prudent to include a term which deals with the situation where the Contractor is unable to continue to manufacture or procure the necessary spare parts. This provision should cover the following points:

- written notification from the Contractor to the Project Company of the relevant facts, with sufficient time to enable the Project Company to order a final batch of spare parts from the Contractor
- the Contractor should deliver to, or procure for the Project Company (at no charge to the Project Company), all drawings, patterns and other technical information relating to the spare parts
- the Contractor must sell to the Project Company (at the Project Company's request) at cost price (less a reasonable allowance for depreciation) all tools, equipment and moulds used in manufacturing the spare parts, to the extent they are available to the Contractor provided it has used its reasonable endeavours to procure them.

The Contractor should warrant that the spare parts are fit for their intended purpose, and that they are of merchantable quality. At worst, this warranty should expire on the later of:

- the manufacturer's warranty period on the applicable spare part
- the expiry of the defects liability period.

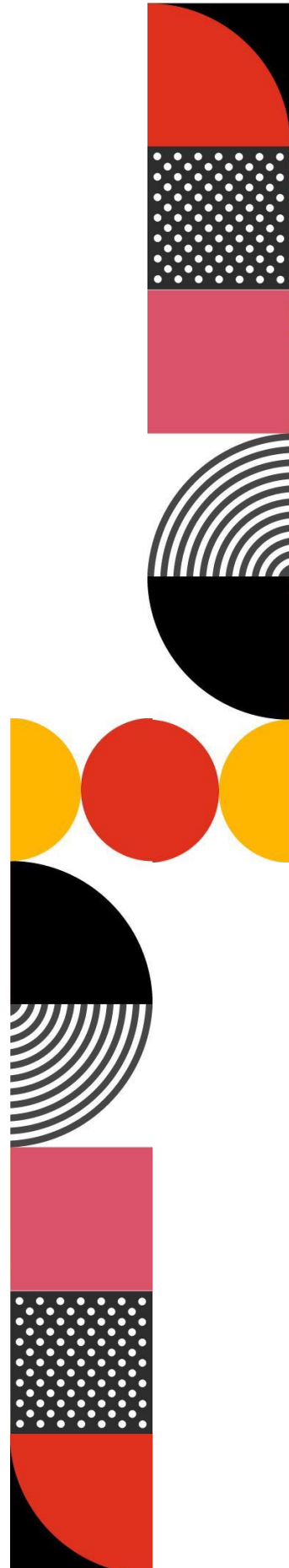
Dispute resolution

Dispute resolution provisions for EPC Contracts could fill another entire paper. There are numerous approaches that can be adopted depending on the nature and location of the project and the particular preferences of the parties involved.

However, there are some general principles which should be adopted. They include:

- having a staged dispute resolution process that provides for internal discussions and meetings aimed at resolving the dispute prior to commencing action (either litigation or arbitration)
- obliging the Contractor to continue to execute the works pending resolution of the dispute
- not permitting commencement of litigation or arbitration, as the case may be, until after commercial operation of the power station. This provision must make exception for the parties to seek urgent interlocutory relief, for example, injunctions and to commence proceedings prior to the expiry of any limitations period. If the provision does not include these exceptions it risks being unenforceable
- providing for consolidation of any dispute with other disputes which arise out of or in relation to the construction of the power station. The power to consolidate should be at the Project Company's discretion.

We have prepared a paper which details the preferred approach to be taken in respect of dispute resolution regimes in various Asian jurisdictions including the PRC, Philippines, Thailand, Vietnam and Taiwan. You should consult this paper, or ask us for a copy, if you want more information on this topic.



Appendix 1

Example clause: Performance testing and guarantee regime

[] Commissioning tests and power station readiness

[]1 After the Contractor has provided the Principal's representative with the marked-up drawings of the piping and instrumentation diagrams, logic diagrams and electrical single-line diagrams and control schematics for them, the Contractor must carry out the commissioning tests for the relevant system.

[]2 The commissioning tests for each system must:

- (a) be performed on a system-by-system basis
- (b) include the inspection and checking of equipment and supporting subsystems, trial operation of supporting equipment, initial operation of the system, operation of the system to obtain data, perform system calibration and corrective works, and shutdown inspection and correction of defects and non-conforming works identified during the commissioning tests.

Must demonstrate:

- the capability of major sections of the works to operate in all modes of start-up, steady state, transients, plant changeovers, shutdowns, trips and the like
- the technical suitability of the works and its control equipment and the capability of the operational procedures recommended by the Contractor.

[Clause 1.2 is optional. The commissioning testing regime can be included in the general testing regime in clause 1.3. The reference to a system is a reference to a discrete part of the works that contains several elements but which can be tested independently of the entire works. Examples include the fire safety system, a coal conveyor and crusher system etc.]

[]3 In carrying out any test which requires the Contractor to supply electricity to the transmission network, the Contractor must:

- (a) issue a notice to the Principal's representative at least 24 hours prior to the time at which it wishes to so supply, detailing the testing or commissioning and including the Contractor's best estimate of the total period and quantity (in MWh per half-hour) of that supply

- (b) promptly notify the Principal's representative if there is any change in the information contained in such notice
- (c) do all things necessary to assist the Principal (including but not limited to cooperating with the network service provider), so that the Principal can comply with its obligations under the grid code.

Power station readiness

[]4 As soon as the power station has, in the opinion of the Contractor, reached the stage of power station readiness, the Contractor must give notice to the Principal's representative.

[]5 The Principal's representative must, promptly, and no later than three days after receipt of the Contractor's notice under GC 1.4, either issue a power station readiness certificate in the form specified in Appendix [] stating that the power station has reached power station readiness or notify the Contractor of any defects and/or deficiencies.

[]6 If the Principal's representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct such defects and/or deficiencies and must repeat the procedure described in GC 1.4.

[]7 If the Principal's representative is satisfied that the power station has reached power station readiness, the Principal's representative must promptly, and no later than three days after receipt of the Contractor's repeated notice, issue a power station readiness certificate stating that the power station has reached power station readiness as at the date stated in that certificate.

[]8 If the Principal's representative is not so satisfied, then it must notify the Contractor of any defects and/or deficiencies within three days after receipt of the Contractor's repeated notice and the above procedure must be repeated.

[]9 If the Principal's representative fails to issue the power station readiness certificate and fails to inform the Contractor of any defects and/or deficiencies within six days after receipt of the Contractor's notice under GC or within three days after receipt of the Contractor's repeated notice under GC 1.6, then the power station is deemed to have reached power station readiness as at the date of the Contractor's notice or repeated notice, as the case may be.

[] **Functional tests, emission tests, performance tests and substantial completion**

Tests

- [].1 Upon receipt of the power station readiness certificate, or when the power station is deemed to have reached power station readiness under GC 1.9, the Contractor must carry out the functional tests, emission tests and performance tests, provided the Contractor gives at least 48 hours' notification to the Principal's representative prior to commencing such tests.
- [].2 The Contractor must not commence any of the functional tests, emission tests or performance tests prior to power station readiness.
- [].3 For the avoidance of doubt, it is a condition precedent to the achievement of substantial completion that the emission tests must be passed.

Procedure

- [].4
 - (a) If a functional test, emission test or performance test is interrupted or terminated, for any reason, such test must be re-started from the beginning, unless otherwise approved by the Principal's representative.
 - (b) The Principal's representative or the Contractor is entitled to order the cessation of any functional test, emission test or performance test if damage to the works, or other property or personal injury are likely to result from continuation.
 - (c) If the power station being tested fails to pass any of the functional tests, emission tests or performance tests (or any repetition thereof in the event of prior failure) or if any functional test, emission test or performance test is stopped before its completion, such functional test, emission test or performance test must, subject to 48 hours' prior notice having been given by the Contractor to the Principal's representative, be repeated as soon as practicable thereafter. All appropriate adjustments and modifications are to be made by the Contractor with all reasonable speed and at its own expense before the repetition of any functional test, emission test or performance test.
 - (d) The results of the functional tests, emission tests and performance tests must be presented in a written report produced by the Contractor and delivered to the Principal's representative within seven days of the completion of the functional tests, emission tests or performance tests. Such results will be evaluated and approved by the Principal's representative. In evaluation of such results, no additional allowance will be made for measurement tolerances over and above those specified in the applicable ISO test standard.

Substantial completion

- [].5 As soon as the power station has, in the opinion of the Contractor, reached the stage of substantial completion, the Contractor must give notice to the Principal's representative.
- [].6 The Principal's representative must, promptly, and no later than three days after receipt of the Contractor's notice under GC 2.5, either issue a substantial completion certificate in the form specified in Appendix [] stating that the power station has reached substantial completion or notify the Contractor of any defects and/or deficiencies.
- [].7 If the Principal's representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct such defects and/or deficiencies and must repeat the procedure described in GC 2.5.
- [].8 If the Principal's representative is satisfied that the power station has reached substantial completion, the Principal must, promptly, and no later than three days after receipt of the Contractor's repeated notice, issue a substantial completion certificate stating that the power station has reached substantial completion as at the date stated in that certificate.
- [].9 If the Principal's representative is not so satisfied, then it must notify the Contractor of any defects and/or deficiencies within three days after receipt of the Contractor's repeated notice and the above procedure must be repeated.
- [].10 Notwithstanding that all the requirements for the issuing of a substantial completion certificate have not been met, the Principal's representative may at any time, in its absolute discretion, issue a substantial completion certificate. The issue of a substantial completion certificate in accordance with this GC 2.10 will not operate as an admission that all the requirements of substantial completion have been met, and does not prejudice any of the Principal's rights, including the right to require the Contractor to satisfy all these requirements.

[] **Reliability test and commercial operation**

Reliability test

- [].1 Upon receipt of the substantial completion certificate, the Contractor must carry out the reliability test.
- [].2 It is a condition precedent to the commencement of the reliability test that the substantial completion certificate has been issued.
- [].3 If the reliability test is interrupted or terminated by the Principal or the Principal's representative, other than for reason of default by the Contractor, such test must be restarted from the point of interruption or termination. In the case of default by the Contractor, it must be restarted from the beginning or otherwise in accordance with Appendix 1. If the actual rated output specified in the substantial completion certificate is less than the rated output performance guarantee the guaranteed availability in MWh will be recalculated.

Commercial operation

- [] .4 As soon as the power station has, in the opinion of the Contractor, reached the stage of commercial operation, the Contractor must give notice to the Principal's representative.
- [] .5 The Principal's representative must, promptly, and no later than three days after receipt of the Contractor's notice under GC 3.4, either issue a commercial operation certificate in the form specified in Appendix [] stating that the power station has reached commercial operation or notify the Contractor of any defects and/or deficiencies.
- [] .6 If the Principal's representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct such defects and/or deficiencies and must repeat the procedure described in GC 3.4.
- [] .7 If the Principal's representative is satisfied that the power station has reached commercial operation, the Principal must, promptly, and no later than three days after receipt of the Contractor's repeated notice, issue a commercial operation certificate stating that the power station has reached commercial operation as at the date stated in that certificate.
- [] .8 If the Principal's representative is not so satisfied, then it must notify the Contractor of any defects and/or deficiencies within three days after receipt of the Contractor's repeated notice and the above procedure must be repeated.

[] Performance guarantees

Net heat rate and rated output performance guarantees

- [] .1 The Contractor guarantees that, during the same performance tests, the power station and all parts will meet the rated output performance guarantee and the net heat rate performance guarantee.

Minimum performance guarantees not met

- [] .2 If, for reasons not attributable to the Principal, either or both of the minimum performance guarantees are not met, the Contractor must at its cost and expense make such changes, modifications and/or additions to the power station or any part as may be necessary so as to meet at least the minimum rated output performance guarantee and the minimum net heat rate performance guarantee respectively. The Contractor must notify the Principal upon completion of the necessary changes, modifications and/or additions and must repeat, subject to the Principal's rights under GCs 4.3 and 46.2(a)(iii) [Termination], the relevant performance tests until the minimum rated output performance guarantee and the minimum net heat rate performance guarantee respectively have been met. Nothing in this GC 4.2 derogates from the Contractor's obligation to meet the rated output performance guarantee and the net heat rate performance guarantee.

- [] .3 Notwithstanding this GC 4 or any other provision of this contract, if for reasons not attributable to the Principal at any time after the Contractor has repeated the performance tests, the Contractor does not meet either or both minimum performance guarantees, the Principal may require the Contractor to pay
 - (a) In relation to the minimum performance guarantee(s) that has/have been met performance liquidated damages calculated in accordance with section [] of Appendix [] .
 - (b) If the minimum rated output performance guarantee has not been met:
 - (i) an amount equal to the amount the Contractor would have been liable for if the actual rated output of the power station was equal to 95% of the rated output performance guarantee as specified in section [] of Appendix []
 - (ii) performance liquidated damages calculated in accordance with section [] of Appendix [] .
 - (c) If the minimum net heat rate performance guarantee has not been met:
 - (i) an amount equal to the amount the Contractor would have been liable for if the actual net heat rate of the power station was equal to 105% of the net heat rate performance guarantee as specified in section [] of Appendix []
 - (ii) performance liquidated damages calculated in accordance with section [] of Appendix [] .
- [] .4 The payment of performance liquidated damages under GC 4.3 will be in complete satisfaction of the Contractor's guarantees under GC 4.1.

Minimum performance guarantees met, but not performance guarantees

- [] .5 Subject to GCs 4.3, 4.6 and 4.7, if, for reasons not attributable to the Principal, both of the rated output performance guarantee and the net heat rate performance guarantee are not met but both the minimum performance guarantees are met during the same performance test, the Contractor must, prior to the expiration of the extended testing period:
 - (a) at its cost and expense make such changes, modifications and/or additions to the power station or any part as may be necessary so as to meet the rated output performance guarantee and the net heat rate performance guarantee respectively
 - (b) notify the Principal upon completion of the necessary changes, modifications and/or additions
 - (c) repeat the performance tests until the rated output performance guarantee and the net heat rate performance guarantee respectively have been met during the same performance test.

[].6 If, during the same performance test, the Contractor has met both the minimum performance guarantees, but not both the net heat rate performance guarantee and the rated output performance guarantee by the expiration of the extended testing period, the Contractor must pay the respective performance liquidated damages to the Principal.

[].7

- (a) Notwithstanding GCs 4.5 and 4.6, the Contractor may at any time during the extended testing period elect to pay performance liquidated damages to the Principal in respect of the failure to meet either or both of the net heat rate performance guarantee and the rated output performance guarantee provided the minimum performance guarantees are met.
- (b) Notwithstanding GCs 4.5 and 4.6, and subject to GC 4.3, the Principal may, provided that the date for commercial operation has passed, require the Contractor to pay performance liquidated damages to the Principal in respect of the failure to meet either or both of the net heat rate performance guarantee and the rated output performance guarantee.

[].8 The payment of performance liquidated damages under GC 4.6 or GC 4.7 will be in complete satisfaction of the Contractor's guarantees under GC 4.1, provided that the power station meets both the minimum rated output performance guarantee and the minimum net heat rate performance guarantee as at the date of payment of such performance liquidated damages.

Guaranteed availability

[].9 The Contractor guarantees that the power station either in whole or in part will operate at the guaranteed availability for a period of 12 months from not later than two months after the date of commercial operation.

[].10 If during the actual availability period actual energy measured is less than the guaranteed availability, the Contractor will pay performance liquidated damages to the Principal as specified in Appendix Y.

[].11 The aggregate liability of the Contractor for performance liquidated damages under GC 4.10 will not exceed the amount calculated in accordance with Appendix [].

General

[].12 Performance liquidated damages will be invoiced by the Principal and payment will be due within 21 days of issue of such invoice. At the expiration of 21 days the amount invoiced is a debt due and payable to the Principal on demand and may be deducted from any payments otherwise due from the Principal to the Contractor and the Principal may also have recourse to the security provided under this contract.

4.13 The parties agree that the performance liquidated damages in Appendix Y are a fair and reasonable pre-estimate of the damages likely to be sustained by the Principal as a result of the Contractor's failure to meet the performance guarantees.

[].14 The payment of performance liquidated damages under this GC 4 is in addition to any liability of the Contractor for delay liquidated damages under GC [].

[].15 The aggregate liability of the Contractor for delay liquidated damages and performance liquidated damages (provided the Contractor has met both minimum performance guarantees) will not exceed the amount calculated in accordance with section [] of Appendix []. The aggregate liability of the Contractor under this GC 4.15 will not apply if the Principal requires the Contractor to pay performance liquidated damages pursuant to GC 4.3.

[].16 If this GC 4 (or any part thereof) is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Principal from claiming performance liquidated damages, the Principal is entitled to claim against the Contractor damages at law for the Contractor's failure to meet any or all of the performance guarantees. Such damages must not exceed:

- (a) \$[] for each megawatt (and pro rata for part of a megawatt) by which the actual output of the power station or part (whichever is applicable) is less than the rated output performance guarantee, unless the actual output of the power station is less than 95% of the rated output performance guarantee, in which case such damages will not exceed \$[] for each megawatt (and pro rata for part of a megawatt) by which the actual output of the power station or part (whichever is applicable) is less than the minimum rated output performance guarantee.
- (b) \$[] for each kilojoule/kilowatt hour (and pro rata for part of a kilojoule/kilowatt hour) by which the actual net heat rate of the power station or part (whichever is applicable) exceeds the net heat rate performance guarantee, unless the actual net heat rate of the power station is more than 105% of the net heat rate performance guarantee, in which case such damages will not exceed \$[] for each kilojoule/kilowatt hour (and pro rata for part of a kilojoule/kilowatt hour) by which the actual net heat rate of the power station or part (whichever is applicable) is less than the minimum net heat rate performance guarantee.
- (c) \$[] for each megawatt hour (and a proportionate part thereof for each part of a megawatt hour) that the availability period actual energy measured is less than the guaranteed availability.

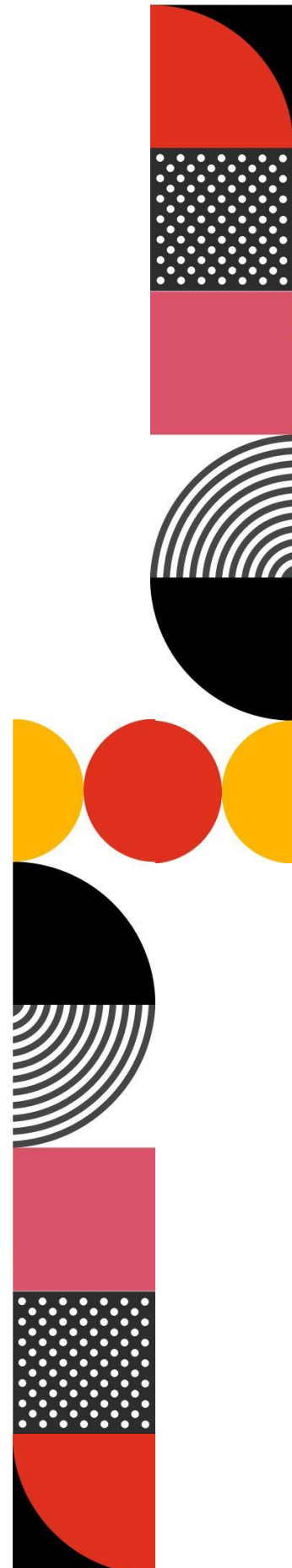
[].17 The Contractor is not entitled to the benefit of the exclusion in GC [] [prohibition on claiming consequential loss] in any claim for damages at law by the Principal against the Contractor pursuant to GC 4.16 for the Contractor's failure to meet any or all of the performance guarantees.

Appendix 2

Example clause: Extension of time regime

- [].1 The Contractor must immediately give notice to the Project Company of all incidents and/or events of whatsoever nature affecting or likely to affect the progress of the works.
- [].2 Within 15 days after an event has first arisen the Contractor must give a further notice to the Project Company which must include:
- (a) the material circumstances of the event including the cause or causes
 - (b) the nature and extent of any delay
 - (c) the corrective action already undertaken or to be undertaken
 - (d) the effect on the critical path noted on the Programme
 - (e) the period, if any, by which in its opinion the date for commercial operation should be extended
 - (f) a statement that it is a notice pursuant to this GC [].2.
- [].3 Where an event has a continuing effect or where the Contractor is unable to determine whether the effect of an event will actually cause delay to the progress of the works so that it is not practicable for the Contractor to give notice in accordance with GC [].2, a statement to that effect with reasons together with interim written particulars (including details of the likely consequences of the event on progress of the works and an estimate of the likelihood or likely extent of the delay) must be submitted in place of the notice required under GC [].2. The Contractor must then submit to the Project Company, at intervals of 30 days, further interim written particulars until the actual delay caused (if any) is ascertainable, whereupon the Contractor must as soon as practicable but in any event within 30 days give a final notice to the Project Company including the particulars set out in GC [].2.
- [].4 The Project Company must, within 30 days of receipt of the notice in GC [].2 or the final notice in GC [].3 (as the case may be), issue a notice notifying the Contractor's representative of its determination as to the period, if any, by which the date for commercial operation is to be extended.
- [].5 Subject to the provisions of this GC [], the Contractor is entitled to an extension of time to the date for commercial operation as the Project Company assesses, where a delay to the progress of the works is caused by any of the following events, whether occurring before, on or after the date for commercial operation:
- (a) any act, omission, breach or default by the Project Company, the Project Company's representative and their agents, employees and Contractors
 - (b) a variation, except where that variation is caused by an act, omission or default of the Contractor or its subcontractors, agents or employees
 - (c) a suspension of the works pursuant to GC [], except where that suspension is caused by an act, omission or default of the Contractor or its subcontractors, agents or employees
 - (d) an event of FM
 - (e) a change of law.
- [].6 Despite any other provisions of this GC [], the Project Company may at any time make a fair and reasonable extension of the date for commercial operation.
- [].7 The Contractor must constantly use its best endeavours to avoid delay in the progress of the works.
- [].8 If the Contractor fails to submit the notices required under GCs [].1, [].2 and [].3 within the times required then:
- (a) the Contractor has no entitlement to an extension of time
 - (b) the Contractor must comply with the requirements to perform the works by the date for commercial operation
 - (c) any principle of law or equity (including those which might otherwise entitle the Contractor to relief and the Prevention Principle) which might otherwise render the date for commercial operation immeasurable and liquidated damages unenforceable, will not apply.

- [].9 It is a further condition precedent of the Contractor's entitlement to an extension of time that the critical path noted on the Programme is affected in a manner which might reasonably be expected to result in a delay to the works reaching commercial operation by the date for commercial operation.
- [].10 If there are two or more concurrent causes of delay and at least one of those delays would not entitle the Contractor to an extension of time under this GC [] then, to the extent of that concurrency, the Contractor is not entitled to an extension of time.
- [].11 The Project Company may direct the Contractor's representative to accelerate the works for any reason including as an alternative to granting an extension of time to the date for commercial operation.
- [].12 The Contractor will be entitled to all extra costs necessarily incurred, by the Contractor in complying with an acceleration direction under GC [].11, except where the direction was issued as a consequence of the failure of the Contractor to fulfil its obligations under this contract. The Project Company must assess and decide as soon as reasonably practical, the extra costs necessarily incurred by the Contractor.



Appendix 3

Example clause: Grid access regime

- [].1 The Contractor must coordinate the connection of the facility to the transmission line and provide, in a timely manner, suitable termination facilities in accordance with Appendix 1. The Contractor must liaise with the network service provider, government authorities and other parties to avoid delays in connecting the facility to the transmission line.
- [].2 On the date for first synchronisation the Project Company must ensure that there is in place a transmission network which is capable of receiving the generated output the facility is physically capable of producing at any given time.
- [].3 The Project Company's obligation to ensure that the transmission network is in place is subject to the Contractor being able (physically and legally) to connect the facility to the transmission line and import and/or export power to the transmission network.
- [].4 If the Contractor notifies the Project Company that first synchronisation is likely to take place before the date for first synchronisation, the Project Company must endeavour, but is under no obligation to ensure that the transmission network is in place, to enable first synchronisation to take place in accordance with the Contractor's revised estimate of first synchronisation.
- [].5 At the time of and following first synchronisation the Project Company will ensure that the Contractor is permitted to export to the transmission network power which the facility is physically capable of exporting, provided that:
 - (a) it is necessary for the Contractor to export that amount of power if the Contractor is to obtain commercial operation
 - (b) the Contractor has complied in all respects with its obligations under GC [].7
 - (c) in the reasonable opinion of the Project Company and/or the network service provider the export of power by the facility will not pose a threat to the safety of persons and/or property (including the transmission network).
- [].6 For the avoidance of doubt, the Project Company will not be in breach of any obligation under this contract by reason only of the Contractor being denied permission to export power to the transmission network in accordance with the grid code.
- [].7 The Contractor must carry out the testing of the works, in particular in relation to the connection of the facility to the transmission network so as to ensure that the Project Company and the Contractor as a Participant (as defined in the electricity code) comply with their obligations under the electricity code in respect of the testing of the works.
- [].8 The Contractor must carry out the testing of the works, in particular in relation to the connection of the facility to the transmission network, so as to ensure that:
 - (a) any interference to the transmission network is minimised
 - (b) damage to the transmission network is avoided.
- [].9 The Contractor must promptly report to the Project Company's representative any interference with and damage to the transmission network which connects with the facility.
- [].10 Without derogating from the Contractor's obligations under this contract, in carrying out any test which requires the Contractor to supply electricity to the transmission network, the Contractor must:
 - (a) issue a notice to the Project Company's representative at least 24 hours prior to the time at which it wishes to so supply, detailing the testing or commissioning and including the Contractor's best estimate of the total period and quantity (in MWh per half-hour) of that supply
 - (b) promptly notify the Project Company's representative if there is any change in the information contained in such notice
 - (c) do all things necessary to assist the Project Company (including but not limited to cooperating with the network service provider and complying with its obligations under GC 20.15), so that the Project Company can comply with its obligations under the national electricity code.

EPC and EPCM
delivery models



14 Engineering, Procurement and Construction (EPC) contracts in the solar sector

Investing in Energy Transition Projects
March 2023



Introduction

Engineering, procurement and construction (EPC)

Contracts are the most common form of contract used to undertake construction works on utility-scale solar projects by the private sector.¹ Under an EPC Contract, a Contractor is obliged to deliver a complete facility to the Project Company. The Project Company needs only to turn a key to start operating the facility, hence EPC Contracts are sometimes called 'turnkey' construction contracts. The Contractor must deliver the complete facility for a guaranteed price by a guaranteed date and the facility must perform to the specified level. Failure to comply with any requirements will usually result in the Contractor incurring monetary liabilities.

EPC Contracts and their use on solar projects has recently attracted negative publicity, particularly in contracting circles. Some Contractors have suffered heavy losses due to a range of factors including grid connection delays and constraints, unidentified site risks, and supply chain delays arising from international and domestic responses to COVID-19.² Contractors are increasingly hesitant to enter into EPC Contracts in Australia. This problem has been exacerbated by a substantial tightening in the insurance market. Construction insurance has become more expensive due to significant losses suffered on many projects and the impact of COVID-19 on the insurance market.

However, given their flexibility and the value and certainty that Principals and Lenders derive from them, EPC Contracts will continue to be the most commonly used form of construction contract for utility-scale solar projects in most jurisdictions.³

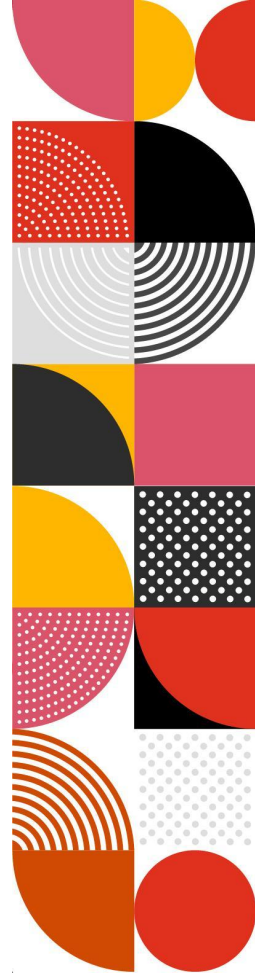
While our focus here is on the use of EPC Contracts in the solar sector, many of the issues are applicable to EPC Contracts in all sectors. EPC Contracts do not eliminate or mitigate against all risks; however, when drafted correctly they can ensure performance, timely delivery and rectification within agreed parameters or up to agreed caps. For this reason, we recommend advice on a project-by-project, contract-by-contract basis.

Before examining EPC Contracts in detail, it is useful to explore the basic features of a solar project.

¹ For our purposes here, we use ARENA's definition of utility-scale solar as a solar farm which can generate anywhere from hundreds of kilowatts to thousands of megawatts of solar power. Other terms used for utility-scale solar projects include solar power plants and large-scale solar. See <https://arena.gov.au/renewable-energy/large-scale-solar/>.

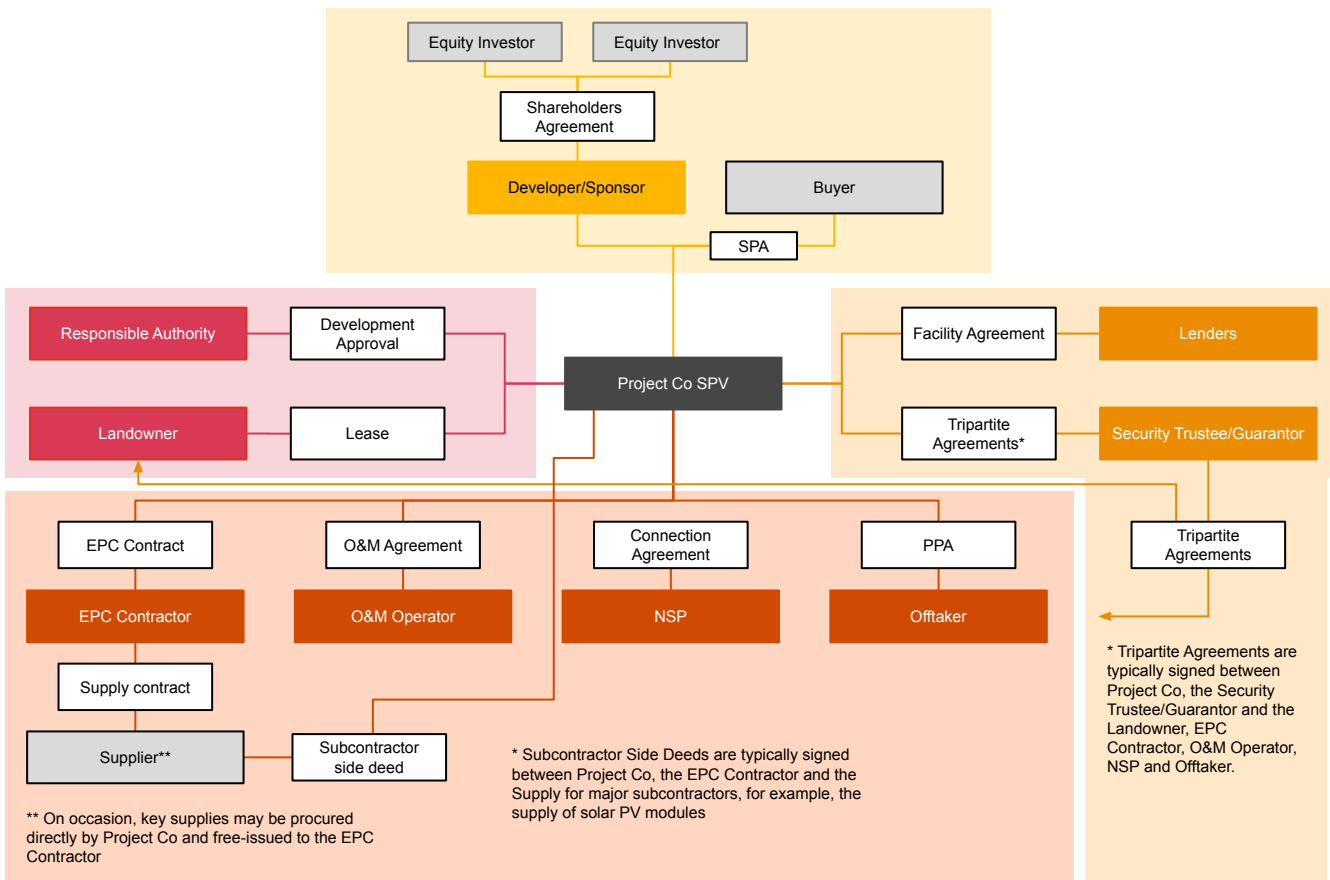
² Kathryn Diss, 'RCR Tomlinson administrators reveal debts of up to \$630m from collapsed engineering firm', *ABC News* (Web Page, 3 December 2018) <[https://www.abc.net.au/news/2018-12-03/rcr-tomlinson-administrators-reveal-debts-of-up-to-\\$630/10576754](https://www.abc.net.au/news/2018-12-03/rcr-tomlinson-administrators-reveal-debts-of-up-to-$630/10576754)>.

³ Some jurisdictions, such as the USA, use alternative structures which separate the work into various components.



Contractual structure and bankability of solar projects

The detailed contractual structure will vary from project to project. Most solar projects using an EPC Contract will have a similar basic structure, as shown below. The detailed contractual structure will vary among projects.



The Project Company⁴ will usually enter into agreements which cover the following elements:

- **A power purchase agreement (PPA) between the Project Company and power purchaser (or 'offtaker')**: In most, but not all, project-financed utility-scale solar projects (as opposed to merchant projects), the power purchaser undertakes to pay for a set amount of electricity every year of the PPA, subject to availability, regardless of whether it actually takes that amount of electricity (referred to as a 'take or pay' obligation). Sometimes a tolling agreement is used instead of a PPA, under which the power purchaser directs how the facility is to be operated and despatched. In the absence of a PPA, Lenders and Project Companies developing a merchant project do not have the same certainty of cash flow. Therefore, merchant projects are generally considered higher risk than non-merchant projects.⁵ This risk can be mitigated by entering into hedge agreements. Project Companies developing merchant projects often enter into synthetic PPAs or hedge agreements to provide some certainty of revenue. These agreements are financial hedges rather than physical sales contracts.

⁴ Given our focus on project-financed infrastructure projects, we refer to the employer as the Project Company. Whilst Project Companies are usually limited liability companies incorporated in the jurisdiction in which the project is being developed, the actual structure of the Project Company will vary from project to project and jurisdiction to jurisdiction.

⁵ However, because merchant power projects are generally undertaken in more sophisticated and mature markets, there is usually a lower level of country or political risk, yet this may no longer be the case as electricity markets in various countries move towards privatisation.

- **A construction contract:** An EPC Contract is one contractual approach that can be taken to construct a solar facility. Another option is a disaggregated approach with, for example, a supply contract, a design agreement and a construction contract with or without a project management agreement. The choice of contracting approach will depend on factors such as the time available, Lenders' requirements and the identity of the Contractor(s). The major advantage of the EPC Contract is that it provides a single point of responsibility. In our experience, most utility-scale solar projects use an EPC Contract.
- **An operation and maintenance agreement:** This is usually a medium- to long-term Operating and Maintenance Agreement (**O&M Agreement**) with an Operator. The term of the O&M Agreement will vary from project to project. The Operator will usually be an equity sponsor of the Principal, especially if one of the sponsors is an independent power producer or utility company. The term of the O&M Agreement will likely match the term of the PPA. In limited circumstances, Lenders will require the Project Company to operate the facility itself and the O&M Agreement will be replaced with a technical services agreement under which the Project Company is supplied with the know-how necessary for its own employees to operate the facility.
- **Financing and security agreements with Lenders to finance the development of the project:** Most utility-scale solar projects will require debt funding. Before committing to financing terms, Lenders will need to be satisfied with the risk allocation in the aforementioned construction and operation and maintenance arrangements as well as other key project agreements. To avoid onerous lending terms, contingent equity requirements and increased security arrangements in the financing agreement(s), the Principal will need to demonstrate to Lenders that the project is viable and therefore bankable for the duration of the loan period and beyond.

Accordingly, the construction contract is only one of a suite of documents on a solar project. Importantly, the Project Company operates the project and earns revenue under contracts other than the construction contract. Therefore, the construction contract must, where practical, be tailored to be consistent with the requirements of the other project documents, and it is vital to properly manage the interfaces between the various types of agreements.

Bankability

A bankable EPC Contract is a contract with a risk allocation between the Contractor and the Project Company to the satisfaction of Lenders and their credit committees. Lenders focus on the ability (or more particularly, the lack thereof) of the Contractor to claim additional costs or extensions of time as well as the security provided by the Contractor for the performance of its obligations. The less comfortable Lenders are with these provisions, the more equity support (direct or contingent) the Principal's equity sponsors will need to provide. In addition, Lenders will have to be satisfied on the technical risks in any project. Price is also a consideration but is usually considered separately from the bankability of the contract because the contract price (or more accurately the capital cost of the solar facility) relates to the bankability of the project as a whole.

Before examining the requirements for bankability, it is worth considering the appropriate financing structures and lending institutions. The most common form of financing for infrastructure projects is project financing. Project financing refers to financing secured only by the assets of the project itself. Therefore, the revenue generated by the project must be sufficient to support the financing. Project financing is often referred to as either non-recourse financing or limited recourse financing, and these terms are often used interchangeably. However, the terms mean different things: non-recourse means there is no recourse to the Principal's equity sponsors at all; whereas limited recourse means that some recourse to the Principal's equity sponsors is possible. The recourse is limited in terms of when it can occur and the extent of additional equity support. In practice, true non-recourse financing is rare. In most projects, the Principal's equity sponsors will be obliged to contribute additional equity support in certain situations.



Project financing was traditionally provided by commercial Lenders. Whilst commercial Lenders still provide finance, governments now also provide financing either through export credit agencies (**ECAs**) or multilateral organisations such as the World Bank, the Asian Development Bank, the European Bank for Reconstruction, etc. Many countries offer export credit financing for large energy and infrastructure projects via the establishment of government-mandated export ECAs. As reported in the June 2020 Report to the US Congress on Global Export Credit Competition, there are 115 known official ECAs worldwide, varying significantly in export credit volumes. In 2019, the top five largest ECAs by medium to long-term export credit volumes were the ECAs for China, France, Germany, Italy and Korea. Each ECA is given a mandate by its government outlining what support it can provide. The mandates of the ECAs can differ markedly and can change from time to time; though, given the current global focus on climate change and carbon emission control, financing for renewable energy projects is likely to be prominent in the coming years. The products offered by most ECAs include:

- direct finance (tied and untied)
- guarantees and bonds
- insurance products, including credit insurance and political risk insurance (the latter of which is either unobtainable or prohibitively expensive in the commercial marketplace).

Most ECAs work within a regulated environment where they are obliged to comply with a set of OECD guidelines called the Arrangement on Officially Supported Export Credits (**OECD Arrangement**). The OECD Arrangement aims to avoid unfair competition as a result of certain ECAs offering particularly generous financing conditions. It typically sets out:

- minimum interest rates for fixed-rate loans defined as the commercial interest reference rate (**CIRR**). The CIRR depends on the currency of the transaction, and is adjusted by the OECD on a monthly basis
- the maximum repayment tenor for both standard exports, as well as for specified industries through special sector understandings
- an allowance for the financing of a percentage of local costs associated with the exported items
- compliance obligations associated with the social and environmental standards of the Equator Principles.

The OECD Arrangement has been updated to include sector-specific annexes called 'Sector Understandings'. This includes the Renewable Energy, Climate Change Mitigation and Adaptation and Water Projects Sector Understanding (Annex IV of the OECD Arrangement) (**Annex IV**), which aims to promote good practice in terms of scaling up and better targeting public and private finance that supports climate-friendly investment. Annex IV provides more flexible conditions for the provision of export credits relating to renewable energy projects or climate change mitigation projects. This contrasts with the Coal-Fired Electricity Generation Sector Understanding (Annex VI of the OECD Arrangement), which provides stricter conditions for the provision of export credits relating to coal-fired electricity generation projects.

Principal equity sponsors are also using other sophisticated products to provide a portion of the necessary finance, such as credit-wrapped bonds, securitisation of future cash flows, and political risk insurance.

Assessing bankability

In assessing bankability, Lenders look at a range of factors and assess a contract as a whole. Therefore, in isolation it is difficult to state whether one approach is or is not bankable. However, generally speaking, Lenders will require:

- a fixed completion date
- a fixed completion price
- no or limited technology risk
- output guarantees
- liquidated damages for both delay and performance
- security from the Contractor and/or its parent
- large caps on liability (ideally, there would be no caps on liability, however, there are almost always caps on liability given the nature of EPC Contracting and the risks to the Contractors involved)
- restrictions on the ability of the Contractor to claim extensions of time and additional costs.

An EPC Contract delivers these requirements in a single integrated package, which is one of the major reasons why EPC Contracts are the most common form of construction contract used in project-financed utility-scale solar projects.



Basic features of an EPC Contract

The key clauses in any construction contract are those that impact on time, cost and quality.

The same is true of EPC Contracts. However, EPC Contracts tend to deal with issues with greater sophistication than other types of construction contracts in order to satisfy Lenders' requirements for bankability.

EPC Contracts provide for:

- **A single point of responsibility:** The Contractor is responsible for all design, engineering, procurement, construction, commissioning and testing activities. If any problems occur, the Project Company need only look to one party – the Contractor – to fix the problem and provide compensation. If the Contractor is a consortium comprising several entities, the EPC Contract must provide that those entities are jointly and severally liable to the Project Company.
- **A fixed contract price:** The risk of cost overruns and the benefit of any cost savings are to the Contractor's account. The Contractor's ability to claim additional money is usually limited to circumstances in which the Project Company has delayed the Contractor or has ordered variations to the works.
- **A fixed completion date:** EPC Contracts include a guaranteed completion date that is either a fixed date or a fixed period after the commencement of the EPC Contract. If this date is not met, the Contractor is liable for delay liquidated damages (**DLDs**). DLDs are designed to compensate the Project Company for loss and damage suffered as a result of late completion of the solar facility. To be enforceable in common law jurisdictions, DLDs must be a genuine pre-estimate of the loss or damage that the Project Company will suffer if the solar facility is not completed by the target completion date. The genuine pre-estimate is determined by reference to the time the contract was executed.

DLDs are usually expressed as a rate per day which represents the estimated extra costs incurred (such as extra insurance, supervision fees and financing charges) and losses suffered (revenue forgone) for each day of delay.

In addition, the EPC Contract must provide for the Contractor to be granted an extension of time (**EOT**) when it is delayed by the acts or omissions of the Project Company.

- **Performance guarantees:** The Project Company's revenue will be earned through the operation of the solar facility. Therefore, it is vital that the solar facility performs as required in terms of output, efficiency and reliability. To protect the Project Company, EPC Contracts contain performance guarantees backed by performance liquidated damages (**PLDs**) payable by the Contractor if it fails to meet the performance guarantees.

PLDs must be a genuine pre-estimate of the loss and damage that the Project Company will suffer over the life of the project if the solar facility does not meet the performance guarantees. As with DLDs, the genuine pre-estimate is determined by reference to the time the contract was signed.

PLDs are usually a net present value (**NPV**) (less expenses) calculation of the revenue forgone over the life of the project. For example, if the output of the facility is five MWs less than the specification, the PLDs are designed to compensate the Project Company for the revenue forgone over the life of the project by being unable to sell the output for the five MWs.

- **Caps on liability:** Most Contractors will not, as a matter of company policy, enter into contracts with unlimited liability. Therefore, EPC Contracts for utility-scale solar projects cap the Contractor's liability at a percentage of the contract price. This varies from project to project; however, an overall liability cap of 100% of the contract price is common. In addition, there are normally sub-caps on the Contractor's liquidated damages liability. For example, DLDs and PLDs might each be capped at 10–15% of the contract price with an overall cap on both types of liquidated damages of 20–25% of the contract price. We expect to see Contractors increase their press for the lower end of each scale given recent high-profile cost overruns arising as a result of DLDs.⁶ Similarly, we also anticipate Lenders will be especially focussed on the duration of time during which DLDs can sustain the project and keep the Project Company whole during potentially lengthy periods of delay. The method of calculation and applicable caps on DLDs will therefore be an even bigger commercial consideration in the months and years ahead.

⁶ Giles Parkinson, 'Biggest solar contractor in Australia hit by damages claims, soaring modules costs' *Renew Economy* (Web Page) <<https://reneweconomy.com.au/biggest-solar-contractor-in-australia-hit-by-damages-claims-soaring-module-costs/>>.

There will also likely be a prohibition on the claiming of consequential damages. Consequential damages are damages that do not flow directly from a breach of contract but which were in the reasonable contemplation of the parties at the time the contract was signed. This used to mean heads of damage like loss of profit. However, loss of profit is now usually recognised as a direct loss on project-financed projects and, therefore, would be recoverable under a contract containing a standard exclusion of consequential loss clause. Nonetheless, care should be taken to state explicitly that liquidated damages can include elements of consequential damages. Given that the rate of liquidated damages is pre-agreed, most Contractors will not object to this exception.

In relation to caps on liability and exclusion of liability, it is common for exceptions which apply to either or both the cap on liability and the prohibition on claiming consequential losses. The exceptions themselves are often project-specific. However, some common examples include cases of fraud or wilful misconduct, death or personal injury, situations where the minimum performance guarantees have not been met and the cap on DLDs has been reached, and breaches of the intellectual property warranties. The cap on liability typically does not apply to the extent that amounts would be recoverable under insurance policies required under the contract, but for a breach, failure, act or omission by the party responsible for the procurement of such policies. As per above, given recent project examples we expect to see attempts for further carve-outs from such caps by Contractors.

- **Security:** It is standard for the Contractor to provide performance security to protect the Project Company if the Contractor does not comply with its obligations under the EPC Contract. The security takes a number of forms including:
 - A bank guarantee for a percentage, normally in the range of 10–20%, of the contract price. The actual percentage will depend on a number of factors including the other security available to the Project Company, the payment schedule (because the greater the percentage of the contract price unpaid by the Project Company at the time it is most likely to draw on security, for example, to satisfy DLD and PLD obligations, the smaller the bank guarantee can be), the identity of the Contractor and the risk of it not properly performing its obligations, the price of the bank guarantee and the extent of the technology risk.
 - Retention, for example, withholding a percentage (usually 5–10%) of each payment. Provision is often made to replace retention monies with a bank guarantee (sometimes referred to as a retention guarantee (bond)). However, it is now uncommon for both a bank guarantee and cash retention in the above ranges to be in the same security package; it is one or the other.
 - Advance payment guarantee, if an advance payment is made.
- A parent company guarantee from the ultimate parent (or other suitably related entity) of the Contractor which provides that it will perform the Contractor's obligations if, for whatever reason, the Contractor does not perform. This is typical in circumstances in which the Contractor is a jurisdiction-specific corporate entity controlled by an international construction firm.
- **Variations:** The Project Company has the right to order variations and agree to variations suggested by the Contractor. If the Project Company wants the right to omit works either in their entirety or to be able to engage a different Contractor, this must be stated specifically. In addition, a properly drafted variations clause should make provision for how the price of a variation is to be determined. In the event the parties do not reach agreement on the price of a variation, the Project Company or its representative should be able to determine the price. This determination is subject to the dispute resolution provisions. In addition, the variations clause should detail how the impact, if any, on the performance guarantees is to be treated. For some larger variations, the Project Company may also wish to receive additional security. If so, this must also be dealt with in the variations clause.
- **Defects liability:** The Contractor is usually obliged to repair defects that occur in the 12 to 24 month period following completion of the performance testing and acceptance of the facility. Defects liability clauses can be tiered, for example, the clause can provide for one period for the entire solar facility and a second, extended period for more critical items. In the case of key component parts, the concept of 'serial defects' means substantially the same defect having the same root cause that has been identified in the same part, for example in 5% or more of the total number of panels in the solar facility. In such instances, the Contractor is also obliged to rectify the defect on all items of that particular piece of equipment even if the defect itself has not yet materialised in all items of that equipment.
- **Intellectual property:** The Contractor warrants that it has rights to all the intellectual property used in the execution of the works and indemnifies the Project Company if any third-party intellectual property rights are infringed. Upon creation, all project-specific intellectual property vests in, and is the sole and exclusive property of, the Project Company.
- **Force majeure:** The parties are excused from performing their obligations if a force majeure (FM) event occurs.
- **Suspension:** The Project Company usually has the right to suspend the works. During the period of suspension, the Contractor must not remove any equipment from the project site.

- **Termination:** This sets out the contractual termination rights of both parties. The Contractor usually has very limited contractual termination rights. These rights are limited to the right to terminate for non-payment, Project Company insolvency or for prolonged suspension or prolonged FM and will be further limited by the tripartite or direct agreement between the Project Company, Lenders and the Contractor. The Project Company will have more extensive contractual termination rights. They will usually include the ability to terminate immediately for certain major breaches or if the Contractor becomes insolvent and the right to terminate after a cure period for other breaches. In addition, the Project Company may have a right to terminate for convenience, though Contractors will typically expect a termination fee in the event of a termination for convenience and it is likely that the Project Company's ability to exercise its termination rights will also be limited by the terms of the financing agreements.
- **Performance specification:** Unlike a traditional construction contract, an EPC Contract usually contains a performance specification. The performance specification details the performance criteria that the Contractor must meet. However, it does not dictate how they must be met. This is left to the Contractor to determine. A delicate balance must be maintained. The specification must be detailed enough to ensure the Project Company knows what it is contracting to receive but not so detailed that if problems arise the Contractor can argue they are not its responsibility. In particular, there must be agreement and certainty in respect of key concepts including what constitutes completion, particularly on novel or complex matters.

Whilst there are, as described above, numerous advantages to using an EPC Contract, there are some disadvantages. These include the fact that it can result in a higher contract price than alternative contractual structures. This higher price is a result of a number of factors not least of which is the allocation of almost all the construction risk to the Contractor. This has a number of consequences, one of which is that the Contractor will have to factor into its price the cost of absorbing those risks, which will result in the Contractor building contingencies into the contract price for events that are unforeseeable and/or unlikely to occur. If those contingencies were not included, the contract price would be lower. However, the Project Company would bear more of the risk of those unlikely or unforeseeable events. The Principal will have to determine, in the context of its particular project, whether the increased price is worth paying.

As a result, the Principal and its advisers must critically examine the risk allocation on every project. Risk allocation should not be an automatic process. Instead, the Project Company should allocate risk in a sophisticated way that delivers the most efficient result. For example, if a project is being undertaken in an area with unknown geology and without the time to undertake a proper geotechnical survey, the Project Company may be best served by bearing the site condition risk itself as it will mean the Contractor does not have to price a contingency it has no way of quantifying. This approach can lower the risk premium paid by the Project Company. Alternatively, the opposite may be true. The Project Company may wish to pay for the contingency in return for passing off the risk, which quantifies and caps its exposure. This type of analysis must be undertaken on all major risks prior to going out to tender.

Another consequence of the risk allocation is that there are relatively few construction companies willing to enter into EPC Contracts, particularly in the solar sector which has unquestionably narrowed in Australia within the past two to three years. The scarcity of Contractors can also result in relatively high contract prices and longer project delivery timeframes.

Another major disadvantage of an EPC Contract becomes evident when problems occur during construction. In return for a guaranteed price and a guaranteed completion date, the Project Company cedes most of the day-to-day control over the construction. Therefore, Project Companies have limited ability to intervene when problems occur during construction. As a general rule, the more the Project Company interferes, the greater the likelihood of the Contractor claiming additional time and costs. In addition, interference by the Project Company will make it substantially easier for Contractors to defeat claims for liquidated damages and defective works.

Ensuring the project is completed satisfactorily is usually more important than protecting the integrity of the contractual structure. However, if the Project Company interferes with the execution of the works, it will, in most circumstances, have the worst of both worlds. It will have a contract that exposes it to liability for time and costs incurred as a result of interference without any corresponding ability to hold the Contractor liable for delays in completion or defective performance. The same problems occur even when the EPC Contract is drafted to give the Project Company the ability to intervene. In many circumstances, regardless of the actual drafting, if the Project Company becomes involved in determining how the Contractor executes the works, then the Contractor will be able to argue that it is not liable for either delayed or defective performance.

As a result, it is vitally important that great care is taken in selecting the Contractor and in ensuring the Contractor has sufficient knowledge and expertise and available resources to execute the works. Given the significant monetary value of EPC Contracts, and the potential adverse consequences if problems occur during construction, the lowest price should not be the only factor used when selecting a Contractor.

Key solar-specific clauses in solar EPC Contracts

General interface issues

As noted earlier, an EPC Contract is one of a suite of agreements necessary to develop a solar project. Therefore, it is vital that the EPC Contract properly interfaces with those other agreements. In particular, care should be taken to ensure the following aspects interface properly:

- commencement and completion dates
- liquidated damages amounts and trigger points
- caps on liability
- indemnities
- entitlements to extensions of time
- insurance
- FM
- intellectual property.

Not all of these aspects will be relevant for all agreements. In addition to these general interface issues that apply to most types of projects, there are also solar-specific issues that must be considered, mainly concerned with the nature of the site and the technology.

Major solar-specific interface issues are:

- access for the Contractor to the transmission grid to allow timely completion of construction, commissioning and testing (grid access), including generator performance standards and compliance with AEMO requirements
- consistency of commissioning and testing regimes
- warranty and design life requirements for key component parts
- interface issues between the relevant government agencies, landowners, local communities, the Project Company and the Contractor. In particular, whilst the Project Company must maintain a long-term or comfortable relationship with government agencies, the Contractor does not necessarily need to do so.

Grid access

EPC Contracts will not provide for the handover of the solar facility to the Project Company, and the PPA will not become effective until all commissioning and reliability trialling has been successfully completed. This raises the important issue of the Contractor's grid access and the need for the EPC Contract to clearly define the obligations of the Project Company in providing grid access.

Lenders want to avoid the situation where the Project Company's obligation to ensure grid access is uncertain. This will result in protracted disputes with the Contractor concerning its ability to place load onto the grid system and to obtain extensions of time in situations where delay has been caused as a result of the failure or otherwise of the Project Company to provide grid access.

Grid access issues arise at two levels:

- the obligation to ensure that the infrastructure is in place
- the obligation to ensure that the Contractor is permitted to export power.

With respect to the obligation to ensure that the infrastructure is in place, the responsibility will be project-specific and covered in the relevant Connection Agreement. In the case of existing grid infrastructure already in situ, the grid operator will retain control of existing grid infrastructure and carry out any necessary upgrades. The cost will form part of the connection fee payable by the Project Company in accordance with the Connection Agreement. For new infrastructure (for example, substations, or material upgrades to existing underground or overhead infrastructure), the Project Company will typically bear this risk vis à vis the Contractor, with the relevant requirements and works passed directly from the Connection Agreement to the Contractor via the EPC Contract. Issues that must be considered include:

- What are the facilities to be constructed and how will these facilities interface with the Contractor's works? Is the construction of these facilities covered by the Connection Agreement or any other construction agreement? If so, are the rights and obligations of the Project Company dealt with in a consistent manner?
- Will the infrastructure be project-specific? Or will it be made available by the grid operator to other applications and projects (including, potentially, projects of a similar nature)?
- What is the timing for completion of the infrastructure? Will it fit in with the timing under the EPC Contract?

With respect to the Contractor's ability to export power, the EPC Contract must adequately deal with this risk and satisfactorily answer the following questions to ensure smooth testing, commissioning and commercial operation:

- What is the extent of the grid access obligation? Is it merely an obligation to ensure that the infrastructure necessary for the export of power is in place or does it involve a guarantee that the grid will take all power that the Contractor is able to produce?
- What is the timing for the commencement of this obligation? Does the obligation cease at the relevant target date of completion? If not, does its nature change after the date has passed?
- What is the obligation of the Project Company to provide grid access in cases where the Contractor's commissioning/facility is unreliable? Is it merely a reasonableness obligation?
- Is the relevant grid robust enough to allow for full testing by the Contractor – for example, the performance of full load rejection testing?
- What is the impact of relevant national grid codes or legislation and their interaction with both the EPC Contract and the PPA? Does the facility comply with the generator performance standards and any other AEMO requirements for a project of this nature? Given the evolving technology in this sector and the changing landscape in respect of applications to connect to the grid, it is not uncommon for new or updated requirements to be implemented in the intervening period between contract execution and completion of practical works.

Many EPC Contracts are silent on these matters or raise far more questions than they answer. The Project Company's failure will stem from restrictions imposed on it under either the PPA or the Connection Agreement or both, so the best answer is to accurately 'back to back' the Project Company's obligations under the EPC Contract (usually to provide an EOT or costs) with the PPA and Connection Agreement. This approach will not eliminate the risk associated with grid access issues, but will make it more manageable.

A variety of projects we have worked on in Asia, and more recently in Australia, have incurred significant amounts of time and costs in determining the grid access obligations under the EPC Contract. This experience has taught us that it is a matter which must be resolved at the contract formation stage. Therefore, we recommend inserting the clauses in Appendix 3.

Interfacing of commissioning and testing regimes

It is also important to ensure that the commissioning and testing regimes in the EPC Contract mirror the requirements for commercial operation under the PPA. Mismatches can result in delays, lost revenue and liability for damages under the PPA or concession agreement, all of which have the potential to cause disputes.

Testing/trialling requirements under both contracts must provide the necessary Project Company satisfaction under the EPC Contract and offtaker satisfaction under the PPA. Relevant testing issues that must be considered include:

- Are differing tests/trialling required under the EPC Contract and the PPA? If so, are the differences manageable for the Project Company or likely to cause significant disruption?
- Is there consistency between obtaining handover from the Contractor under the EPC Contract and commercial operation? It is imperative to prescribe back-to-back testing under the relevant PPA and the EPC Contract which will result in smoother progress of the testing and commissioning and will better facilitate all necessary supervision and certification. It must not be forgotten that various certifications will be required at the Lender level. The last thing Lenders want is the process to be held up by their own requirements for certification. To avoid delays and disruption, it is important that the Lenders' engineer is acquainted with the details of the project and any potential difficulties with the testing regime so that any potential problems can be identified early and resolved without impacting on the commercial operation of the solar facility.
- Is the basis of the testing to be undertaken mirrored under both the EPC Contract and the PPA? For example, on what basis are various performance tests to be undertaken? Are they to be undertaken on a per unit basis or a facility output basis?
- What measurement methodology is being used? Are the correction factors to be applied under the relevant documents uniform? Are references to international standards or guidelines to a particular edition or version? Is there an order of precedence where standards or guidelines conflict?
- Are all tests necessary for the Contractor to complete under the EPC Contract able to be performed as a matter of practice?

Significantly, if the relevant specifications are linked to guidelines such as the World Bank environmental guidelines, consideration must be given to changes that may occur in these guidelines. The EPC Contract reflects a snapshot of the standards existing at a time when that contract was signed. The actual construction of the project may be undertaken a number of years after that date, which may allow mismatches if legislation or guidelines have changed in the interim. It is important that there is certainty as to which standard applies for both the PPA and the EPC Contract. Is it the standard at the time of entering the EPC Contract or is it the standard that applies at the time of testing?

Consideration must be given to the appropriate mechanism to deal with potential mismatches between the ongoing obligation of complying with laws and the Contractor's obligation to build to a specification agreed at a previous time. Consideration must also be given to requiring satisfaction of guidelines as amended from time to time. The breadth of any change of law provision will be at the forefront of any review.

The above issues raise the importance of the testing schedules to the EPC Contract and the PPA. The size and importance of the various projects to be undertaken mean that the days are gone where schedules could be attached at the last minute without review. Discrepancies between the relevant testing and commissioning requirements will only serve to delay and distract all parties from the successful completion of testing and reliability trials.

These are all areas where lawyers can add value to the successful completion of projects by being alert to and dealing with such issues at the contract formation stage.

Warranty and design life requirements for key component parts

Subject to the Principal's right (if any) to free issue specified key component parts, the Contractor will primarily be responsible for procuring the equipment required for the facility. Whilst this may be left entirely to the Contractor to determine, to ensure a degree of Project Company control over the technology used or the suppliers involved in the project, the EPC Contract will typically set out a selection of approved suppliers for key component parts, from which the Contractor may then appoint at its own discretion. As a result, the Contractor is expected to stand behind its supply chain and its decision to use certain equipment manufacturers at the expense of others and must warrant that the equipment used is capable of the expected design life as set out in the performance specification. Other warranties may include that the equipment is new and unused, the equipment utilises proven technology that has been operated commercially on projects of similar size and scale and is capable of being insured.

In addition to this design life warranty, key component parts (including spare parts) will be subject to manufacturer warranties. For example, in solar projects, the following parts are typically classified as key component parts:

- panels
- trackers
- module supports (for example, racking)
- inverters
- batteries.

The Contractor must provide the Project Company with fully assignable warranties for warranted component parts for the duration outlined in the performance specification. This gives the Project Company (or its appointed O&M Operator) the ability to make a direct claim against the manufacturer if any defects occur during the project life. The Contractor is liable for such defects during the duration of the warranty period, provided that its liability will be limited after the defects liability period under the contract to the collateral warranties obtained and collated. Lenders will also take security over those warranties, adding a further layer of protection in respect of defects.

Free issue by the Project Company

The concept of free issue of equipment by a Principal is relatively standard practice in other industries and is now being considered in the solar industry in the context of the generation equipment. In particular, the free issue of generation equipment enables the Project Company to procure the equipment at a lower cost using market advantage, such as where the Project company may be better positioned to negotiate better pricing or warranty conditions than appointed Contractor(s), including in relation to their:

- size and reputation
- existing relationships and influences, with institutional equity investors often having stronger supply relationships than Contractors
- the attractiveness of large-scale projects or pipelines of projects, leading to a steady line of work for suppliers.

The reduction in Contractor overheads (for example, head office costs) associated with the procurement of major items of generation equipment combined with limited Contractor preliminaries due to reduced insurances, site accommodation etc. required from the reduced scope will ultimately be reflected in a lower overall Contract price.

This control over the appointment of generation equipment suppliers and the possible reduction in the contract price may increase risk for the Project Company. In some instances, Contractors have been reluctant to accept underperformance risk for generation equipment procured by the Project Company, for example, they are unable to commit to a turnkey solution backed by performance guarantees and a compensation regime for underperformance. However we believe that free issue does not increase the risk profile for Contractors and does not materially change the status quo. The generation equipment will still be delivered to a designated handover spot on site in the same manner as a standard form EPC Contract; the only difference will be the party responsible for the procurement of that supply prior to its arrival. The reticence from Contractors is mostly commercial and linked to the loss of margins on the procurement of the generation equipment. This loss can be offset on utility-scale projects or portfolios of projects which promise large packages or pipelines of work. Further, with much larger solar projects becoming more prevalent, the impact of the contingent liability of a supply chain failure (let alone an actual failure) on the balance sheet of a Contractor may result in a rethink, albeit all parties (including Lenders) need to carefully understand and work through the appropriate allocation of responsibility for a failure to meet the performance guarantees and defects.

Underperformance can also be mitigated in the agreement between the Project Company and the generation equipment supplier (**Supply Agreement**) and the EPC Contract. Under the Supply Agreement, the generation equipment supplier will provide collateral warranties for the benefit of the Contractor or each party would enter into a tripartite agreement in relation to the quality and performance of the equipment. Lenders will also take security over the Project Company's rights under those arrangements (including the Supply Agreement). The EPC Contract will entitle the Contractor to attend (with the Project Company) any factory acceptance tests conducted on the generation equipment, in a similar manner to the standard approach where the Project Company may attend such tests when the equipment is procured by the Contractor. The generation equipment will need to pass those tests and be of a suitable quality to be installed, tested and commissioned. In any event, generation equipment suppliers will also provide long-term warranties (in addition to the aforementioned collateral warranties) for their equipment: the warranties will be for the benefit of the Project Company (in the case of free issue) or assigned to the Project Company from the Contractor (in the case of standard form EPC Contract, as outlined above) and Lenders will also take security over those warranties, adding a further layer of protection in respect of underperformance.

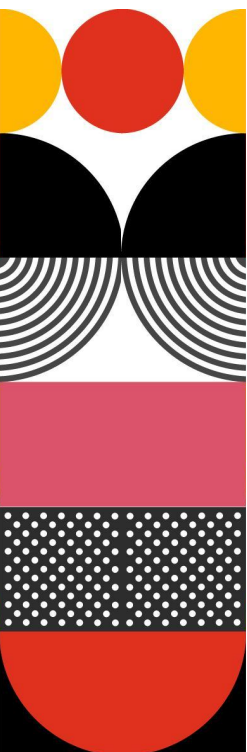
As mentioned above, the Project Company will assume responsibility for the delivery of the free issue generation equipment to a designated delivery point on site in the same way that the Contractor would arrange for the delivery of other equipment to that delivery point. The Contractor will not be responsible for delay in delivery to site unless the delay is caused by the Contractor's inability to receive the generation equipment procured by the Project Company at the designated delivery point. The Contractor will only take the risk of damage to the free issue generation equipment after it has been delivered to the designated delivery point at the project site.

However, if the free issue generation equipment is damaged prior to installation (for example, during shipment or unpacking) and replacements are required, the Contractor will need to be able procure the replacement equipment. A tripartite agreement between the generation equipment supplier, the Project Company and the Contractor is recommended which provides the Contractor with the benefit of the Project Company's right to place additional orders for supply should breakages occur. The collateral warranties described above can also be captured in this tripartite agreement.

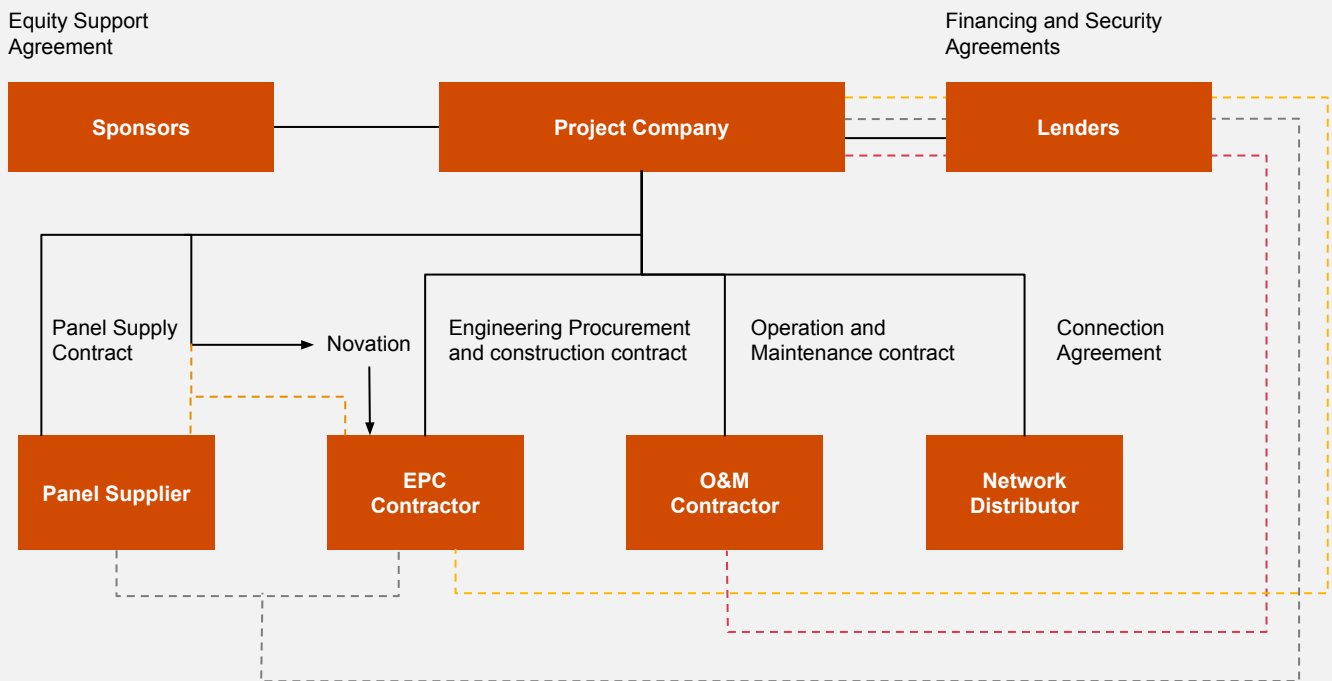
In advance of entering into the tripartite agreement, the Contractor will require details of the generation equipment supply agreement and the prices charged, though this information may be commercially sensitive to the supplier and the supplier must agree to this approach from the outset (and is in fact bound to enter the tripartite agreement as per the terms of the supply contract). Given that the Contractor will be responsible for the generation equipment after delivery until the end of the defect liability period, the collateral warranties in the tripartite agreement must be in place for the duration of this period or the tripartite agreement must otherwise allow the Contractor to claim directly against the equipment supplier.

After the defect liability period, the Project Company's rights against the generation equipment supplier will continue, though may be subject to a similar tripartite arrangement with the appointed O&M Operator. On occasion, the Contractor may agree to be responsible for the delivery of the generation equipment from the factory and be responsible for the insurance and customs clearance and the payment of all costs including import duties and taxes, though this will be subject to negotiation and the best commercial outcome for each party.

The Project Company will also take price fluctuations and foreign exchange risk for the generation equipment, though the Supply Agreement should contain clearly defined parameters to hold price (or restrict price increases above agreed thresholds) and limit foreign exchange exposure, in a similar manner to standard form EPC Contract wording in relation to contract price.



The diagram below summarises the contracts and agreements recommended for free issue of generation equipment (in this example, panels) in an EPC structure:



Tripartite Deeds:

- EPC Lender Tripartite
- O&M Lender Tripartite
- Lender Panel Supply Tripartite
- EPC Panel Supply Tripartite

An example of EPC Contract free issue wording is included in Appendix 4.

Interface issues between stakeholders and Contractors

At a fundamental level, it is imperative that the appropriate party corresponds with the relevant project stakeholders. The Project Company must ensure the EPC Contract states clearly that it is the appropriate party to correspond with any government agencies or authorities and the offtaker. Any uncertainty in the EPC Contract may unfortunately see the Contractor liaising directly with these third parties and possibly risking the relationship of the Project Company with key influencers, customers and long-term neighbours. Significantly, it is the Project Company that must develop and nurture an ongoing and long-term relationship with key stakeholders, particularly the offtaker. On the other hand, it is the Contractor’s prime objective to complete the project on time or earlier at a cost that provides it with significant profit. The clash of these conflicting objectives in many cases does not allow for such a smooth process. Resolving these issues at the EPC Contract formation stage is imperative.

Key performance clauses in power EPC Contracts

Rationale for imposing liquidated damages

Almost every construction contract will impose liquidated damages for delay and impose standards in relation to the quality of construction. Most, however, do not impose PLDs. EPC Contracts impose PLDs because the achievement of the performance guarantees has a significant impact on the ultimate success of a project. Similarly, it is important the solar facility commences operation on time given the liability the Project Company will have under other project agreements. This is why DLDs are imposed. DLDs and PLDs are both used to motivate the Contractor to fulfil its contractual obligations.

The law of liquidated damages

As previously discussed, liquidated damages must be a genuine pre-estimate of the Project Company's loss. If liquidated damages are more than a genuine pre-estimate, they will be a penalty and unenforceable. There is no legal sanction for setting a liquidated damages rate below that of a genuine pre-estimate; however, there are the obvious financial consequences.

In addition to being unenforceable as a penalty, liquidated damages can also be void for uncertainty or unenforceable because they breach the 'prevention principle'. Void for uncertainty means, as the term suggests, that it is not possible to determine how the liquidated damages provisions work. In those circumstances, a court will void the liquidated damages provisions. The prevention principle was developed by the courts to prevent Principals from delaying Contractors and then claiming DLDs. It is discussed in more detail below in the context of extensions of time.

Prior to discussing the correct drafting of liquidated damages clauses to ensure they are not void or unenforceable, it is worth considering the consequences of an invalid liquidated damages regime. If the EPC Contract contains an exclusive remedies clause the result is simple – the Contractor will have escaped liability unless the contract contains an explicit right to claim damages at law if the liquidated damages regime fails.

If, however, the EPC Contract does not contain an exclusive remedies clause, the non-challenging party should be able to claim at law for damages it has suffered as a result of the challenging party's non-performance or defective performance. What then is the impact of the caps in the now-invalidated liquidated damages clauses?

The position is unclear in common law jurisdictions, and a definitive answer cannot be provided based upon the current state of authority. It appears the answer varies depending upon whether the clause is invalidated due to its character as a penalty or because of uncertainty or unenforceability. Our view of the current position is set out below. We note that whilst the legal position is not settled, the position presented below does appear logical.

- **Clause invalidated as a penalty:** When liquidated damages are unenforceable because they are a penalty (for example, they do not represent a genuine pre-estimate of loss), the liquidated damages or its cap will not act as a cap on damages claims at general law. We note that it is rare for a court to find liquidated damages are penalties in contracts between two sophisticated, well-advised parties.
- **Clause invalidated due to acts of prevention by the Project Company:** Where a liquidated damages clause is invalidated due to an act of prevention by the Project Company for which the Contractor is not entitled to an EOT, the liquidated damages or its cap will not act as a cap on damages claims at general law.

A liquidated damages clause which is unworkable, or too uncertain to ascertain what the parties intended, is severed from the EPC Contract in its entirety and will not act as a cap on the damages recoverable by the Principal from the Contractor. Upon severance, the clause is, for the purposes of contractual interpretation, ignored.

However, it should be noted that the threshold test for rendering a clause void for uncertainty is high, and courts are reluctant to hold that the terms of a contract, in particular a commercial contract where performance is well advanced, are uncertain.

Drafting of liquidated damages clauses

Given the role liquidated damages play in ensuring EPC Contracts are bankable, and the consequences detailed above of the regime not being effective, it is vital to ensure that liquidated damages clauses are properly drafted so that Contractors cannot avoid their liquidated damages liability on a legal technicality.

Therefore, it is important from a legal perspective to ensure DLDs and PLDs are dealt with separately. If a combined liquidated damages amount is levied for late completion of the works, it risks being struck out as a penalty because it will overcompensate the Project Company. However, a combined liquidated damages amount levied for underperformance may under-compensate the Project Company.

Our experience shows that there is a greater likelihood of delayed completion than there is of permanent underperformance. One of the reasons why projects are not completed on time is that Contractors are often faced with remedying performance problems. This means, from a legal perspective, if there is a combination of DLDs and PLDs, the liquidated damages rate should include more of the characteristics of DLDs to protect against the risk of the liquidated damages being found to be a penalty.

If a combined liquidated damages amount includes an NPV or performance element, the Contractor will be able to argue that the liquidated damages are not a genuine pre-estimate of loss when liquidated damages are levied for late completion only. However, if the combined liquidated damages calculation takes on more of the characteristics of DLDs, the Project Company will not be properly compensated if there is permanent underperformance.

Drafting of the performance guarantee regime

Now that it is clear that DLDs and PLDs must be dealt with separately, it is worth considering, in more detail, how the performance guarantee regime should operate. A properly drafted performance testing and guarantee regime is important because the success or failure of the project depends, all other things being equal, on the performance of the solar facility.

The major elements of the performance regime are:

- testing
- guarantees
- liquidated damages.

Liquidated damages are discussed above. Testing and guarantees are discussed below.

Testing

Performance tests may cover a range of areas. Two of the most common are functional tests and performance tests.

- **Functional tests/factory acceptance tests:** These test the functionality of certain parts of the solar facility prior to shipping to site (or on occasion, upon arrival at site). They are usually discrete tests specific to items of equipment which do not test the solar facility as a whole. Liquidated damages do not normally attach to these tests. Instead, they are absolute obligations that must be complied with. If not, the solar facility will not reach the next stage of completion and, in the case of factory acceptance, delivery to the project site.
- **Performance tests:** These test the ability of the solar facility to meet the performance criteria specified in the contract and occur at commercial operation and again in the following years. We typically see performance ratio (**PR**) testing used in the utility-scale solar industry. The Contractor will be liable for PLDs if the actual PR is less than the Guaranteed PR during commercial operation performance tests and post-commercial operation performance tests.

Upon completion of the commercial operation performance tests, for the Project Company to issue a commercial operation certificate, the actual PR must be above the Minimum PR (typically set at 95–98% of the Guaranteed PR).

If the Minimum PR is not achieved during the commercial operation performance tests, the Contractor may make modifications, remedy defects and retest to achieve at least the Minimum PR until it reaches the cap of its liability for DLDs. If the commercial operation performance tests demonstrate that the plant is performing below the Guaranteed PR (but above the Minimum PR), the Project Company may issue the certificate of commercial operation and withhold the final contract payment (typically equivalent to 5–10% of the contract price).

Although the commercial operation performance tests are performed over seven days (so will not give an accurate representation of the performance for an entire calendar year), the result is corrected for seasonality and temperature, and the Contractor may declare a day's tests results inadmissible under certain conditions (subject to a maximum cap on the number of times) in the commercial operation performance testing schedule.

As part of the commercial operation performance tests, the Contractor must also calculate the total of the nameplate values of the rated power of the PV modules installed (**Installed DC Capacity**). The Contractor guarantees that the Installed DC Capacity will be no less than the Guaranteed DC Capacity and will be liable by way of PLDs an amount of []% for each 1% (pro rated for part thereof) by which the Installed DC Capacity falls short of the Guaranteed DC Capacity.

The Guaranteed PR should be set at a level of performance at which it is economic to accept the solar facility. Lender's input will be vital in determining what this level is. However, it must be remembered that Lenders have different interests to the Principal. Lenders will, generally speaking, be prepared to accept a solar facility that provides sufficient income to service the debt. However, in addition to covering the debt service obligations, the Principal (and the Principal's equity sponsors) will also want to receive a return on their equity investment and satisfy the requirements of any PPA. If that will not be provided via the sale of electricity because the Contractor has not met the performance guarantees, the Principal will have to rely on the PLDs to earn their return. In some projects, the guarantee tests occur after handover of the solar facility to the Project Company. This means the Contractor no longer has any liability for DLDs during performance testing.

In our view, it is preferable, especially in project-financed projects, for handover to occur after completion of performance testing. This means the Contractor continues to be liable for DLDs until either the solar facility operates at the guaranteed level or the Contractor pays PLDs where the solar facility does not operate at the guaranteed level. Obviously, DLDs will be capped (usually at 15–20% of the contract price); therefore, the EPC Contract should give the Project Company the right to call for the payment of the PLDs and accept the solar facility. If the Project Company does not have this right, the problem mentioned above will arise; namely, the Project Company will not have received its solar facility and will not receive any DLDs as compensation.

As noted above, it is common for the Contractor to be given an opportunity to modify the solar facility if it does not meet the performance guarantees on the first attempt. This is because the PLD amounts are normally very large and most Contractors would prefer to spend the time and the money necessary to remedy performance instead of paying PLDs. Not giving Contractors this opportunity will likely lead to an increased contract price both because Contractors will over-engineer the solar facility and will build a contingency for paying PLDs into the contract price. The second reason is because in most circumstances the Project Company will prefer to receive a solar facility that operates at 100% capacity. The right to modify and retest is another reason why DLDs should be payable up to the time the performance guarantees are satisfied.

If the Contractor is to be given an opportunity to modify and retest, the EPC Contract must deal with who bears the costs of the additional resources and consumables required to undertake the retesting. The cost of the fuel in particular can be significant and should, in normal circumstances, be to the Contractor's account because the retesting only occurs if the performance guarantees are not met at the first attempt.



Technical issues

Ideally, the technical testing procedures should be set out in the EPC Contract. However, for a number of reasons, including the fact that it is often not possible to fully scope the testing program until the detailed design is complete, the testing procedures are usually left to be agreed during construction by the Contractor, the Project Company's representative or engineer and, if relevant, the Lenders' technical adviser. However, a properly drafted EPC Contract should include the guidelines for testing.

The complete testing procedures must, as a minimum, set out details of:

- **Testing methodology:** Reference is often made to standard methodologies, for example, the American Society of Mechanical Engineers methodology. References will need to identify if specific versions or editions are relevant.
- **Testing equipment:** Who is to provide it, where is it to be located, and how sensitive must it be?
- **Tolerances:** What is the margin of error?
- **Ambient conditions:** What atmospheric conditions (including radiation, cloud cover and dust) are assumed to be the base case? Testing results will need to be adjusted to consider any variance from these ambient conditions.
- **Attendees:** Who may attend? And who pays for such attendance? Sufficient notice will also be required to allow travel arrangements for attendees.

In addition, for utility-scale solar projects with multi-units the testing procedures must state those tests to be carried out on a per unit basis, per package basis and those on the basis of an entire facility. This will be particularly relevant for larger, giga-sized projects which involve multiple stages and different testing/commissioning periods.

Provision of consumables during testing

The responsibility for the provision of consumables required to carry out the performance tests must be clearly set out in the EPC Contract. In general, the Contractor will be responsible.

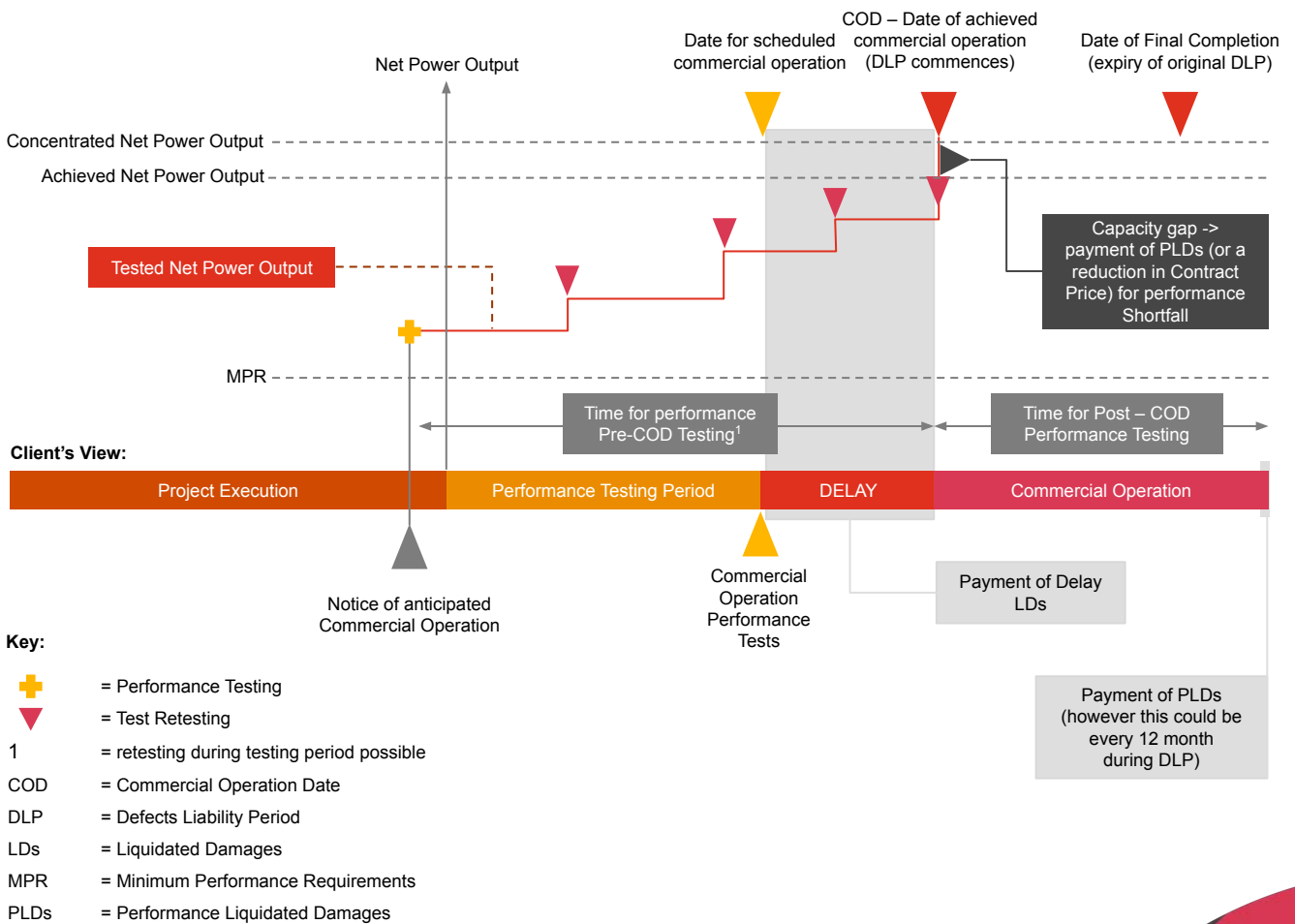
Example

An example of the performance testing and guarantee regime we have used on a number of projects is included in Appendix 1.

These example clauses are only extracts from a complete contract and ideally should be read as part of that entire contract and, in particular, with the clauses that deal with DLDs, PLDs, liability, and the scope of the Contractor's obligations, including any fitness for purpose warranties and termination. Nonetheless, they do provide an example of how a performance testing and liquidated damages regime can operate.

The process is best illustrated diagrammatically. The flowchart below demonstrates how the various parts of the performance testing regime should interface.

Performance guarantees and testing



Key general clauses in EPC Contracts: Delay and extensions of time

The prevention principle

As noted previously, one of the advantages of an EPC Contract is that it provides the Project Company with a fixed completion date. If the Contractor fails to complete the works by the required date, it is liable for DLDs. However, in some circumstances the Contractor is entitled to an extension of the date for completion. Failure to grant an extension for a delay caused by the Project Company can void the liquidated damages regime and set time at large. This means the Contractor is only obliged to complete the works within a reasonable time.

This is the situation under contracts governed by common law⁷ due to the 'prevention principle'. The prevention principle was developed by the courts to prevent employers (for example, Project Companies) from delaying Contractors and then claiming DLDs.

The legal basis of the prevention principle is unclear and it is uncertain whether you can contract out of the prevention principle. Logically, given most commentators believe the prevention principle is an equitable principle, explicit words in a contract should be able to override the principle. However, the courts have tended to apply the prevention principle even in circumstances where it would not, on the face of it, appear to apply. Therefore, there is a certain amount of risk involved in trying to contract out of the prevention principle. The more prudent and common approach is to accept the existence of the prevention principle and provide for it in the EPC Contract.

The Contractor's entitlement to an EOT is not absolute. It is possible to limit the Contractor's rights and impose preconditions on the ability of the Contractor to claim an EOT. A relatively standard EOT clause would entitle the Contractor to an EOT for:

- an act, omission, breach or default of the Project Company
- suspension of the works by the Project Company (except where the suspension is due to an act or omission of the Contractor)
- a variation (except where the variation is due to an act or omission of the Contractor)
- FM.

which causes a delay on the critical path⁸ and for which the Contractor has given notice within the period specified in the contract. It is permissible (and advisable) from the Project Company's perspective to make both the necessity for the delay to impact the critical path and the obligation to give notice of a claim for an EOT conditions precedent to the Contractor's entitlement to receive an EOT. In addition, it is usually good practice to include a general right for the Project Company to grant an EOT at any time.

However, this type of provision must be carefully drafted because some courts have held (especially when the Project Company's representative is an independent third party) that the inclusion of this clause imposes a mandatory obligation on the Project Company to grant an EOT whenever it is fair and reasonable to do so, regardless of the strict contractual requirements. Accordingly, from the Project Company's perspective, it must be made clear that the Project Company has complete and absolute discretion to grant an EOT and that it is not required to exercise its discretion for the benefit of the Contractor.

Similarly, following some recent common law decisions, the Contractor should warrant that it will comply with the notice provisions that are conditions precedent to its right to be granted an EOT.

We recommend using the wording in Appendix 2.

Concurrent delay

In the suggested EOT clause, one of the subclauses refers to concurrent delays. This is relatively unusual because most EPC Contracts are silent on this issue. For the reasons explained below we do not agree with that approach.

A concurrent delay occurs when two or more causes of delay overlap. It is important to note that it is the overlapping of the causes of the delays not the overlapping of the delays themselves. In our experience, this distinction is not often made, which leads to confusion and sometimes disputes. More problematic is when the contract is silent on the issue of concurrent delay and the parties assume the silence operates to their benefit. As a result of conflicting case law it is difficult to determine who, in a particular fact scenario, is correct. This can also lead to protracted disputes and outcomes contrary to the intention of the parties.

⁷ It can arise in civil law countries as well. It will depend on the relevant provisions of the code in those countries. For example, the PRC contract law contains articles that entitle a Contractor to an EOT for employer-caused delays.

⁸ The critical path is the path on the construction program me that shows the dates by which certain activities must be completed in order to achieve completion by the specified date.

There are a number of different causes of delay which may overlap with delay caused by the Contractor. The most obvious causes are the acts or omissions of the Project Company.

The Project Company often has obligations to provide certain access rights, materials or infrastructure to enable the Contractor to complete the works. The timing for the provision of that material or infrastructure (and the consequences for failing to provide it) can be affected by a concurrent delay.

For example, the Project Company is usually obliged, as between the Project Company and the Contractor, to provide a transmission line to connect to the solar facility by the time the Contractor is ready to commission the solar facility. Given that the construction of the transmission line can be expensive, the Project Company is likely to want to incur that expense as close as possible to the date that commissioning is due to commence. It will also be subject to what can be agreed with the grid operator in the Connection Agreement, which itself will be subject to the grid operator's available resources and the grid's capacity and other commitments. If the Contractor is behind schedule under the EPC Contract, the Project Company may seek to delay the commencement of works required in respect of the transmission line to allow the EPC Contract works to 'catch up' and avoid the potential for delay costs to be incurred under the Connection Agreement. In the absence of a concurrent delay clause, this action by the Project Company, in response to the Contractor's delay, could entitle the Contractor to an EOT.

Concurrent delay is dealt with differently in the various international standard forms of contract. Accordingly, it is not possible to argue that one approach is definitely right and one is definitely wrong. In fact, the right approach will depend on which side of the table you are sitting.

In general, there are three main approaches for dealing with the issue of concurrent delay. These are:

- **Option one:** The Contractor has no entitlement to an EOT if a concurrent delay occurs.
- **Option two:** The Contractor has an entitlement to an EOT if a concurrent delay occurs.
- **Option three:** The causes of delay are apportioned between the parties and the Contractor receives an EOT equal to the apportionment. For example, if the causes of a ten day delay are apportioned 60:40 between the Project Company and Contractor, the Contractor would receive a six day EOT.

Each of these approaches is discussed in more detail below.

Option one: Contractor not entitled to an EOT for concurrent delays

A common, Project Company friendly, concurrent delay clause for option one is:

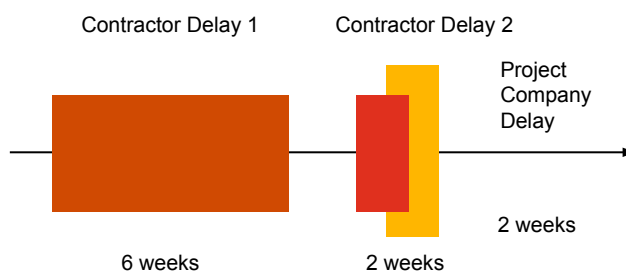
If more than one event causes concurrent delays and the cause of at least one of those events, but not all of them, is a cause of delay which would not entitle the Contractor to an extension of time under [EOT clause], then to the extent of the concurrency, the Contractor will not be entitled to an extension of time.

Nothing in the clause prevents the Contractor from claiming an EOT under the general EOT clause. What the clause does do is to remove the Contractor's entitlement to an EOT when there are two or more causes of delay and at least one of those causes would not entitle the Contractor to an EOT under the general EOT clause.

For example, if the Contractor's personnel were on strike and during that strike the Project Company failed to approve drawings in accordance with the contractual procedures, the Contractor would not be entitled to an EOT for the delay caused by the Project Company's failure to approve the drawings.

The operation of this clause is best illustrated diagrammatically.

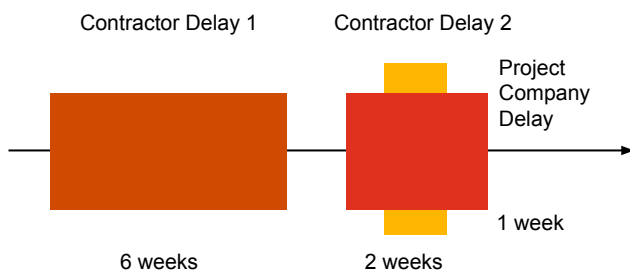
Example 1: Contractor not entitled to an EOT for Project Company caused delay



In this example, the Contractor would not be entitled to any EOT because Contractor Delay 2 overlaps entirely with the Project Company delay. Therefore, using the example clause above, the Contractor is not entitled to an EOT to the extent of the concurrency. As a result, at the end of Contractor Delay 2 the Contractor would be in eight weeks delay (assuming the Contractor has not, at its own cost and expense, accelerated the works).

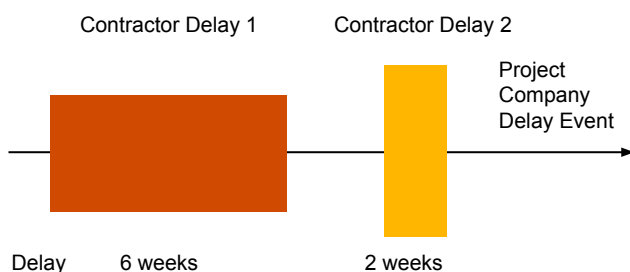


Example 2: Contractor entitled to an EOT for Project Company caused delay



In this example, where there is no overlap between the Contractor and the Project Company delay events, the Contractor would be entitled to a two week EOT for the Project Company delay. Therefore, at the end of the Project Company delay the Contractor will remain in six weeks delay, assuming no acceleration.

Example 3: Contractor entitled to an EOT for a portion of the Project Company caused delay



In this example, the Contractor would be entitled to a one week EOT because the delays overlap for one week. Therefore, the Contractor is entitled to an EOT for the period when they do not overlap, for example, when the extent of the concurrency is zero. As a result, after receiving the one week EOT, the Contractor would be in seven weeks delay, assuming no acceleration.

From the Project Company's perspective, we believe this option is both logical and fair. For example, if, in Example 2, the Project Company delay was a delay in the approval of drawings and the Contractor delay was the entire workforce being on strike, what logic is there in the Contractor receiving an EOT? The delay in approving drawings does not actually delay the works because the Contractor could not have used the drawings given its workforce was on strike. In this example, the Contractor would suffer no detriment from not receiving an EOT. However, if the Contractor did receive an EOT it would effectively receive a windfall gain.

The greater number of obligations the Project Company has, the more reluctant the Contractor will likely be to accept option one. Therefore, it may not be appropriate for all projects.

Option two: Contractor entitled to an EOT for concurrent delays

Option two is the opposite of option one and is the position in many of the Contractor-friendly standard forms of contract. These contracts also commonly include provisions for EOT to the effect that the Contractor is entitled to an EOT for any cause beyond its reasonable control. This, in effect, means there is no need for a concurrent delay clause.

The suitability of this option will obviously depend on which side of the table you are sitting. This option is less common than option one but is nonetheless sometimes adopted. It is especially common when the Contractor has a superior bargaining position.

Option three: Responsibility for concurrent delays is apportioned between the parties

Option three is a middle-ground position that has been adopted in some of the standard form contracts. For example, the Australian Standards construction contract AS4000 adopts the apportionment approach. The AS4000 clause states:

34.4 Assessment

When both non-qualifying and qualifying causes of delay overlap, the superintendent shall apportion the resulting delay to WUC according to the respective causes' contribution. In assessing each EOT the Superintendent shall disregard questions of whether:

- *WUC can nevertheless reach practical completion without an EOT*
- *the Contractor can accelerate, but shall have regard to what prevention and mitigation of the delay has not been effected by the Contractor.*

We appreciate the intention behind the clause and the desire for both parties to share responsibility for the delays they cause. However, we have some concerns about this clause and the practicality of the apportionment approach in general. For example, what if the qualifying cause of delay was the Project Company's inability to provide access to the site and the non-qualifying cause of delay was the Contractor's inability to commence the works because it had been boycotted by unions. How should the causes be apportioned? In this example, the two causes are both 100% responsible for the delay.

In our view, an example such as this where both parties are at fault has two possible outcomes. Either:

- the delay is split down the middle and the Contractor receives 50% of the delay as an EOT, or
- the delay is apportioned 100% to the Project Company and therefore the Contractor receives 100% of the time claimed.

The delay is unlikely to be apportioned 100% to the Contractor because a judge or arbitrator will likely view that as unfair, especially if there is a potential for significant liquidated damages liability. We appreciate that the above is not particularly rigorous legal reasoning; however, the clause does not lend itself to rigorous analysis.

In addition, option three is only likely to be suitable if the party undertaking the apportionment is independent from both the Project Company and the Contractor.

Exclusive remedies and fail safe clauses

It is common for Contractors to request the inclusion of an exclusive remedies clause in an EPC Contract. However, from the perspective of the Project Company, the danger of an exclusive remedies clause is that it prevents the Project Company from recovering any type of damages not specifically provided for in the EPC Contract.

An EPC Contract is conclusive evidence of the agreement between the parties to that contract. If a party clearly and unambiguously agrees that their only remedies are those within the EPC Contract, they will be bound by those terms. However, the courts have been reluctant to come to this conclusion without clear evidence of an intention of the parties to the EPC Contract to contract out of their legal rights. This means if the common law right to sue for breach of EPC Contract is to be contractually removed, it must be done through very clear words.

Contractor's perspective

The main reason for a Contractor insisting on the Project Company being subject to an exclusive remedies clause is to have certainty about its potential liabilities. The preferred position for a Contractor will be to confine its liabilities to what is specified in the EPC Contract. For example, an agreed rate of liquidated damages for delay and, where relevant, underperformance of the solar facility. A Contractor will also generally require the amount of liquidated damages to be subject to a cap and for the EPC Contract to include an overall cap on its liability.

Project Company's perspective

The preferred position for the Project Company is for it not to be subject to an exclusive remedies clause. An exclusive remedies clause limits the Project Company's right to recover for any failure of the Contractor to fulfil its contractual obligations to those remedies specified in the EPC Contract. For this reason, an exclusive remedies clause is an illogical clause to include in an EPC Contract from the perspective of the Project Company because it means that the Project Company must draft a remedy or exception for each obligation. This represents an absurd drafting position.

For example, take the situation where the EPC Contract does not have any provision for the recovery of damages other than liquidated damages. In this case, if the Contractor has either paid the maximum amount of liquidated damages or delivered the solar facility in a manner that does not require the payment of liquidated damages (for example, it is delivered on time and performs to specification) but subsequent to that delivery the Project Company is found to have a claim, say for defective design which manifests itself after completion, the Project Company will have no entitlement to recover any form of damages as any remedy for latent defects has been excluded.

The problem is exacerbated because most claims made by the Project Company will in some way relate to performance of the solar facility and PLDs were expressed to be the exclusive remedy for any failure of the solar facility to perform in the required manner.

For example, any determination as to whether the solar facility is fit for purpose will necessarily depend on the level and standard of the performance of the solar facility. In addition to claims relating to fitness for purpose, the Project Company may also wish to make claims for, amongst other things, breach of contract, breach of warranty or negligence. The most significant risk for the Project Company in an EPC Contract is where there is an exclusive remedies clause and the only remedies for delay and underperformance are liquidated damages. If, for whatever reason, the liquidated damages regimes are held to be invalid, the Project Company would have no recourse against the Contractor as it would be prevented from recovering general damages at law, and the Contractor would escape liability for late delivery and underperformance of the solar facility.



Fail safe clauses

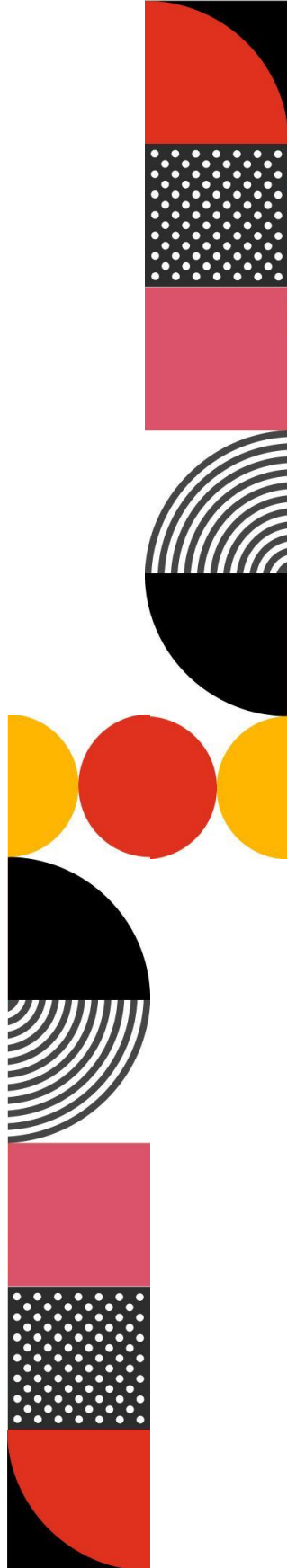
In the case of an exclusive remedies clause, the Project Company must ensure all necessary exceptions are expressly included in the EPC Contract. In addition, drafting must be included to allow the Project Company to recover general damages at law for delay and underperformance if the liquidated damages regimes in the EPC Contract are held to be invalid. To protect the position of the Project Company (if liquidated damages are found for any reason to be unenforceable and there is an exclusive remedies clause), we recommend the following clauses be included in the EPC Contract:

[].1 If clause [delay liquidated damages] is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Project Company from claiming delay liquidated damages, the Project Company is entitled to claim against the Contractor damages at law for the Contractor's failure to complete the works by the date for practical completion.

[].2 If [].1 applies, the damages claimed by the Project Company must not exceed the amount specified in item [] of Appendix [] for any one day of delay and in aggregate must not exceed the percentage of the EPC Contract price specified in item [] of Appendix [].

These clauses (which would also apply to PLDs) mean that if liquidated damages are held to be unenforceable for any reason, the Project Company will not be prevented from recovering general damages at law. However, the amount of damages recoverable at law may be limited to the amount of liquidated damages that would have been recoverable by the Project Company under the EPC Contract if the liquidated damages regime had not been held to be invalid (see discussion above). For this reason, the suggested drafting should be commercially acceptable to a Contractor as its liability for delay and underperformance will be the same as originally contemplated by the parties at the time of entering into the EPC Contract.

In addition, if the EPC Contract excludes the parties' rights to claim their consequential or indirect losses, these clauses should be an exception to that exclusion. The rationale is that the rates of liquidated damages are likely to include an element of consequential or indirect losses.



Exclusive remedies and fail safe clauses – Force majeure

Force majeure (**FM**) clauses are almost always included in EPC Contracts. However, they are rarely given much thought unless and until one or more parties seek to rely on them. Generally, the assumption appears to be that the risk will not affect us or the force majeure clause is a legal necessity and does not impact on our risk allocation under the contract. Both of these assumptions are inherently dangerous, and, particularly in the second case, incorrect. Therefore, especially in the current global environment, it is appropriate to examine their application.

Force majeure is a civil law concept that has no real meaning under the common law. However, force majeure clauses are used in contracts because the only similar common law concept – the doctrine of frustration – is of limited application. For that doctrine to apply, the performance of a contract must be radically different from what was intended by the parties. In addition, even if the doctrine does apply, the consequences are unlikely to be those contemplated by the parties. An example of how difficult it is to show frustration is that many of the leading cases relate to the abdication of King Edward VIII before his coronation and the impact that had on contracts entered into in anticipation of the coronation ceremony.

Given that force majeure clauses are creatures of contract, their interpretation will be governed by the normal rules of contractual construction. Force majeure provisions will be construed strictly and in the event of any ambiguity the contra proferentem rule will apply. Contra proferentem literally means ‘against the party putting forward’. In this context, it means that the clause will be interpreted against the interests of the party that drafted and is seeking to rely on it. The parties may contract out of this rule.

The rule of ejusdem generis, which literally means ‘of the same class’, may also be relevant. In other words, when general wording follows a specific list of events, the general wording will be interpreted in light of the specific list of events. In this context it means that when a broad catch-all phrase, such as ‘anything beyond the reasonable control of the parties’, follows a list of more specific force majeure events, the catch-all phrase will be limited to events analogous to the listed events. Importantly, parties cannot invoke a force majeure clause if they are relying on their own acts or omissions.

The underlying test in relation to most force majeure provisions is whether a particular event was within the contemplation of the parties when they made the contract. The event must also have been outside the control of the contracting party.

There are generally three essential elements to force majeure:

- it can occur with or without human intervention
- it cannot have reasonably been foreseen by the parties
- it was completely beyond the parties’ control and they could not have prevented its consequences.

Given the relative uncertainty surrounding the meaning of force majeure, we favour explicitly defining what the parties mean. This takes the matter out of the hands of the courts and gives control back to the parties. Therefore, it is appropriate to consider how force majeure risk should be allocated.

Drafting force majeure clauses

The appropriate allocation of risk in project agreements is fundamental to negotiations between the Project Company and its Contractors. Risks generally fall into the following categories:

- risks within the control of the Project Company
- risks within the control of the Contractor
- risks outside the control of both parties.

The negotiation of the allocation of many of the risks beyond the control of the parties (for example, latent site conditions and change of law) is usually very detailed so that it is clear which risks are borne by the Contractor. The same approach should be adopted in relation to the risks arising from events of force majeure.

There are two aspects to the operation of force majeure clauses:

- the definition of force majeure events
- the operative clause that sets out the effect on the parties’ rights and obligations if a force majeure event occurs.

The events which trigger the operative clause must be clearly defined. As noted above, it is in the interests of both parties to ensure that the term force majeure is clearly defined.

The preferred approach for the Project Company is to define force majeure events as being any of the events in an exhaustive list set out in the contract. In this manner, both parties are aware of which events are force majeure events and which are not. Clearly, defining force majeure events makes the administration of the contract, and in particular the mechanism within the contract for dealing with force majeure events, simpler and more effective.

An example exhaustive definition is:

[].1 An Event of Force Majeure is an event or circumstance, or combination of events or circumstances, which:

- (a) is beyond the reasonable control of the party affected (Affected Party)
- (b) causes or results in default or delay in the performance by the Affected Party of any of its obligations under this Contract
- (c) is without the fault or negligence of the Affected Party or its Personnel
- (d) the Affected Party could not reasonably have been expected to have prevented, avoided or overcome by exercising a standard of skill, care and diligence consistent with that of a prudent, competent and experienced person in the circumstances

provided that such event or circumstance is limited to the following:

- (e) acts of terrorism as defined in Part 5.3 of the Criminal Code Act 1995 (Cth)
- (f) riot, war, invasion, act of foreign enemies, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection of military or usurped power
- (g) ionising radiation or contamination, radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive assembly or nuclear component
- (h) strikes at national level or Industrial Matters at a national level in Australia by Personnel not employed or otherwise engaged by the Affected Party, its Subcontractors or its suppliers and which affect an essential portion of the Works but excluding any Industrial Matter which is specific to the performance of the Works or this Contract
- (i) earthquake, cyclone, lightning, fire emanating from outside the Site, meteorite and/or explosion.

[].2 For the avoidance of doubt, an Event of Force Majeure does not include:

- (a) mechanical or electrical breakdown or failure of Equipment
- (b) an event or circumstance caused by an act or omission of the Affected Party
- (c) financial hardship or a lack of, or an inability to use, money or available funds for any reason
- (d) failure of a supplier to supply goods or services to the Contractor under the relevant supply agreement unless the failure to do so is an Event of Force Majeure affecting that supplier or
- (e) a supplier's failure to supply or transport Consumables, goods or Equipment under the relevant supply agreement.

[].3 If, following the issue of any notice referred to in clause [].2, the Affected Party claiming relief receives or becomes aware of any further information relating to the Event of Force Majeure (and/or any failure to perform), it must provide that further information to the other party as soon as reasonably possible.

[].4 The Affected Party must mitigate the impact or consequences of the Event of Force Majeure (including incurring any reasonable expenditure of funds and rescheduling manpower and resources) upon its performance of its obligations under this Contract and minimise any resulting delay in the performance of its obligations under this Contract.

[].5 The Affected Party is not relieved from liability under or in connection with this Contract to the extent that it is not able to perform, or has not in fact performed, its obligations under this Contract due to its failure to comply with its obligations under clause [].4.

[].6 Notwithstanding any provision to the contrary in this clause [], neither party will be required to expend more than reasonable sums of money in mitigating or overcoming the consequences of the Event of Force Majeure. No regard will be taken of the particular financial circumstances of the party.

[].7 Upon cessation of the Event of Force Majeure, the Affected Party must, as soon as reasonably practicable, recommence the performance of its obligations under this Contract. Where the Affected Party is the Contractor, the Contractor must provide a revised Programme in the Approved Form, no later than ten Business Days after the Event of Force Majeure ceases, rescheduling the Works to minimise the effects of the prevention or delay caused by the Event of Force Majeure.

[].8 An Event of Force Majeure does not relieve a party from liability for an obligation which arose before the occurrence of that Event of Force Majeure, nor does an Event of Force Majeure affect any obligation to pay money in a timely manner which matured prior to the occurrence of that Event of Force Majeure.

[].9 The Contractor has no entitlement and the Principal has no liability for:

- (a) any costs, Losses or the payment of any part of the Contract Price during an Event of Force Majeure
- (b) any delay costs in any way incurred by the Contractor due to an Event of Force Majeure.

In addition to the above clause, it is important to appropriately deal with other issues that will arise if a force majeure event occurs. For example, as noted above, it is common practice for a Contractor to be entitled to an EOT if a force majeure event impacts on its ability to perform the works. Contractors also often request costs if a force majeure event occurs. In our view, this should be resisted. Force majeure is a neutral risk in that it cannot be controlled by either party. Therefore, the parties should bear their own costs.

Another key clause that relates to force majeure events is the Contractor's responsibility for care of the works and the obligation to reinstate any damage to the works prior to completion. A common example clause is:

- [].1 The Contractor is responsible for the care, custody and control of the Works and the Solar Farm until the Commercial Operation Date.
- [].2 The Contractor must promptly make good, at its own cost, any loss or damage that may occur to the Works from any cause other than an Excepted Risk.
- [].3 The Contractor is also responsible for any loss or damage to the Works caused by the Contractor or its Personnel in the course of any work performed.
- [].4 In the event of loss or damage caused by any Excepted Risk, the Contractor must, promptly and to the extent directed by the Principal, rectify the loss or damage and such rectification will be deemed a Variation.
- [].5 If the Principal does not direct the Contractor to make good any loss or damage to the Works caused by an Excepted Risk, the Principal may either:
 - (a) order a Variation, excluding the performance of that part of the Works lost, destroyed or damaged
 - (b) make good, or procure that a third party make good, the loss or damage to the Works itself, or
 - (c) terminate this Contract under clause [].

This clause is useful because it enables the Project Company to, at its option, have the damaged section of the project rebuilt as a variation to the existing EPC Contract. This will usually be cheaper than recontracting for construction of the damaged sections of the works.

COVID-19 and force majeure

The COVID-19 pandemic and international and domestic mitigation responses have impacted and will likely continue to impact manufacturing and supply of key equipment and materials used in the construction of solar energy facilities in Australia.

Contractors are currently dealing with the delay or disruption in procurement of the necessary equipment and materials, and we are aware of some Contractors notifying project owners of delays to construction timelines, milestones and completion dates. For other projects currently in the development phase, parties are hurriedly revisiting their contracts to understand (and possibly renegotiate) the impending legal and financial implications.

Given that the virus is no longer a new development and major economies of the world are now progressing into a 'living with COVID-19' phase, we expect to see a greater emphasis on the categorisation of both COVID-19 and similar outbreaks in definitions of force majeure going forward. Clearly defined objective criteria will provide greater certainty over generic references and subjective terminology. Going forward, when negotiating force majeure definitions and drafting, we recommend considering the following:

- adding an additional condition precedent specifying that the Contractor must make enquiries as to the availability of solar panels from the intended supplier to inform the construction programme and next steps
- requesting detailed mitigation plans from Contractors outlining proposed suppliers and supply routes that set out clear and obtainable alternatives in the event of an outbreak or the imposition of restrictions in response to an outbreak
- expanding the definition of force majeure events to explicitly include any of the following terms:
 - a 'health crisis within Australia'
 - an 'epidemic'
 - a 'health crisis declared to be a Public Health Emergency of International Concern by the World Health Organization occurring within Australia or internationally' or
 - a 'pandemic'
- expanding the definition of force majeure event to explicitly include Australian authority directives which impact the import of goods from international suppliers and directives from international authorities preventing the exporting of goods to Australia.

For more information, please see PwC's COVID-19 and the Solar Industry.⁹



⁹ PwC, COVID-19 and the solar industry (Report, March 2020).

Operation and maintenance

Operating and maintenance manuals

As part of its contract deliverables, the Contractor will be required to prepare a detailed operating and maintenance manual (**O&M manual**).

The EPC Contract should require the Contractor to prepare a draft of the O&M manual within a reasonable time to enable the Project Company, the Operator and possibly Lenders to provide comments, which can be incorporated into a final draft at least six months before the start of commissioning.

The draft should include all information that may be required for start up, all modes of operation during normal and emergency conditions and maintenance of all systems of the solar facility. The final form of O&M manual should also contain all data books, purchase orders, performance test results and inspection records relating to the solar facility and a record of any warranty obligations for key component parts.

Operating and maintenance personnel

It is standard for the Contractor to be obliged to train the operations and maintenance staff supplied by the Project Company. The cost of this training will be built into the Contract price. It is important to ensure the training is sufficient to enable such staff to be able to efficiently, prudently, safely and professionally operate the solar facility upon commercial operation. Therefore, the framework for the training should be described in the appendix dealing with the scope of work (in as much detail as possible). This should include the standards of training and the timing for training.

The Project Company's personnel trained by the Contractor will also usually assist in the commissioning and testing of the solar facility. They will do this under the direction and supervision of the Contractor. Therefore, in the absence of specific drafting to the contrary, if problems arise during commissioning and/or testing the Contractor can argue they are entitled to an EOT, etc. We recommend inserting the following clause:

[].1 The Project Company must provide a sufficient number of competent and qualified operating and maintenance personnel to assist the Contractor to properly carry out commissioning and the commercial operation performance tests.

[].2 Prior to the date of commercial operation, any act or omission of any personnel provided by the Project Company pursuant to GC [].1 is, provided those personnel are acting in accordance with the Contractor's instructions, directions, procedures or manuals, deemed to be an act or omission of the Contractor and the Contractor is not relieved of its obligations under this contract or have any claim against the Project Company by reason of any act or omission, relieved of its obligations under this contract or have any claim against the Project Company by reason of any act or omission.

Spare parts

The Contractor is usually required to provide, as part of its scope of works, a full complement of spare parts (usually specified in the appendices covering the scope of work or the specification) to be available at the commencement of commercial operation.

Further, the Contractor should be required to replace any spare parts used in rectifying defects during the defects liability period, at its sole cost. There should also be a time limit imposed on when these spare parts must be back in the store, and, subject to the location of the project, a requirement to keep spare parts in a secure location within the vicinity of the project site. It is normally unreasonable to require the spare parts to have been replaced by the expiry of the defects liability period because that may lead, for some items with long lead times, to an extension of the defects liability period.



The Project Company also may wish to have the option to purchase spare parts from the Contractor on favourable terms and conditions (including price) for an agreed period, typically the initial term of the PPA. In that case, it would be prudent to include a term that deals with the situation in which the Contractor is unable to continue to manufacture or procure the necessary spare parts. This provision should cover the following:

- written notification from the Contractor to the Project Company of the relevant facts, with sufficient time to enable the Project Company to order a final batch of spare parts from the Contractor
- the Contractor should deliver to, or procure for the Project Company (at no charge to the Project Company), all drawings, patterns and other technical information relating to the spare parts
- the Contractor must sell to the Project Company (at the Project Company's request) at cost price (less a reasonable allowance for depreciation) all tools, equipment and moulds used in manufacturing the spare parts, to the extent they are available to the Contractor, provided it has used its reasonable endeavours to procure them.

The Contractor should warrant that the spare parts are fit for their intended purpose, and that they are of merchantable quality. At worst, this warranty should expire on the later of:

- the manufacturer's warranty period on the applicable spare part
- the expiry of the defects liability period.

Dispute resolution

Dispute resolution provisions for EPC Contracts could fill another entire paper. There are numerous approaches that can be adopted depending on the nature and location of the project and the particular preferences of the parties involved.

However, some general principles should be adopted, including:

- having a staged dispute resolution process that provides for internal discussions and meetings aimed at resolving the dispute prior to commencing action (either litigation or arbitration)
- obliging the Contractor to continue to execute the works pending resolution of the dispute
- not permitting commencement of litigation or arbitration, as the case may be, until after commercial operation of the solar facility. This provision must make exception for the parties to seek urgent interlocutory relief (for example, injunctions) and to commence proceedings prior to the expiry of any limitations period. If the provision does not include these exceptions, it risks being unenforceable
- providing for consolidation of any dispute with other disputes which arise out of or in relation to the construction of the solar facility. The power to consolidate should be at the Project Company's discretion.

If you would like more information on dispute resolution, ask us for a copy of our paper on preferred approaches to be taken in respect of dispute resolution regimes in various Asian jurisdictions including the PRC, Philippines, Thailand, Vietnam and Taiwan.



Appendix 1

Example clause: Performance testing and guarantee regime

1. Commercial Operation Tests

Commercial Operation Tests

- 1.1 After the successful completion of Commissioning under clause [] and as soon as the Solar Farm has, in the opinion of the Contractor, satisfied all the requirements for Commercial Operation (other than the passing of the Commercial Operation Tests), the Contractor must notify the Principal's Representative in writing that the Solar Farm is ready for the Commercial Operation Tests.
- 1.2 The Contractor must undertake the Commercial Operation Tests in accordance with Schedule [].
- 1.3 Where, prior to Commercial Operation for the Solar Farm, one or more modules is capable of generating and exporting electricity to the Transmission System, the parties must cooperate in good faith to ensure that the revenue associated with the export of electricity and sale of any accompanying Green Benefits is maximised. The Contractor acknowledges and agrees that:
 - (a) the Principal is entitled to all the benefits of all early electricity that may be generated from the Solar Farm during the Precommissioning, Commissioning and the Commercial Operation Tests or otherwise
 - (b) nothing in this Contract imposes any restrictions on the Principal from selling any electricity generated during the Commercial Operation Tests.

Commercial Operation

- 1.4 After completion of the Commercial Operation Tests, the Contractor must notify the Principal's Representative and the Lenders' Representative in writing that the Solar Farm has, in the opinion of the Contractor, reached the stage of Commercial Operation. That notice must, if applicable, also include the Contractor's list of Punch List Items and a programme for expeditiously completing those Punch List Items.
- 1.5 The Principal's Representative must, promptly, and not later than five Business Days after receipt of the Contractor's notice under clause 1.4, either:
 - (a) issue a Certificate of Commercial Operation certified by the Lender's Representative stating that the Solar Farm has reached Commercial Operation and the date on which the Solar Farm reached Commercial Operation, or

- (b) notify the Contractor that the Solar Farm has not achieved Commercial Operation, and provide the reasons why, including any Defects.
- 1.6 If the Principal's Representative notifies the Contractor of any Defects pursuant to clause 1.5(b), the Contractor must promptly correct those Defects and must repeat the procedures described in clauses 1.4 to clause 1.5 until the Principal issues a Certificate of Commercial Operation that is also certified by the Lenders' Representative.
- 1.7 Despite any other provision of this Contract, no payment and no partial or entire use or occupancy of the Site, the Works or the Solar Farm by the Principal (whether during the Commercial Operation Tests or otherwise) in any way constitutes an acknowledgement by the Principal that Commercial Operation has occurred, nor does it operate to release the Contractor from, or otherwise affect, reduce or limit any of the Contractor's warranties, obligations or liabilities under or in connection with this Contract.
- 1.8 Upon the issue of the Certificate of Commercial Operation, the Contractor must hand over care, custody and control of the Solar Farm to the Principal or the Operator under the Operation and Maintenance Agreement if so directed by the Principal.
- 1.9 Notwithstanding that all the requirements for the issue of the Certificate of Commercial Operation have not been met, the Principal may at any time, in its absolute, sole and unfettered discretion, issue the Certificate of Commercial Operation. The issue of the Certificate of Commercial Operation in accordance with this clause 1.9 will not operate as an admission that all the requirements of Commercial Operation have been met, and does not prejudice any of the Principal's rights, including the right to require the Contractor to satisfy the requirements of Commercial Operation, nor does it release the Contractor from any of its warranties, obligations or liabilities under or in connection with this Contract.
- 1.10 If the Principal issues the Certificate of Commercial Operation under clause 1.9, the Contractor must:
 - (a) do all things reasonably necessary to assist the Principal to ensure that the requirements for the issue of a Certificate of Commercial Operation are met
 - (b) pay Performance Liquidated Damages in accordance with clause [].

1.11 Following achievement of Commercial Operation, the Contractor must within the time period stated in the Deliverables Submission Schedule finalise and submit to the Principal each of the Post Commercial Operation Deliverables.

Punch List Items

1.12 The Contractor must rectify or complete within the time stated in the Certificate of Commercial Operation each of the Punch List Items (and the Punch List Items must be appended to the Certificate of Commercial Operation). In the event that the Contractor fails to do so, the Principal may arrange for the outstanding work to be done and the cost of such works will be certified by the Principal and the Lenders' Representative and deducted from the Contract Price or (at the Principal's option) paid to the Principal by Contractor. The Principal may also have recourse to the Punch List Guarantee in accordance with clause [].

2. Final Completion

Post Commercial Operation Tests

2.1 The Contractor must give the Principal and the Lenders' Representative prior written notice of when it intends to carry out the Post Commercial Operation Tests in accordance with the requirements of Schedule [].

2.2 The Contractor must give the Principal and the Lenders' Representative prior written notice of when it intends to carry out the Post Commercial Operation Tests in accordance with the requirements of Schedule [].

2.3 As soon as reasonably practicable after receipt of a notice under clause 2.1, the Principal must issue a notice to the Contractor and the Lenders' Representative specifying the date for commencement of the Post Commercial Operation Tests in accordance with the requirements of Schedule [].

Final Completion

2.4 The Contractor must notify the Principal's Representative and the Lenders' Representative at least 30 Business Days before the whole of the Works and Solar Farm will, in the opinion of the Contractor, reach the stage of Final Completion.

2.5 The Contractor must notify the Principal's Representative and the Lenders' Representative in writing that the Solar Farm has, in the Contractor's opinion, reached the stage of Final Completion.

2.6 The Principal's Representative must promptly, and not later than five Business Days after receipt of the Contractor's notice under clause 2.3, either:

- (a) issue a Certificate of Final Completion, as certified by the Lenders' Representative, stating the Solar Farm has reached Final Completion and stating the date on which the Solar Farm reached Final Completion, or
- (b) notify the Contractor in writing of any Defects that must be remedied before Final Completion can be achieved.

2.7 If the Principal's Representative notifies the Contractor of any outstanding Defects under clause 2.5(b), the Contractor must correct those Defects and must repeat the procedures described in clauses 2.3 and 2.5 until the Principal issues a Certificate of Final Completion. The Certificate of Financial Completion must also be certified by the Lenders' Representative.

2.8 A Certificate of Final Completion issued under clause 2.5(a) will discharge of each party's obligations under this Contract except for:

- (a) obligations in relation to Spare Parts and Warranted Components
- (b) indemnities given under this Contract
- (c) warranties given under this Contract
- (d) Wilful Misconduct relating to the Works and Solar Farm or any part thereof
- (e) any Latent Defects in the Works and Solar Farm or any part thereof which were not apparent at the end of the Defects Liability Period, or which would not have been disclosed upon reasonable inspection at the time of the issue of the Certificate of Final Completion
- (f) any Serial Defect
- (g) unresolved issues the subject of any Dispute, which is referred to the Dispute Resolution Panel for resolution under clause [] within five Business Days after the Certificate of Final Completion is issued under clause 2.5(a) and
- (h) any obligations that are expressly stated in this Contract to or by their nature survive completion, expiry or termination of this Contract.

2.9 Despite any other provision of this Contract, no partial or entire use or occupancy of the Site, the Works or the Solar Farm by the Principal after Commercial Operation in any way constitutes an acknowledgement by the Principal that Final Completion has occurred, nor does it operate to release the Contractor from any of its warranties, obligations or liabilities under this Contract including:

- (a) the satisfactory performance of its obligations during the Defects Liability Period and Latent Defects Period
- (b) the carrying out of the Performance Tests
- (c) meeting the Performance Guarantees.

3. Performance Guarantees and Liquidated Damages

Performance Guarantees

- 3.1 The Contractor warrants that the Solar Farm and all component parts will meet the Performance Guarantees.

Performance Tests

- 3.2 The Contractor must undertake the Performance Tests in accordance with clauses 1 and 2 to establish that the whole of the Works, Solar Farm and all component parts achieve the Performance Guarantees.

Minimum Performance Guarantees not met

- 3.3 If the Contractor does not meet one or more of the Minimum Performance Guarantees during the Commercial Operation Tests, the Principal or the Lenders' Representative may require the Contractor to:
- (a) at the Contractor's cost and expense, make the changes, modifications or additions to the Solar Farm or any part of the Solar Farm as may be necessary to meet the Minimum Performance Guarantees
 - (b) notify the Principal or the Lenders' Representative (as relevant) upon completion of the necessary changes, modifications or additions
 - (c) subject to the Principal's rights under clauses 3.4, [] and [], continue to repeat the Performance Test until the Minimum Performance Guarantees have been met and certified by the Lenders' Representative.
- 3.4 Subject to clause 1.9, if the Contractor does not meet one or more of the Minimum Performance Guarantees by the date it has incurred and is liable for Delay Liquidated Damages up to the Delay Liquidated Damages Cap, the Principal may:
- (a) require the Contractor to complete the Works and achieve Commercial Operation
 - (b) have the Works or any part of the Works completed by itself or by others and the Contractor must pay the Principal's costs in doing so
 - (c) require the Contractor to grant the Principal such reduction in the Contract Price as may be agreed, or in default of agreement, determined by an Independent Expert in accordance with the procedure set out at clauses [] to [] to be a reasonable reduction, with reference to the ongoing delay, any incomplete Works and the effect on the Project by any delay, and the Contractor must promptly pay to the Principal such reduction unless the parties agree otherwise, or

- (d) if the Actual PR (as that term is defined in Schedule []) is 50% or less of the Guaranteed PR (as that term is defined in Schedule []), reject the Works and the Solar Farm and immediately terminate the Contractor's engagement under this Contract, and the Principal is entitled to recover from the Contractor an amount to be agreed (that includes all sums paid in respect of the Works together with the cost of dismantling the Works, clearing the Site and returning Equipment to the Contractor or otherwise disposing of the Equipment), or in default of agreement, determined by an Independent Expert in accordance with the procedure set out at clauses [] to [].

The Principal's rights and remedies under this clause 3.4 will survive termination of this Contract.

Commercial Operation Performance Guarantees not met

- 3.5 If, after carrying out the Commercial Operation Tests under clause 1.2, the Contractor meets all of the Minimum Performance Guarantees but does not meet one or more of the Commercial Operation Performance Guarantees, the Contractor must:
- (a) at its cost and expense, make the changes, modifications or additions to the Solar Farm or any part of the Solar Farm as may be necessary to meet the Commercial Operation Performance Guarantees
 - (b) notify the Principal upon completion of the necessary changes, modifications or additions
 - (c) subject to the Principal's rights under clauses 1.9 and 3.16, continue to repeat the Commercial Operation Tests until all of the Commercial Operation Performance Guarantees have been met.

Performance Liquidated Damages for failure to achieve the Commercial Operation Performance Guarantees

- 3.6 Subject to clause 1.9, if the Contractor does not meet all of the Commercial Operation Performance Guarantees by the date it has incurred or is liable for Delay Liquidated Damages up to the Delay Liquidated Damages Cap, then provided that the Minimum Performance Guarantees have been met, the Contractor must pay to the Principal the Performance Liquidated Damages to the Principal in the amounts and at the times specified in Schedule [].

Post Commercial Operation Performance Guarantees not met

- 3.7 If the Contractor does not meet the Post Commercial Operation Performance Guarantees in accordance with the procedures and timing set out in Schedule [], the Contractor must pay Performance Liquidated Damages to the Principal in the amounts and at the times specified in Schedule [].

Satisfaction of Performance Guarantees

- 3.8 The Principal's entitlement to the payment of Performance Liquidated Damages under clauses 1.10(b), 3.6 and/or 3.7 (as applicable) will be in satisfaction of the Performance Guarantees.

Due and payable

- 3.9 The Performance Liquidated Damages must be invoiced by the Principal in accordance with the timing specified in Schedule [] and payment must be made by the Contractor within ten Business Days of the date of the invoice. If at the expiration of those ten Business Days, the amount invoiced is not paid, that amount will be a debt due and payable to the Principal on demand and will be deducted from any payments otherwise due from the Principal to the Contractor. The Principal may also have recourse to the Security provided under this Contract.

Fair and reasonable pre estimate

- 3.10 The parties agree that the Performance Liquidated Damages specified in Schedule [] are a genuine, fair and reasonable pre estimate of the damages likely to be sustained by the Principal as a result of the Contractor's failure to achieve the relevant Performance Guarantees.

No relief

- 3.11 The Contractor agrees that payment of the Performance Liquidated Damages does not affect, limit or reduce the Contractor's obligation to achieve Commercial Operation and Final Completion or from any other warranties, obligations or liabilities under or in connection with this Contract (including its obligations under clause []).

- 3.12 Subject to clause 3.14, the payment of Performance Liquidated Damages under this clause 3 is in addition to any liability of the Contractor for Delay Liquidated Damages.

Aggregate liability

- 3.13 The aggregate liability of the Contractor for the Performance Liquidated Damages will not exceed the Performance Liquidated Damages Cap.

Overall aggregate liability for Liquidated Damages

- 3.14 The overall aggregate liability of the Contractor for both Delay Liquidated Damages and Performance Liquidated Damages under this Contract will not exceed the Aggregate Liquidated Damages Cap.

No benefit

- 3.15 The Contractor is not entitled to the benefit of the exclusion in clause [] in any claim for Performance Liquidated Damages by the Principal against the Contractor for failure to achieve the Performance Guarantees.

Rights at law

- 3.16 If this clause 3 (or any part) is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Principal from claiming Performance Liquidated Damages, the Principal is entitled to claim against the Contractor for damages at law for failure to achieve any of the Performance Guarantees. Such damages must not exceed the aggregate liability for Performance Liquidated Damages specified in clauses 3.13 and 3.14.



Appendix 2

Example clause: Extension of time regime

1. Extension of time

Notice

1.1 The Contractor must immediately give notice to the Principal's Representative of all incidents, circumstances or events (**Events**) of any nature affecting or likely to affect the progress of the Works which might be reasonably expected to result in a delay to the Works achieving Commercial Operation by the Date for Commercial Operation.

Further notice

1.2 Within ten Business Days after the date of the notice issued under clause 1.1, the Contractor must give a further notice to the Principal's Representative which must include:

- (a) the material circumstances of the Event including the cause or causes
- (b) the nature and extent of any delay caused by or likely to be caused by the Event
- (c) the corrective action already undertaken or to be undertaken
- (d) the effect on the critical path noted on the Programme
- (e) whether in its opinion, the Event qualifies as one which entitles the Contractor to an extension of time to the Date for Commercial Operation under clauses 2.6 and 2.7
- (f) the period, if any, by which in its opinion the Date for Commercial Operation should be extended and
- (g) a statement that it is a notice under this clause 1.2.

Continuing events

1.3 Where:

- (a) an Event has a continuing effect, or
- (b) the Contractor is unable to determine whether the effect of an Event will actually cause delay to the progress of the Works so that it is not practicable for the Contractor to give notice under clause 1.2

the Contractor must submit to the Principal's Representative:

- (a) a statement to that effect with reasons together with interim written particulars (including details of the likely consequences of the Event on progress of the Works and an estimate of the likelihood or likely extent of the delay)
- (b) at intervals of ten Business Days or less, further interim written particulars until the actual delay caused (if any) is ascertainable, at which time the Contractor must as soon as practicable but in any event within 30 Business Days give a final notice to the Principal's Representative including the particulars specified in clause 1.2.

Determination by Principal

1.4 Within 30 Business Days after receipt of the notice in clause 1.2 or the final notice in clause 1.3, the Principal must issue a notice notifying the Contractor's Representative:

- (a) whether the relevant Event qualifies as one which entitles the Contractor to an extension to the Date for Commercial Operation under clauses 1.5 and 1.6
- (b) if it does, the period, if any, by which the Date for Commercial Operation is to be extended.

Causes of delay

1.5 Subject to the provisions of this clause 1, the Contractor is entitled to an extension of time to the Date for Commercial Operation as the Principal assesses where a delay to the achievement of Commercial Operation is caused by any of the following events, whether occurring before, on or after the Date for Commercial Operation:

- (a) any Principal Act of Prevention
- (b) a Variation, except where that Variation is caused by an act, omission or default of the Contractor or its Personnel
- (c) a Connection Works Delay
- (d) a suspension of the Works under clause 4, except where that suspension is caused by an act, omission or default of the Contractor or its Personnel, or
- (e) an Event of Force Majeure.

1.6 For the avoidance of doubt, any act which the Principal or its Personnel is entitled or authorised to do under this Contract will not be an act for the purposes of clause 1.5(a).

Extension of time

1.7 Despite any other provisions of this clause 1 and notwithstanding that the Contractor is not entitled to or has not claimed an extension of time to the Date for Commercial Operation, the Principal may, at any time in its absolute, sole and unfettered discretion, grant an extension of the Date for Commercial Operation. The Principal has no obligation to grant, or to consider whether it should grant, an extension of time and is not required to exercise this discretion for the benefit of the Contractor.

Conditions precedent to entitlement to extension of time

1.8 If the Contractor fails to submit the notices required under clauses 1.1, 1.2 and 1.3 within the specified time periods, or fails to comply with any other notice requirement under this Contract regarding the Event (including, in the case of a Force Majeure Event, the notice under clause []):

- (a) the Contractor will have no entitlement to an extension of time
- (b) the Contractor must comply with the requirements to perform the Works by the Date for Commercial Operation.

Principles of law

1.9 The Contractor agrees that any principle of law or equity which might otherwise render the Date for Commercial Operation immeasurable and any Delay Liquidated Damages or Performance Liquidated Damages unenforceable, does not apply to this Contract.

1.10 For the avoidance of doubt, a delay to the Date for Commercial Operation caused by any Principal Act of Prevention will not cause the Date for Commercial Operation to be set at large.

1.11 Nothing in clause 1.10 will prejudice any right of the Contractor to claim an extension of time under this clause 1 or delay costs under clause 2 for that delay.

Time is not set at large

1.12 Neither the:

- (a) failure of the Principal to grant an extension of time to the Date for Commercial Operation under this clause 1 or at all, or
- (b) existence of any Dispute between the Contractor and the Principal as to the Contractor's entitlement to, or the extent of, any extension of time to the Date for Commercial Operation

will cause the Date for Commercial Operation to be set at large or prevent the Principal from subsequently exercising its discretion under clause 1.7.

Must impact critical path

1.13 It is a further condition precedent of the Contractor's entitlement to an extension of time that:

- (a) the Contractor is or actually will be prevented from achieving Commercial Operation by the Date for Commercial Operation by an Event, and the Event qualifies as one which entitles the Contractor to an extension of time to the Date for Commercial Operation under clauses 1.5 and 1.6
- (b) the relevant delay is demonstrable on an assessment of the actual and then current critical path to achieving Commercial Operation by the Date for Commercial Operation.

Acceleration

1.14 The Principal may, at any time prior to the Commercial Operation Date, direct the Contractor's Representative to accelerate the Works for any reason, including as an alternative to granting an extension of time to the Date for Commercial Operation.

1.15 Within ten Business Days of its receipt of the direction under clause 1.14, the Contractor must advise the Principal's Representative as to whether it can reasonably comply with the direction, with details of any additional costs the Contractor will incur (if any) in complying with the direction.

1.16 Subject to the Contractor's obligation to mitigate, if complying with the direction under clause 1.14 will cause the Contractor to necessarily incur additional costs in performing the Works, subject to clause [] and except where the direction was issued as a consequence of the failure of the Contractor to fulfil its obligations under this Contract, the Contractor may be entitled to its additional cost and margin (which must not exceed 10% collectively and includes profit and overhead). The Principal (on advice from the Lenders' Representative) must assess and decide, as soon as reasonably practicable, the extra costs necessarily incurred by the Contractor.

1.17 The Principal (on advice from the Lenders' Representative) must assess and decide, as soon as reasonably practicable, any reduction of the Contract Price due to any cost savings resulting from the Contractor complying with an acceleration direction under clause 1.14 and the Principal will be entitled to reduce the Contract Price by that amount.

Sole entitlement

1.18 Without limiting the Contractor's rights under clauses 1 and 2, an extension of time granted under this clause 1 and any delay costs under clause 2 are the Contractor's sole entitlements to any Claim for delay, including delay caused by the Principal, whether in breach of contract or otherwise and is in substitution for and excludes the Contractor's other rights and remedies, including the right to recover damages under or in connection with this Contract or any applicable Law in respect of any such delay.

Concurrent causes of delay

1.19 If there are two or more events which constitute concurrent causes of delay and at least one of those concurrent causes is a cause of delay which would not entitle the Contractor to an extension of time under this Contract, the Contractor is not entitled to an extension of time for the period of that concurrency.

Survival

1.20 This clause 1 survives the completion, expiry or termination of this Contract.

2. Delay costs

Contractor may claim

2.1 Where the Contractor has been granted an extension of time for a delay under clause 1.5(a), and has necessarily incurred extra cost as a direct consequence of the delay, the Contractor must give to the Principal's Representative notice of its Claim for delay costs at the same time as the notice referred to in clause 1.1 or the final notice in clause 1.2 (as the case may be), including all available particulars and supporting documentation and a statement that it is a notice under this clause 2.1.

Delay costs

- 2.2 Delay costs in connection with extensions of time pursuant to:
- (a) clause 1.5(b) must be dealt with under clause 3 (Valuation of Variations) only
 - (b) clause 1.5(d) must be dealt with under clause 4 (Suspension Costs) only
 - (c) clause 1.5(e) must be dealt with under clause 5 (Force Majeure Costs) only.

No other right

2.3 In all other circumstances, an extension of time, if any, is the limit of the Contractor's entitlement for delay.

Principal must assess

2.4 Subject to clause 2.5, the Principal must assess and decide as soon as reasonably practicable after receipt of the notice referred to in clause 1.1 or clause 1.2 (as the case may be) the extra costs necessarily incurred by the Contractor, which does not include off Site overheads, profit or loss of profit.

Condition precedent

2.5 It is a condition precedent of the Contractor's entitlement to recover any amount representing extra costs necessarily incurred under clause 2.1 that the Contractor has provided the notices referred to in clause 2.1.

Sole entitlement

2.6 The sums payable under this clause 2 are the Contractor's sole entitlement to compensation for delay or disruption, including, delay or disruption caused by the Principal, whether in breach of contract or otherwise and is in substitution for and excludes the Contractor's other rights and remedies, including the right to recover damages under or in connection with this Contract or any applicable Law.

3. Valuation of Variations

- 3.1 The valuation of the Variation must be calculated as follows:
- (a) by agreement between the parties
 - (b) failing agreement between the parties within ten Business Days after submission of the Contractor's Variation proposal, under the unit rates specified in Schedule [] or
 - (c) where there are no relevant unit rates specified in Schedule [], the Principal's Representative (on advice from the Lenders' Representative) will determine the valuation based on reasonable rates and prices. If the Contractor disputes the Principal's Representative's valuation, the matter can be referred to dispute resolution under clause [].

4. Suspension Costs

- 4.1 If the Contractor's performance of its obligations is suspended or the rate of the Contractor's progress is reduced pursuant to clause [];
- (a) the Date for Commercial Operation may be extended in accordance with clause 1
 - (b) the Principal must pay to the Contractor any direct extra costs necessarily incurred by the Contractor as a result of the suspension or reduction (not including any off Site overheads, profit or loss of profit) except where the suspension or reduction was necessary due to any act, omission, default or breach of this Contract by the Contractor or its Personnel.

5. Force Majeure Costs

- 5.1 The Contractor has no entitlement and the Principal has no liability for:
- (a) any costs, Losses or the payment of any part of the Contract Price during an Event of Force Majeure
 - (b) any delay costs in any way incurred by the Contractor due to an Event of Force Majeure.

Appendix 3

Example clause: Grid access regime

1. Transmission System

Coordinating connection to Transmission System

- 1.1 The Contractor must coordinate the Works, the Connection Works, and the connection of the Solar Farm to the Transmission System. The Contractor must liaise with the Transmission Network Service Provider, government authorities, the Principal and any Contractors undertaking the Connection Works to avoid delays in connecting the Solar Farm to the Transmission System.
- 1.2 The Contractor's obligations to coordinate with the Transmission Network Service Provider with respect to Connection Works obligations will require the Contractor to take into account the requirements of the Grid when designing, constructing and commissioning the Works and the Connection Works.
- 1.3 The Contractor must complete, or procure the completion of, the Connection Works:
 - (a) in the manner specified in the Works Specification and the Project Agreements
 - (b) on or before the date which is [date to be determined by the TNSP in accordance with the terms of the Connection Agreement].
- 1.4 The Contractor must ensure that the Works connect to, and fully interface with, the Connection Works.

Transmission System

- 1.5 On the Date for First Synchronisation the Principal must ensure that there is in place a Transmission System (other than the Connection Works) which is capable of receiving the generated net output the Solar Farm is physically capable of producing at any given time.

Principal's obligation

- 1.6 The Principal's obligation to ensure that the Transmission System is in place is subject to the Contractor satisfying its obligations under clauses 1.1 and 1.4 in accordance with this Contract.
- 1.7 The Contractor acknowledges and agrees that, except as expressly provided for in clauses [] and [], the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of, or in connection with the Principal's breach of clause 1.5.

Readiness for First Synchronisation

- 1.8 The Contractor must notify the Principal within five Business Days of it achieving readiness for First Synchronisation.

First Synchronisation before Date for First Synchronisation

- 1.9 If the Contractor notifies the Principal that First Synchronisation is likely to take place before the Date for First Synchronisation, the Principal must endeavour, but is under no obligation to ensure, that the Transmission System is in place and the Connection Works have been completed, to enable First Synchronisation to take place in accordance with the Contractor's revised estimate of First Synchronisation.

No deemed Commercial Operation

- 1.10 The Contractor acknowledges that there will not be any deemed Commercial Operation as a result of the connection of the Solar Farm to the Transmission System or the sale of any electricity.

Regulatory Framework

- 1.11 The Contractor must perform the Works, in particular in relation to the connection of the Solar Farm to the Transmission System, to ensure that the Principal is able to comply with, and the Works and the Solar Farm comply with the relevant requirements of the Regulatory Framework.



Avoidance of damage or interference to Transmission System

1.12 The Contractor must perform the Works, in particular in relation to the connection of the Solar Farm to the Transmission System, to ensure that:

- (a) any interference to the Transmission System is minimised
- (b) damage to the Transmission System is avoided.

Reporting of interference

1.13 The Contractor must promptly report to the Principal's Representative any interference with and damage to the Transmission System.

Additional obligations

1.14 Without derogating from the Contractor's obligations under this clause 1, in carrying out any test which requires the Contractor to supply electricity to the Transmission System, the Contractor must:

- (a) issue a notice to the Principal's Representative at least 24 hours prior to the time at which it wishes to so supply, detailing the testing or Commissioning and including the Contractor's best estimate of the total period and quantity (in MWh per half hour) of that supply
- (b) promptly notify the Principal's Representative if there is any change in the information contained in such notice
- (c) do all things necessary to assist the Principal (including cooperating with the Transmission Network Service Provider and complying with its obligations under clause 1.5)

so that the Principal can comply with its obligations under the Regulatory Framework and the Project Agreements.



Appendix 4

Example clause: Free issue

1. Free Issue of Panels

Panel Price

- 1.1 The Contractor acknowledges that as at the Execution Date, the Contract Price includes an indicative price for Panels as set out in Schedule [] (**Tender Panel Price**).
- 1.2 The Principal may request prior to the issue of a Notice to Proceed that the Contractor provides its confirmed price for the Panels.
- 1.3 Within five Business Days of receipt of the Principal's request under clause 1.2, the Contractor must obtain a revised quotation from a Nominated Subcontractor and submit to the Principal the Contractor's Revised Panel Price, which must:
 - (a) consist of the amount of the revised quotation from the relevant Nominated Subcontractor
 - (b) consist of the percentage margin set out in clause [] of this Contract
 - (c) not be more than the Tender Panel Price (**Revised Panel Price**).
- 1.4 If the Principal has not exercised its Option to Free Issue Panels under clause 1.5 and the Revised Panel Price is less than the Tender Panel Price, the Contract Price will be decreased by the difference. The net cost savings between the Tender Panel Price and Revised Panel Price will be shared in equal portions between the parties. In no case will the amount payable by the Principal on account of the Panel Price be more than the Tender Panel Price.

Option to Free Issue Panels or nominate Subcontractor

- 1.5 The Principal may at its sole discretion, by written notice given to the Contractor on or before the Notice to Proceed, either:
 - (a) exercise its Option to Free Issue Panels by giving the Contractor a notice in the form of Part B of Schedule [] or
 - (b) nominate to the Contractor the supplier of the Panels (**Nominated Subcontractor**) and direct the Contractor to subcontract with the Nominated Subcontractor for the supply of Panels.
- 1.6 The Contractor has no right of rejection in respect of a nomination or direction issued in accordance with clause 1.5, unless the type of Panels to be supplied by the Nominated Subcontractor would materially alter the preliminary design of the Project set out in Schedule [].

Option to Free Issue Panels

- 1.7 Commencing upon the issue of a notice by the Principal under clause 1.5(a), the parties must perform their obligations under this Contract on the basis that the Contract Price, the Works Specification and the provisions of this Contract will be adjusted as set out in Schedule [].
- 1.8 For the avoidance of doubt:
 - (a) the Principal is not under any obligation whatsoever to exercise
 - (b) the Principal is not entitled to make, nor will the Principal be liable upon, any Claim from the Contractor in respect of it not exercising any Option to Free Issue Panels.
- 1.9 The exercise of any Option to Free Issue Panels by the Principal under clause 1.5(a) will not:
 - (a) relieve the Contractor from its liability or obligations (including those arising out of any warranties given under this Contract)
 - (b) limit or otherwise affect the Principal's rights against the Contractor or the Contractor's rights against the Principal (including those arising out of any warranties given under this Contract) or
 - (c) entitle the Contractor to make a Claim, including an extension of time, except as provided for under this Contract (including under clause [] in Schedule []).

Nomination or novation of Supply Agreement

- 1.10 The Contractor agrees that the Principal may assign the benefit or novate to the Contractor the supply agreement entered into between the Principal and the Panel supplier following the exercise of the Principal's Option to Free Issue Panels under clause 1.5(a) in the agreed form in Schedule [] (**Supply Agreement**).
- 1.11 If the Principal directs an assignment or novation of the Supply Agreement, the Contractor must:
 - (a) accept the assignment by signing a deed of assignment or
 - (b) accept the novation by signing a deed of novation.

1.12 Unless the Supply Agreement is assigned or novated to you in accordance with clause 1.11, the Principal will procure the:

- (a) warranties for the Panels for the duration of the Warranted Component Part Period for Panels from both the manufacturers, agents and suppliers of the Panels
- (b) performance guarantee from the Nominated Subcontractor.

1.13 The warranties and performance guarantee will be in both the name of the Principal and the Contractor as warranty or guarantee (as applicable) and warrant or guarantee (as applicable) for the Warranted Component Part Defect Period for the Panels and the Panels will comply with all the requirements of this Contract.

Contractor's obligations for the Panels

1.14 The Contractor will remain responsible for obtaining the warranties for the Panels from the installer of the Panels in accordance with the Warranted Component Parts.

1.15 If the Contractor is required by clause 1.5(b) or clause 1.10 to enter into a subcontract, or to execute a deed of assignment or novation for the Supply Agreement the Contractor must proceed promptly to do so and must notify us in writing as soon as the subcontract, assignment or novation has been affected.

1.16 Where the Principal does not exercise its discretion to exercise any Option to Free Issue Panels and does not nominate a Nominated Subcontractor in accordance with clause 1.5(b), the Contractor must procure the supply of the Panels in accordance with the scope of Works set out in Schedule 1 for an amount equal to or less than the Tender Panel Price set out in Schedule [].

1.17 Where any part of the Tender Panel Price for supplying the Panel is not spent, then the amount not spent is to be deducted from the Contract Price. The Contractor must provide to the Principal evidence of the cost of supplying the Panels under clause 1.16. The Contractor will not be entitled to any increase in the Contract Price above the Tender Panel Price.

1.18 Despite any other provision of this Contract:

- (a) the Contractor is appointed to act as the Principal's agent for the purpose of managing the supply of the Panels under a Supply Agreement
- (b) the Contractor is responsible to the Principal for the Panels supplied by the Nominated Subcontractor to the same extent that the Contractor is responsible for any other part or parts of the Work or supply of Equipment under the Contract

- (c) the Contractor will not be relieved by any liability or obligation, including in respect to Defects, under the Contract because the Nominated Subcontractor supplied the Panels
- (d) the Contractor accepts and is responsible to the Principal for the design obligations in respect of the Works, including incorporating the Panels supplied by the Nominated Subcontractor into the final design as set out in Schedule 1
- (e) the Contractor may rely on the performance guarantee from the Nominated Subcontractor to the extent there is a Defect with the Panels
- (f) any matter within the control of a Nominated Subcontractor must be taken within the Contractor's reasonable control whether as the Principal's agent for the Supply Agreement or in accordance with a subcontract, assignment or novation of the Supply Agreement in accordance with clause 1.5(b) or clause 1.10
- (g) the Principal has no obligation or liability to the Contractor for any act, omission, default, breach of contract or insolvency of a Nominated Subcontractor arising from the subcontract with the Contractor under clause 1.5(b) or the assignment or novation of the Supply Agreement under clause 1.10
- (h) the Contractor must not, without the prior written consent of the Principal, do any act or thing which:
 - (i) varies, assigns or novates any of the Principal's rights or obligations under any subcontract with a Nominated Subcontractor or
 - (ii) changes the scope of, or requirements for, work to be provided by a Nominated Subcontractor.

1.19 The Contractor must not terminate a subcontract or novated or assigned Supply Agreement for the supply of the Panels from the Nominated Subcontractor without the written approval of the Principal (which is not to be unreasonably withheld) and as early as possible the Contractor must notify the Principal of the intention to terminate and reasons.

Replacement of Nominated Subcontractor

1.20 Despite any other provision of the Contract, if at any time for any reason:

- (a) the Contractor is unable to enter into a subcontract with a Nominated Subcontractor under clause 1.5(b) or effect a deed of assignment or novation of the Supply Agreement under clause 1.10
- (b) the Nominated Subcontractor repudiates or abandons the subcontract or Supply Agreement or
- (c) the subcontract or Supply Agreement with a Nominated Subcontractor is terminated, then:

- (d) the Contractor must request that the Principal nominate an alternative Nominated Subcontractor
- (e) if the Principal does not nominate an alternative Nominated Subcontractor within ten Business Days after the Contractor's request, the Contractor may proceed with the part or parts of the Work or supply of the Equipment under the Contract as if it were not Subcontract Work
- (f) the Contractor must have no Claim whatsoever by reason of the Principal taking up to ten Business Days after the Contractor's request to nominate an alternative Nominated Subcontractor or failing to nominate an alternative Nominated Subcontractor.

1.21 Subject only to clause 1.6, the Contractor must comply with any nomination or replacement nomination of a Nominated Subcontractor directed by the Principal regardless of the impact of the nomination on the Date for Commercial Operation. The Contractor will not be entitled to an extension of time for any delays to the Date for Commercial Operation caused by the acts or omissions, appointment or termination of a Nominated Subcontractor.

No relief and horizontal defences to Supply Agreement

- 1.22 The parties acknowledge and agree that the Contractor:
- (a) has read and understood the Supply Agreement
 - (b) accepts responsibility for and assumes the risk of all interface and coordination issues arising out of or in connection with the interface and coordination of the performance of the supply of the Panels with the Works under this Contract with the procurement and supply of the Panels under the Supply Agreement (as applicable) for the Panels.

- 1.23 The Contractor will not be entitled to make a Claim, to a payment of any sum from the Principal or to relief from any obligation to make payment to the Principal or relief from or reduction of any other liability, obligation or duty arising out of or in connection with this Contract including:
- (a) any extension of time
 - (b) any relief from liability for Delay Liquidated Damages or Performance Liquidated Damages or reduction in the Contract Price
 - (c) to meet the Commercial Operation Performance Guarantees
 - (d) any relief from liability for any other damages
 - (e) any relief for deductions from payments
 - (f) any relief from liability to rectify Defects
 - (g) any increase in the Contract Price or
 - (h) payment of any costs incurred,

which arises out of or in connection with any act or omission of the Nominated Subcontractor, whether under or in connection with this Contract or the Supply Agreement.

- 1.24 The Contractor waives any and all rights, under contract, tort or otherwise at law, to assert any and all defences which the Contractor may have to a Claim by the Principal for the non performance, inadequate performance or delay in performance under or in connection with this clause 1.





EPC and EPCM
delivery models

15 Engineering, Procurement and Construction (EPC) contracts in the process plant sector

Investing in Energy Transition Projects
March 2023



Purpose

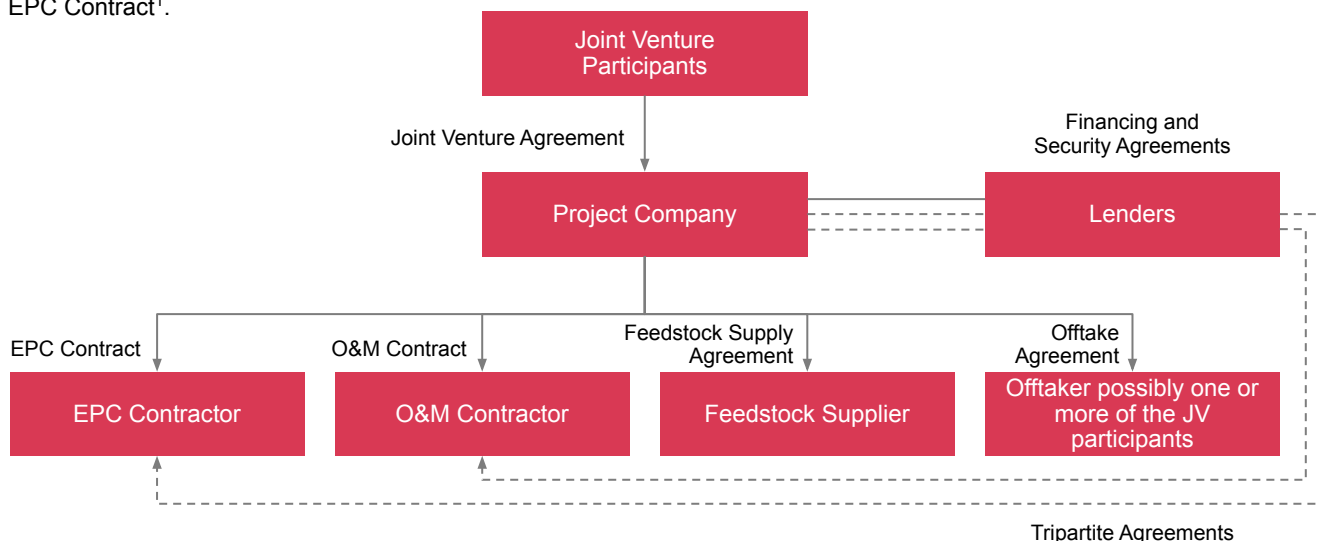
The purpose of this paper is to explain the use of Engineering, Procurement and Construction contracts (**EPC**) in the process plant sector.

Prior to examining process plant EPC Contracts in detail, it will be useful to explore the basic features of a process plant project.

Basic features of a process plant project

The contractual structure

The diagram below illustrates the basic contractual structure of a simple project financed process plant project using an EPC Contract¹.



The detailed contractual structure will vary from project to project. However, most projects will have the basic structure illustrated above². As can be seen from the diagram, the following agreements will usually be entered into:

- A Joint Venture (**JV**) agreement between the JV participants, which sets out the rights and obligations of the JV participants in relation to management, control and funding of the project. Usually the JV participants will establish a special purpose vehicle (referred to as the Project Company in the above diagram), which will be the entity that will construct and own the process plant facility. There is a significant advantage in establishing a special purpose vehicle as it means that one body is responsible for the delivery of projects and relationships with government, customers, Contractors and suppliers.
- An agreement governing the operation and maintenance of the process plant facility. This is usually a long-term Operating and Maintenance Agreement (**O&M agreement**) with an Operator for the operation and maintenance of the facility. The term of the O&M agreement will vary from project to project. The Operator will usually be one of the JV participants whose main business is manufacturing the product to be produced at the facility.
- A supply agreement governing the supply of feedstock to the process plant. For an ammonia and urea plant or a methanol plant, the main feedstock material is natural gas and therefore the Project Company will usually enter into a gas supply agreement with a local gas supplier. In most projects, this will require the construction of infrastructure for the supply of the feedstock to the facility. For example, a pipeline to supply natural gas to the facility. The Project Company will often engage a separate Contractor to design and construct this infrastructure.
- Offtake agreements govern the sale of the product of the project. For process plant projects, these agreements are crucial to the development proceeding. Financiers will not lend the funds and boards will not approve the project if there are no customers locked in to take the product. The impact of the offtake agreement is on practical completion. If there are take or pay agreements, it is vital that the project is ready to deliver the product from inception date of the offtake agreement or it will face penalties. It may even have to buy the product in the open market to meet its obligations. This can be a costly exercise if those markets are thinly traded or demand for these products is high.
- Financing and security agreements with the Lenders to finance the development of the project.

¹ A LNG project would also usually involve a shipping deal and/or pipeline aspects.

² Even if the project is developed by a large conglomerate, there are usually contracts between the various entities. For example, where the proponent will also be the supplier, there will often be a supply agreement put in place so that the new project is properly defeasible and business property accountable.

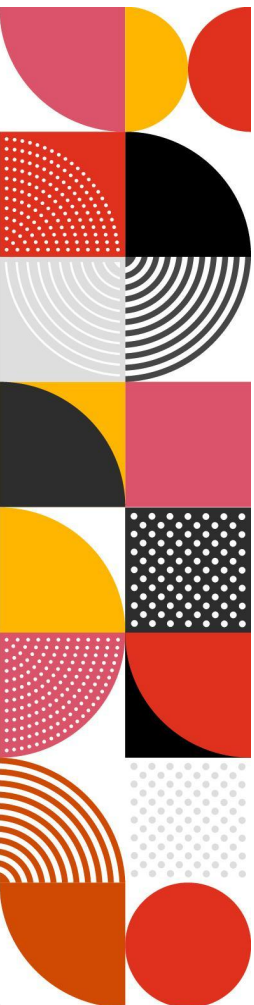
There are a number of contractual approaches that can be taken to construct a process plant facility. An EPC Contract is one approach. Another option is to have a supply contract, a design agreement and an infrastructure contract with or without a project management agreement. The project management can be, and often is, carried out by the proponent itself. Alternatively, an EPCM or project management contract can be used for the management. The choice of contracting approach will depend on a number of factors, including the time available, the Lender's requirements, the sophistication of the proponent and the identity of the Contractor(s).

Accordingly, the infrastructure contract is only one of a suite of documents on a process plant project. Importantly, the promoter or the joint venture participants of the project operate and earn revenue under contracts other than the infrastructure contract. Therefore, the infrastructure contract must, where practical, be tailored so as to be consistent with the requirements of the other project documents. As a result, it is vital to properly manage the interfaces between the various types of agreements. These interface issues are discussed in more detail below.

The major advantage of the EPC Contract over other possible approaches is that it provides for a single point of responsibility. This is discussed in more detail below.

Joint venture participants

- Interestingly, on large project-financed projects, the Contractor is increasingly becoming one of the Sponsors, for example, an equity participant in the Project Company. This is not the case in traditional process plant projects. Contractors will ordinarily sell down their interest after financial close because, generally speaking, Contractors will not wish to tie up their capital in operating projects. In addition, once construction is complete, the rationale for having the Contractor included in the Ownership consortium often no longer exists. Similarly, once construction is complete, a project will normally be reviewed as lower risk than a project in construction, therefore, all other things being equal, the Contractor should achieve a good return on its investments.
- Many Developers of process plant companies are large companies that sometimes choose to finance projects from their balance sheet. However, this is not always the case. Often they will seek finance to fund the project or there may be a number of small companies looking to develop assets that are regarded as stranded or too small for large companies to operate profitably. These smaller companies will need finance to carry out these developments. In these cases, the EPC Contractor is required to be a large, experienced participant in the industry so that the Sponsors and Lenders are confident it can successfully deliver the project and is large enough to cope with losses if it does not. Further, companies with a successful track record means that insurance for the project is easier to obtain. The larger Principal will still use an EPC Contract or design and construct contract for parts of large projects even if self-management, EPCM or project management are used for the greater project.



Bankability

A bankable contract is a contract with a risk allocation between the Contractor and the Project Company that satisfies the Lenders. Lenders focus on the ability (or more particularly the lack thereof) of the Contractor to claim additional costs and/or extensions of time as well as the security provided by the Contractor for its performance. The less comfortable the Lenders are with these provisions, the greater amount of equity support the Sponsors will have to provide. In addition, Lenders will have to be satisfied as to the technical risk. Obviously, price is also a consideration, but that is usually considered separately to the bankability of the contract because the contract price (or more accurately the capital cost of the project facility) goes more directly to the economic bankability of the project as a whole.

Before examining the requirements for bankability, it is worth briefly considering the appropriate financing structures and lending institutions. Historically, the most common form of financing for process plant projects is project financing. Project financing is a generic term that refers to financing secured only by the assets of the project itself. Therefore, the revenue generated by the project must be sufficient to support the financing. Project financing is also often referred to as either 'non-recourse' financing or 'limited recourse' financing.

The terms 'non-recourse' and 'limited recourse' are often used interchangeably, however, they mean different things. 'Non-recourse' means there is no recourse to the project Sponsor at all and 'limited recourse' means, as the name suggests, there is limited recourse to the Sponsor. The recourse is limited both in terms of when it can occur and how much the Sponsor is forced to contribute. In practice, true non-recourse financing is rare. In most projects, the Sponsor will be obliged to contribute additional equity in certain defined situations.

Traditionally, project financing was provided by commercial Lenders. However, as projects became more complex and financial markets more sophisticated, project finance also developed. In addition, as well as bank borrowings, Sponsors are also using more sophisticated products like credit wrapped bonds, securitisation of future cash flows and political, technical and completion risk insurance to provide a portion of the necessary finance.

In assessing bankability, Lenders will look at a range of factors and assess a contract as a whole. Therefore, in isolation it is difficult to state whether one approach is or is not bankable. However, generally speaking, the Lenders will require the following:

- a fixed completion date
- a fixed completion price
- no or limited technology risk
- output guarantees
- liquidated damages for both delay and performance
- security from the Contractor and/or its parent
- large caps on liability (ideally, there would be no caps on liability, however, given the nature of EPC Contracting and the risks to the Contractors involved, there are almost always caps on liability)
- restrictions on the ability of the Contractor to claim extensions of time and additional costs.

An EPC Contract delivers all of the requirements listed above in one integrated package. This is one of the major reasons why they are the predominant form of infrastructure contract used for large-scale project-financed infrastructure projects and why they can be effective in process plant projects.



Basic features of an EPC Contract

The key clauses in any infrastructure contract are those which impact on:

- time
- cost
- quality.

The same is true of EPC Contracts. However, EPC Contracts tend to deal with issues with greater sophistication than other types of infrastructure contracts. This is because, as mentioned above, an EPC Contract is designed to satisfy the Lenders' requirements for bankability.

EPC Contracts provide for:

- **A single point of responsibility:** The Contractor is responsible for all design, engineering, procurement, construction, commissioning and testing activities. Therefore, if any problems occur, the Project Company needs only look to one party—the Contractor—to both fix the problem and provide compensation. As a result, if the Contractor is a consortium comprising several entities, the EPC Contract must state that those entities are jointly and severally liable to the Project Company.
- **A fixed contract price:** Risk of cost overruns and the benefit of any cost savings are to the Contractor's account. The Contractor usually has a limited ability to claim additional money, which is limited to circumstances where the Project Company has delayed the Contractor or has ordered variations to the works.
- **A fixed completion date:** EPC Contracts include a guaranteed completion date that is either a fixed date or a fixed period after the commencement of the EPC Contract. If this date is not met, the Contractor is liable for delay liquidated damages (**DLDs**). DLDs are designed to compensate the Project Company for loss and damage suffered as a result of late completion of the facility.³ To be enforceable in common law jurisdictions, DLDs must be a genuine pre-estimate of the loss or damage that the Project Company will suffer if the facility is not completed by the target completion date. The genuine pre-estimate is determined by reference to the time the contract was entered into.

DLDs are usually expressed as a rate per day, which represents the estimated extra costs incurred (such as extra insurance, supervision fees and financing charges) and losses suffered (revenue forgone) for each day of delay.

In addition, the EPC Contract must provide for the Contractor to be granted an extension of time when it is delayed by the acts or omissions of the Project Company. The extension of time mechanism and reasons why it must be included are discussed below.

- **Performance guarantees:** The Project Company's revenue will be earned by operating the facility. Therefore, it is vital that the facility performs as required in terms of output, efficiency and reliability. Therefore, EPC Contracts contain performance guarantees backed by performance liquidated damages (**PLDs**) payable by the Contractor if it fails to meet the performance guarantees. The performance guarantees usually comprise a guaranteed production capacity, quality and efficiency. PLDs must also be a genuine pre-estimate of the loss and damage that the Project Company will suffer over the life of the project if the facility does not achieve the specified performance guarantees. As with DLDs, the genuine pre-estimate is determined by reference to the time the contract was signed. PLDs are usually a net present value (**NPV**) (less expenses) calculation of the revenue forgone over the life of the project. For example, for an ammonia and urea plant, if the production rate of urea is 50 tonnes less than the specification, the PLDs are designed to compensate the Project Company for the revenue forgone over the life of the project by being unable to sell that 50 tonnes of urea. It is possible to have a separate contract that sets out the performance requirements, testing regime and remedies. However, this can create problems where the EPC Contract and the performance guarantees do not match. In our view, the preferred option is to have the performance guarantees in the EPC Contract itself. PLDs and the performance guarantee regime and its interface with the DLDs and the delay regime are discussed in more detail below.

³ For the purposes of this paper, we have assumed the EPC Contract will be governed by the law of a common law jurisdiction. Where there are differences between jurisdictions, we have adopted the English law approach. Therefore, if an EPC Contract is governed by a law other than English law, you will need to seek advice from local counsel to ensure the contract is enforceable in the relevant jurisdiction. For example, in both the PRC and Malaysia, liquidated damages amounts specified in a contract may be subsequently altered by a court. If a party can show that the liquidated damages amounts will either under- or in some cases over-compensate a party, the court can adjust the damages payable so they more accurately reflect the actual damage suffered by a party.

- **Caps on liability:** As mentioned above, most EPC Contractors will not, as a matter of company policy, enter into contracts with unlimited liability. Therefore, EPC Contracts for process plant projects cap the Contractor's liability at a percentage of the contract price. This varies from project to project, however, a cap of 100% of the contract price is common. In addition, there are normally subcaps on the Contractor's liquidated damages liability. For example, DLDs and PLDs might each be capped at 20% of the contract price, with an overall cap on both types of liquidated damages of 30% of the contract price. There will also likely be a prohibition on the claiming of consequential damages. Put simply, consequential damages are those damages that do not flow directly from a breach of contract, but which may have been in the reasonable contemplation of the parties at the time the contract was entered into. This used to mean heads of damage like loss of profit. However, loss of profit is now usually recognised as a direct loss on project-financed projects and, therefore, would be recoverable under a contract containing a standard exclusion of consequential loss clause. Nonetheless, care should be taken to state explicitly that liquidated damages can include elements of consequential damages. Given the rate of liquidated damages is pre-agreed, most Contractors will not object to this exception.

In relation to both caps on liability and exclusion of liability, it is common for there to be some exceptions. The exceptions may apply to either or both the cap on liability and the prohibition on claiming consequential losses. The exceptions themselves are often project specific, however, some common examples include cases of fraud or wilful misconduct, situations where the minimum performance guarantees have not been met and the cap on DLDs has been reached, and breaches of the intellectual property warranties.
- **Security:** It is standard for the Contractor to provide performance security to protect the Project Company if the Contractor does not comply with its obligations under the EPC Contract. The security takes a number of forms, including:
 - A bank guarantee or bond for a percentage, normally in the range of 5–15% of the contract price. The actual percentage will depend on a number of factors including the other security available to the Project Company, the payment schedule (because the greater the percentage of the contract price unpaid by the Project Company at the time, it is most likely to draw on security, for example, to satisfy DLD and PLD obligations the smaller the bank guarantee can be), the identity of the Contractor and the risk of it not properly performing its obligations, the price of the bank guarantee and the extent of the technology risk
 - Advance payment guarantee, if an advance payment is made
 - A parent company guarantee—this is a guarantee from the ultimate parent (or other suitable related entity) of the Contractor, which provides that it will perform the Contractor's obligations if, for whatever reason, the Contractor does not perform.
- **Variations:** The Project Company has the right to order variations and agree to variations suggested by the Contractor. If the Project Company wants the right to omit works, either in their entirety or to be able to engage a different Contractor, this must be stated specifically. In addition, a properly drafted variations clause should make provision for how the price of a variation is to be determined. In the event the parties do not reach agreement on the price of a variation, the Project Company or its representative should be able to determine the price. This determination is subject to the dispute resolution provisions. In addition, the variations clause should detail how the impact, if any, on the performance guarantees is to be treated. For some larger variations, the Project Company may also wish to receive additional security. If so, this must also be dealt with in the variations clause.
- **Defects liability:** The Contractor is usually obliged to repair defects that occur in the 12 to 24 months following completion of the performance testing. Defects liability clauses can be tiered. That is, the clause can provide for one period for the entire facility and a second extended period, for more critical items.
- **Intellectual property:** The Contractor warrants that it has rights to all the intellectual property used in the execution of the works and indemnifies the Project Company if any third parties' intellectual property rights are infringed.
- **Force majeure (FM):** The parties are excused from performing their obligations if a FM event occurs. This is discussed in more detail below.
- **Suspension:** The Project Company usually has a right to suspend the works.
- **Termination:** This sets out the contractual termination rights of both parties. The Contractor usually has very limited contractual termination rights. These rights are limited to the right to terminate for non-payment or for prolonged suspension or prolonged FM and will be further limited by the tripartite or direct agreement between the Project Company, the Lenders and the Contractor. The Project Company will have more extensive contractual termination rights. They will usually include the ability to terminate immediately for certain major breaches or if the Contractor becomes insolvent and the right to terminate after a cure period for other breaches. In addition, the Project Company may have a right to terminate for convenience. It is likely the Project Company's ability to exercise its termination rights will also be limited by the terms of the financing agreements.

- **Performance specification:** Unlike a traditional infrastructure contract, an EPC Contract usually contains a performance specification. The performance specification details the performance criteria that the Contractor must meet. However, it does not dictate how they must be met. This is left to the Contractor to determine. A delicate balance must be maintained. The specification must be detailed enough to ensure the Project Company knows what it is contracting to receive but not so detailed that if problems arise, the Contractor can argue they are not its responsibility.

Whilst there are, as described above, numerous advantages to using an EPC Contract, there are some disadvantages. These include the fact that it can result in a higher contract price than alternative contractual structures. This higher price is a result of a number of factors, not least of which is the allocation of almost all the construction risk to the Contractor. This has a number of consequences, one of which is that the Contractor will have to factor into its price the cost of absorbing those risks. This will result in the Contractor building contingencies into the contract price for events that are unforeseeable and/or unlikely to occur. If those contingencies were not included, the contract price would be lower. However, the Project Company would bear more of the risk of those unlikely or unforeseeable events. Sponsors have to determine, in the context of their particular project, whether the increased price is worth paying.

As a result, Sponsor and their advisors must critically examine the risk allocation on every project. Risk allocation should not be an automatic process. Instead, the Project Company should allocate risk in a sophisticated way that delivers the most efficient result. For example, if a project is being undertaken in an area with unknown geology and without the time to undertake a proper geotechnical survey, the Project Company may be best served by bearing the site condition risk itself as it will mean the Contractor does not have to price a contingency it has no way of quantifying. This approach can lower the risk premium paid by the Project Company. Alternatively, the opposite may be true. The Project Company may wish to pay for the contingency in return for passing off the risk, which quantifies and caps its exposure. This type of analysis must be undertaken on all major risks prior to going out to tender.

Another consequence of the risk allocation is the fact that there are relatively few engineering and construction companies that can and are willing to enter into EPC Contracts. As mentioned in the introduction, some bad publicity and a tightening insurance market have further reduced the pool of potential EPC Contractors. The scarcity of EPC Contractors can also result in relatively high contract prices.

Another major disadvantage of an EPC Contract becomes evident when problems occur during construction. In return for receiving a guaranteed price and a guaranteed completion date, the Project Company cedes most of the day-to-day control over the construction. Therefore, project companies have limited ability to intervene when problems occur during construction. The more a Project Company interferes, the greater the likelihood of the Contractor claiming additional time and costs. In addition, interference by the Project Company will make it substantially easier for Contractors to defeat claims for liquidated damages and defective works.

Obviously, ensuring the project is completed satisfactorily is usually more important than protecting the integrity of the contractual structure. However, if a Project Company interferes with the execution of the works, they will, in most circumstances, have the worst of both worlds. They will have a contract that exposes them to liability for time and costs incurred as a result of their interference without any corresponding ability to hold the Contractor liable for delays in completion or defective performance. The same problems occur even where the EPC Contract is drafted to give the Project Company the ability to intervene. In many circumstances, regardless of the actual drafting, if the Project Company becomes involved in determining how the Contractor executes the works, then the Contractor will be able to argue that it is not liable for either delayed or defective performance.

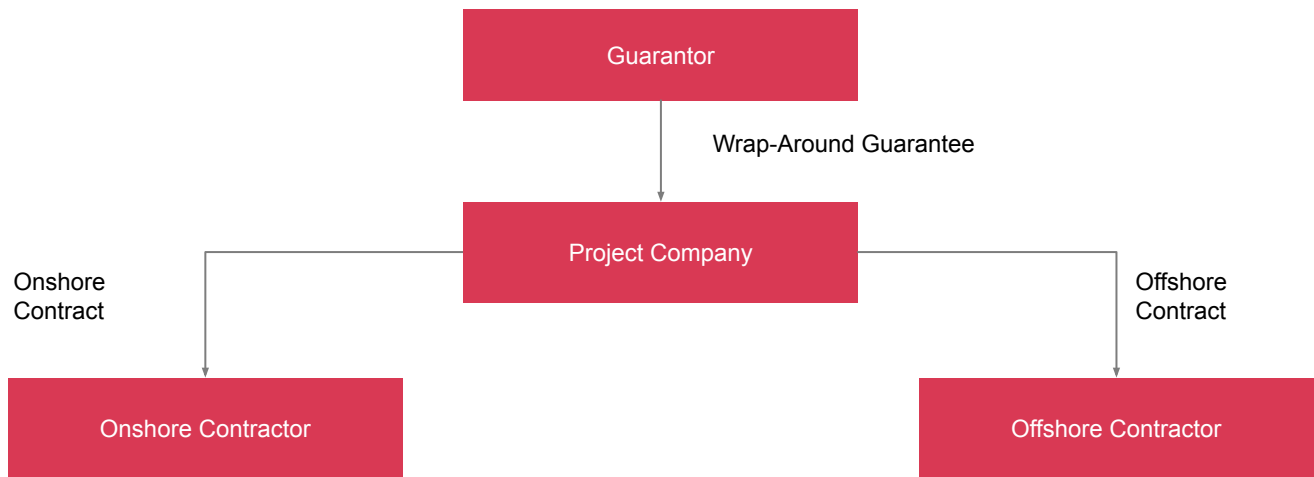
As a result, it is vitally important that great care is taken in selecting the Contractor and in ensuring the Contractor has sufficient knowledge and expertise to execute the works. Given the significant monetary value of EPC Contracts, and the potential adverse consequences if problems occur during construction, the lowest price should not be the only factor used when selecting Contractors.



Split EPC Contracts

One common variation, particularly in Asia, on the basic EPC structure illustrated above is a split EPC Contract. Under a split EPC Contract, the EPC Contract is, as the name implies, split into two or more separate contracts.

The basic split structure (illustrated below) involves splitting the EPC Contract into an onshore infrastructure contract and an offshore supply contract.⁴



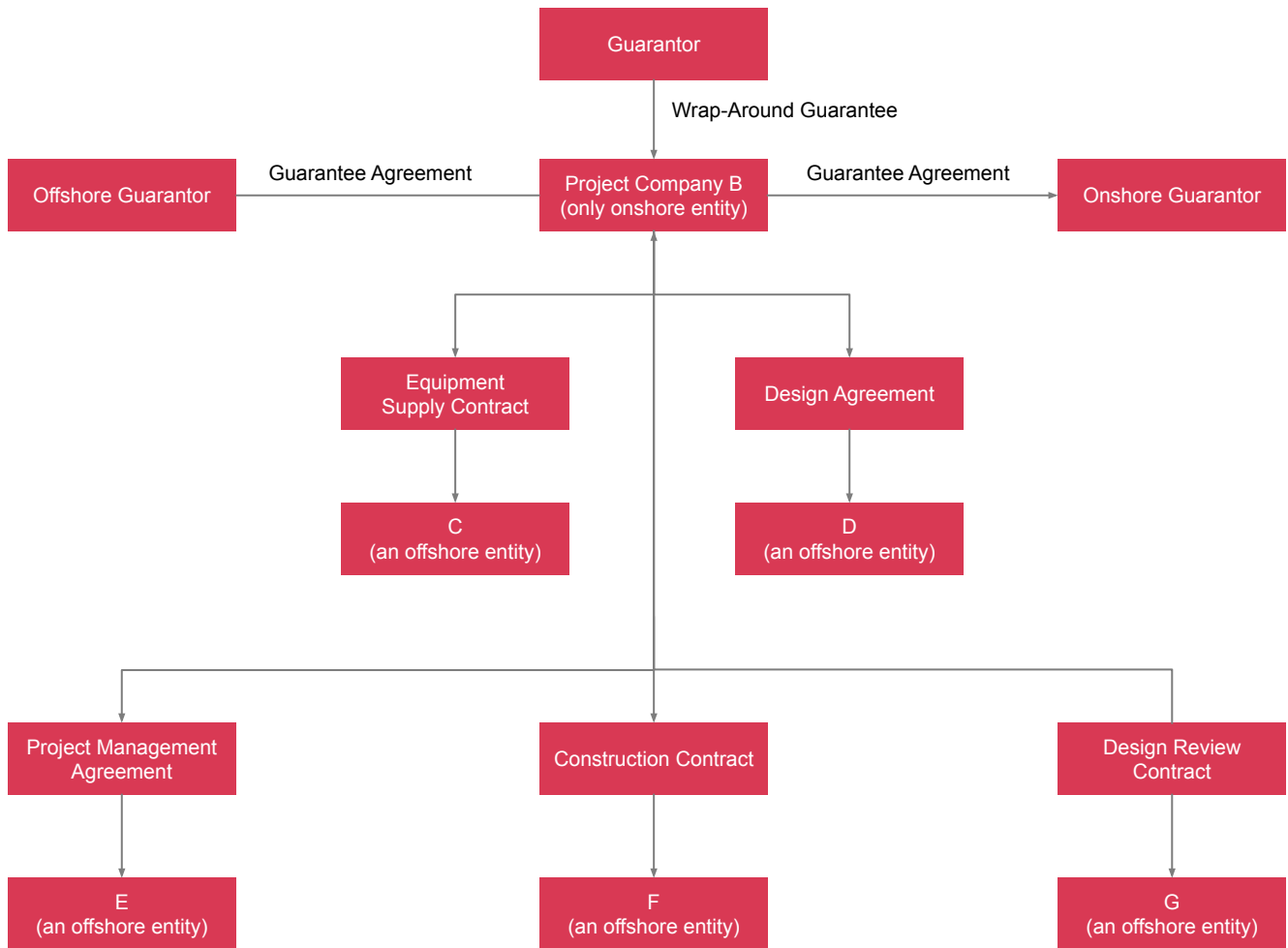
There are two main reasons for using a split contract. The first is because it can result in a lower contract price as it allows the Contractor to make savings in relation to onshore taxes; in particular on indirect and corporate taxes in the onshore jurisdiction. The second is because it may reduce the cost of complying with local licensing regulations by having more of the works, particularly the design works, undertaken offshore.⁵ In addition, in some countries that impose restrictions on who can carry out certain activities like engineering and design services, splitting the EPC Contract can also be advantageous because it can make it easier to repatriate profits. Below is a diagram illustrating a more complex split EPC structure we have used previously that dealt with both tax and licensing issues.



⁴ We have prepared a paper that deals with the variations and complications in split EPC Contracts. You should consult that paper if you want more information on this topic.

⁵ Modularisation is now a common form of construction and is an example where a split EPC Contract may be particularly appropriate.

Example of split EPC structure



Example of simple split EPC structure

Whilst a split EPC Contract can result in costs savings, there are risks to the Project Company in using such a structure. These mainly arise because of the derogation from the principle of a single point of responsibility.

Unlike a standard EPC Contract, the Project Company cannot look only to a single Contractor to satisfy all the contractual obligations (in particular, design, construction and performance). Under a split structure, there are at least two entities with those obligations. Therefore, a third agreement, a wrap-around guarantee,⁶ is used to deliver a single point of responsibility despite the split.

Under a wrap-around guarantee, an entity, usually either the offshore supplier or the parent company of the contracting entities, guarantees the obligations of both Contractors. This delivers a single point of responsibility to the Project Company and the Lenders. The contracting entities will then enter into a separate agreement to determine how, as between themselves, liability is to be apportioned. However, that agreement is not relevant for the purposes of this paper.

In addition, the wrap-around guarantee will, if properly drafted, prevent the various Contractors from relying on the defaults of the other parties to avoid performing their contractual obligations—a tactic known as a horizontal defence. The wrap-around guarantee should also prevent a Contractor from relying on the Project Company's default, where the Project Company's default was a result, either directly or indirectly, of the non-performance, under-Guarantor performance or delay in performance of any of the other Contractors under their respective contracts.

In addition to horizontal defences, the wrap-around guarantee should deal with the following matters:

- **Guarantees and indemnities:** The Guarantor must guarantee the performance of the totality of the works and the ability of the separate parts to work seamlessly.
- **Liquidated damages:** This is linked to the issue of horizontal defences discussed above. The wrap-around guarantee must ensure that liquidated damages are paid regardless of which Contractor is late and which Contractor fails to perform. Similarly, the aggregate cap of liability in the wrap-around guarantee must override any caps on liability in the split contracts themselves.

- **Provision of a performance bond by the Guarantor or its parent:** It is usually prudent to have the Guarantor provide security for their obligations under the wrap-around guarantee. This may be in addition to or in replacement of the security provided under the EPC Contracts themselves. It will depend on the particular requirements of each project.
- **Liability (and limitation of liability) of the Guarantor:** The Guarantor's liability should be equal to the aggregate liability of the contracting entities under the split EPC Contracts.
- **Duration of the wrap-around guarantee:** The wrap-around guarantee should remain in force for as long as possible to offer the Project Company additional protection in the event latent defects occur. In any event, it should remain in force until the expiry of the defects liability period or the resolution of any dispute arising out of or in connection with the construction of the facility, whichever occurs later.
- **Dispute resolution:** The procedures should be identical to those in the project documents and allow the Project Company to consolidate claims.
- **Termination:** Termination of an EPC Contract should automatically terminate the other EPC Contract(s) and the wrap-around guarantee (except in respect of accrued liability).
- **Tax indemnity:** Ideally, the Contractor(s) should indemnify the Project Company for any taxes or penalties payable as a result of the split.

In addition, the wrap-around guarantee should contain provisions dealing with the practical consequences of splitting the contract and how the contracts and the project should be administered. For example, there should also be clauses dealing with more mundane issues like notices. Notices issued under one contract should be deemed to be notices under the other contracts.

Whenever an EPC Contract is split, the primary driver of both the general structure of the split and the particular drafting approach must be achieving a tax-effective structure. Therefore, tax advice from experts in the relevant jurisdiction must be obtained and those experts must review the split contracts and the wrap-around guarantee.

⁶ This is also called a coordination agreement, an administration agreement or an umbrella deed.

The hidden dangers of split EPC Contracts

The split structure offers reduced taxation obligations on the Contractor by allowing the Contractor to avoid local taxes on equipment and materials purchased from 'offshore'. The savings result in a reduced project capital cost, which in turn may be passed onto the Project Company and its Lenders.

The concept of splitting EPC Contracts

As stated above, under the classic split, the EPC Contract is divided into two separate contracts, commonly referred to as the 'onshore contract' and the 'offshore contract'. The responsibilities of the offshore Contractor will usually be restricted to:

- the supply of design and engineering services
- the supply of plant, equipment and materials (equipment) sourced from outside the host country.

The responsibilities of the onshore Contractor will usually be restricted to:

- the installation of equipment sourced from outside the host country and procured under the offshore contract, once the equipment has reached its onshore destination
- the construction, testing, commissioning and other onsite activities (including some onshore design and engineering services) associated with the works
- the supply of equipment sourced from within the host country.

It will also be necessary to consider the splitting of obligations to provide training and supply spare parts.

To complete the split structure, an agreement is required to coordinate and wrap the obligations of the onshore and offshore Contractors to the Project Company. This way, any gaps that arise as a result of the split structure are appropriately covered and the Project Company's recourse, in the event of a failure in the performance of either the onshore Contractor or the offshore Contractor, will only be to a single entity—the Guarantor (as would have been the case in the traditional EPC Contract form). In some structures, the offshore Contractor will also be the Guarantor.

Why split EPC Contracts?

In a word: tax. The split structure is designed to avoid or reduce the profit element of any equipment supplied from outside the host country, or any design work performed outside the host country, becoming subject to local taxes. The classes of taxes, both direct and indirect, to which an EPC Contractor and Project Company may be exposed in the host country include value-added taxes; withholding taxes; technology transfer taxes; import and stamp duties; local construction and property licence fees and duties; and onshore income or profits tax.

Other commercial considerations may drive the split structure, such as avoidance of local 'red tape' requirements and costs associated with obtaining permits, approvals and submitting designs to local government authorities in the host country.

Caveat on splitting EPC Contracts

Splitting EPC Contracts will not be appropriate for every project. Appropriate local taxation advice and legal advice should always be sought before deciding whether to split the EPC Contract into two or more contracts to take advantage of taxation savings and other commercial benefits. Different legal and tax jurisdictions will have their own specific requirements, which will impact the structure. For example, in some jurisdictions, a mere reference in the onshore contract to the offshore contract (or vice-versa) may defeat the tax advantages that the split structure is intended to achieve.

The legal issues associated with splitting EPC Contracts

Specifications: Where two separate specifications are prepared, the Project Company should thoroughly review the specifications to ensure there are no inconsistencies and that when combined, they cover the entire works. Any 'gaps' produced as a result of splitting the specification should be covered in the umbrella agreement. If one specification is adopted to cover the whole of the works, then it should be made clear that the offshore Contractor's scope of work includes all activities associated with the supply of design and engineering services and the supply of equipment sourced from outside the host country. The onshore Contractor's scope of work will include all remaining activities necessary for the proper completion of the works.

Timing and performance issues: Where the split structure results in split liquidated damages and extension of time regimes, the Project Company will need to scrutinise the regimes in each contract to ensure they are consistent and interact logically and correctly.

Quality issues: The Project Company should ensure that the overall design obligations are assumed by one Contractor, usually the onshore Contractor which has established a presence in the host country. The Guarantor under the umbrella agreement should then provide a guarantee for the Contractor's design obligations.

Coordination issues: The onshore contract should provide that the onshore Contractor is responsible for all equipment sourced from offshore from the moment the offshore Contractor ceases to be responsible for that same equipment and in the same way that the offshore Contractor is responsible under the offshore contract for the equipment.

Residual legal issues: The Project Company should also address the following issues with a split structure:

- caps on liability and liquidated damages
- termination and suspension
- variations/change orders
- confidentiality issues
- governing law
- FM.

The umbrella agreement

In terms of providing the necessary legal protection to the Project Company, the most important document is the umbrella agreement (also known as a 'wrap-around guarantee agreement', 'coordination and administration agreement', 'supplemental agreement' or 'guarantee agreement'). The umbrella agreement will, if properly drafted, provide the Project Company with a single point of responsibility and more importantly, prevent the various Contractors from relying on each other's defaults to avoid performing their contractual obligations—a tactic known as a 'horizontal defence'. The umbrella agreement should also prevent a Contractor from relying on the Project Company's default where the Project Company's only default was a result, either directly or indirectly, of the non-performance, inadequate performance or delay in performance of any of the other Contractors under their respective contract. In addition to horizontal defences, the umbrella agreement should deal with the following matters:

- guarantees and indemnities
- liquidated damages
- the performance bond by the Guarantor's parent
- liability (and limitation of liability) of the Guarantor
- duration of the umbrella agreement
- dispute resolution—it should be identical to the project documents and allow the Project Company to consolidate claims.

Conclusion on splitting an EPC Contract

The splitting of works between two or more contracts is usually driven by tax and other commercial considerations. Provided appropriate taxation and legal advice is sought and received, and it should be in every case, and provided all associated legal issues are adequately addressed in the split contracts and co-ordinated and 'wrapped' in the umbrella agreement, the taxation and other commercial benefits offered under the split structure should flow through to the Project Company and its Lenders.

Key process plant-specific clauses in process plant EPC Contracts

General interface issues

As noted above, an EPC Contract is one of a suite of agreements necessary to develop a process plant project. Therefore, it is vital that the EPC Contract properly interfaces with those other agreements. In particular, care should be taken to ensure the following issues interface properly:

- commencement and completion dates
- liquidated damages amounts and trigger points
- caps on liability
- indemnities
- entitlements to extensions of time
- insurance
- FM
- intellectual property.

Obviously, not all these issues will be relevant for all agreements. In addition to these general interface issues that apply to most types of projects, there are also process plant project issues that must be considered. These issues are many and varied and depend largely on the nature of the project. For example, on a methanol project, the facility must be ready and able to accept feedstock, process it to meet rigorous occupational health, safety and environmental guidelines and export methanol to meet supplier and customer demands and contractual obligations. They are discussed in more detail below.

Some major process plant-specific interface issues are:

- access for the Contractor to the feedstock to allow timely completion of construction, commissioning and testing
- consistency of commissioning and testing regimes
- feedstock, product and by-product (such as greenhouse emissions) specification requirements
- interface issues between the relevant government agencies and System Operator and the Contractor. In particular, whilst the Project Company must maintain a long-term/comfortable relationship with either the government or the System Operator, the Contractor does not.



Feedstock and product storage

Usually, EPC Contracts will not provide for the handover of the facility to the Project Company until all commissioning and reliability trialling has been successfully completed.⁷

This raises the important issue of the supply of feedstock and other consumables (such as water) and receipt of product during testing and commissioning. There is also the need for the EPC Contract to clearly define the obligations of the Project Company in providing feedstock and sufficient storage or product demand to fully and properly commission and test the facility.

Lenders need to be able to avoid the situation where the Project Company's obligation to ensure feedstock and storage (or demand) is uncertain. This will result in protracted disputes with the Contractor concerning the Contractor's ability to commission and test the facility at design conditions and to obtain extensions of time in situations where delay has been caused as a result of the failure or otherwise of the Project Company to provide sufficient (or sufficient quality) feedstock or storage.

With respect to the obligation to ensure the availability of sufficient feedstock, the Project Company is the most appropriate party to bear this risk *vis-à-vis* the Contractor, since the Project Company usually either builds the infrastructure itself or has it provided through the relevant supply agreement. Issues that must be considered include:

- Where is the feedstock from, an existing facility or a new facility?
- If it is a new facility, what is the timing for completion of that facility—will it fit in with the timing under the EPC Contract? What are the risks—and what can be done if it is not finished?
- Will new infrastructure be required to transport the feedstock material to the site—such as the construction of a new pipeline? Will this be completed in time?
- What happens if insufficient feedstock is available or not available at all? Contractors will usually want the test to be deemed complete in these circumstances.
- What happens if the feedstock does not meet the specification? The EPC Contract should provide an adjustment mechanism to cope with this.

From the Project Company's perspective, the EPC Contract should set out the quantity of feedstock material and the date at which it must be provided. If possible, it should specify a maximum quantity that will be supplied. This will enable the Project Company to arrange the supply of this material by entering into a supply agreement with a third party.

With respect to the Contractor's ability to export product or store product, the EPC Contract must adequately deal with this risk and satisfactorily answer the following questions to ensure the smooth testing, commissioning and achieving commercial operation:

- What is the extent of the product export obligation? It will usually be an obligation to provide storage or demand for the product for a fixed period of time.
- What is the timing for the commencement of this obligation? Does the obligation cease at the relevant target date of completion? If not, does its nature change after the date has passed?
- What is the obligation of the Project Company to provide demand or storage in cases where the Contractor's commissioning/plant is unreliable—is it merely a reasonableness obligation?
- Which party is responsible for loss or damage to the product that is being stored?
- What happens if the Project Company fails to provide sufficient storage or demand? Contractors will usually seek to have the test deemed complete.

Many EPC Contracts are silent on these matters or raise far more questions than they actually answer. Given that the Project Company's failure will stem from restrictions imposed on it under its supply or offtake agreements, the best answer is to back-to-back the Project Company's obligations under the EPC Contract (usually to provide an extension of time and/or costs) with its supply and offtake agreements. This approach will not eliminate the risk associated with commissioning and testing issues, but will make it more manageable.

Our experience in a variety of projects has taught us that the issue of availability and quality of feedstock and availability of storage or demand is a matter that must be resolved at the contract formation stage.

⁷ Some Principals will, however, carry out the commissioning themselves.

Interfacing of commissioning and testing regimes

It is also important to ensure the commissioning and testing regimes in the EPC Contract mirror the requirements of any supply and offtake agreements. Mismatches only result in delays, lost revenue and liability for damages under the EPC Contract, supply or offtake agreements, all of which have the potential to cause disputes. This is even more important where the EPC Contract is part of a larger development, say a methanol plant on the back of a new gas processing plant. For example, the gas process plant might need the methanol plant to take its product as much as the methanol plant needs its product. If the interface is not carefully thought through and agreed in the contracts, then this interface becomes a ripe area for disputes.

Testing/trialling requirements under any related contracts must provide the necessary Project Company satisfaction under the EPC Contract and the offtake and supply contracts. Relevant testing issues which must be considered include:

- Will any related facilities be required for the tests/trialling?
- Is there consistency between obtaining handover from the Contractor under the EPC Contract and commercial operation? It is imperative to ensure that there is a sufficient window for the EPC Contract facility and any related facilities to be tested. Contractors will usually want an agreement that where the testings/trials cannot be undertaken, through no fault of its own, in a reasonable time frame, the test/trials are deemed to be completed. It must not be forgotten that various certifications will be required at the Lender level. The last thing the Lenders will want is the process to be held up by their own requirements for certification. To avoid delays and disruption, it is important that the Lenders' engineer is acquainted with the details of the project and, in particular, any potential difficulties with the testing regime. Therefore, any potential problems can be identified early and resolved without impacting the commercial operation of the facility.
- Is the basis of the testing to be undertaken mirrored under both the EPC Contract and related facility? Using the methanol example above, is the gas processing plant required to produce the same quality gas that the methanol plant is to be tested/trialled, and ultimately operated on?⁸

- On what basis are various environmental tests to be undertaken?
- What measurement methodology is being used? Are the correction factors to be applied under the relevant documents uniform? Are references to international standards or guidelines to a particular edition or version?
- Are all tests necessary for the Contractor to complete under the EPC Contract able to be performed as a matter of practice?

Significantly, if the relevant specifications are linked to guidelines such as the international environmental guidelines, consideration must be given to changes which may occur in these guidelines. The EPC Contract reflects a snapshot of the standards existing at a time when that contract was signed. It may be a number of years post that date in which the actual construction of the project is undertaken, thus allowing for possible mismatches should the legislative/guidelines have changed as regards environmental concerns. It is important that there is certainty as to which standard applies. Is it the standard at the time of entering the EPC Contract or is it the standard which applies at the time of testing?

Consideration must therefore be given to the appropriate mechanism to deal with potential mismatches between the ongoing obligation of complying with laws, and the Contractor's obligation to build to a specification agreed at a previous time. Consideration must be given to requiring satisfaction of guidelines 'as amended from time to time'⁹. The breadth of any change of law provision will be at the forefront of any review.

The above issues raise the importance of the testing schedules to the EPC Contract. The size and importance of the various projects to be undertaken must mean that the days where schedules are attached at the last minute without being subject to review are gone—they are part and parcel of the EPC Contract.

Discrepancies between the relevant testing and commissioning requirements will only serve to delay and distract all parties from the successful completion of testing and reliability trials.

These are all areas where lawyers can add value to the successful completion of projects by being alert to and dealing with such issues at the contract formation stage.

⁸ This sounds basic but it has been a relatively common error. The same issue arises if the testing, using this example, was contingent on another related facility being able to accept some or all of the product.

⁹ It is often the case that if amendments to the design are required as a result, the Contractor will be entitled to extensions of time and/or variations.

Feedstock specification issues

The nature of the feedstock to be supplied to the Contractor under the EPC Contract is also another important issue. Where there is a supply agreement¹⁰, it is vitally important that adequate review is done at the EPC Contract level to ensure the feedstock being provided under the supply agreement meets the requirements of the EPC Contract. Similar consideration will need to be given to any Project Company where it will be supplying the feedstock itself. This is a common area of dispute where the facility fails to meet the specification in test/trials.

Differing feedstock specification requirements can only result in delay, cost claims and extension of time claims at the EPC Contract level. Feedstock specification issues will be hidden away in the schedules. Again, watch out for those schedules.

In addition, where certain tests require specific types or quality of feedstock, the review should check there are arrangements in place for that type of quality of feedstock to be provided. If the specification calls for a wide range of feedstock and provision is made for it to be tested as such, it will be meaningless if the test cannot be undertaken. For example, the production plan might show an increase in a certain contaminant over the life of the project, so a test on the lower quality feedstock may be appropriate, but only if it is possible to do so.

Interface issues between a supplier or offtaker and the EPC Contractor

At a fundamental level, it is imperative that the appropriate party corresponds with the relevant supplier or offtaker/System Operator during construction on issues such as the provision of offtake facilities/feedstock requirements/testing requirements and timing.

The Project Company must ensure the EPC Contract states clearly that it is the appropriate party to correspond with the supplier or offtaker and the System Operator. Any uncertainty in the EPC Contract may unfortunately see the EPC Contractor dealing with the supplier or offtaker and/or the System Operator thus possibly risking the relationship of the Project Company with its customer. Significantly, it is the Project Company which must develop and nurture an ongoing and long-term relationship with the offtaker. On the other hand, it is the Contractor's prime objective to complete the project on time or earlier at a cost which provides it with significant profit. The clash of these conflicting objectives in many cases does not allow for such a smooth process. Again, the resolution of these issues at the EPC Contract formation stage is imperative.

Interface issues between the operating and maintenance agreement and the EPC Contract

During the transition from the construction to operating phase of the project, a number of interface issues arise which need to be addressed by both the EPC Contract and the operating and maintenance agreement.

The first is commissioning. In many EPC Contracts, the Project Company is required to provide personnel to assist the Contractor with commissioning. The personnel provided by the Project Company will more than often be personnel of the Operator.

To enable the Operator to have sufficient time to mobilise its personnel, it needs to have adequate notice of the likely date of the commencement of commissioning. This is particularly important where the Operator is not a local or domestic organisation and will be mobilising personnel from different parts of the world. An EPC Contract, therefore, must require the Contractor to give advance notice to the Project Company as to the likely date of commissioning.

The second interface issue that needs to be addressed is the completion and handover of the facility. Again, the Operator will need to have sufficient notice of the likely date of completion as the commencement date under the operating and maintenance agreement (commencement of operation) will immediately follow this date. As with commissioning, the Operator will need to mobilise personnel that are not already on site assisting with commissioning.

On some projects, the Contractor (or the Project Company itself depending on the identity of the Sponsor) may require the Project Company to carry out the commissioning and performance testing. In those circumstances, handover of the facility will usually take place on mechanical completion.

While this arrangement may provide the Project Company with greater control of commissioning and performance testing, it creates bankability issues. For example, if the performance guarantees are not achieved or the project is not completed by the guaranteed completion date, the Contractor could argue that the acts or omissions of the Project Company prevented it from achieving the performance guarantees or completion by the guaranteed completion date. Even when such allegations are without merit, they can be very difficult and expensive to disprove. For those reasons, it is preferable if the EPC Contract provides that the Contractor is responsible for commissioning and carrying out the performance tests and not the Project Company.¹¹

¹⁰ As opposed to the situations of the Operator of the new plant also supplying the feedstock, which presents its own problems.

¹¹ Ibid.

Key performance clauses in process plant EPC Contracts

Rationale for imposing liquidated damages

Almost every infrastructure contract will impose liquidated damages for delay and impose standards in relation to the quality of construction. Most, however, do not impose PLDs. EPC Contracts impose PLDs because the achievement of the performance guarantees has a significant impact on the ultimate success of a project. Similarly, it is important that the facility commences operation on time because of the impact on the success of the project and because of the liability the Project Company will have under other agreements. This is why DLDs are imposed. DLDs and PLDs are both sticks used to motivate the Contractor to fulfil its contractual obligations.

The law of liquidated damages

As discussed above, liquidated damages must be a genuine pre-estimate of the Project Company's loss. If liquidated damages are more than a genuine pre-estimate, they will be a penalty and unenforceable. There is no legal sanction for setting a liquidated damages rate below that of a genuine pre-estimate, however, there are the obvious financial consequences.

In addition to being unenforceable as a penalty, liquidated damages can also be void for uncertainty or unenforceable because they breach the Prevention Principle. Void for uncertainty means, as the term suggests, that it is not possible to determine how the liquidated provisions work. In those circumstances, a court will void the liquidated damages provisions. The Prevention Principle was developed by the courts to prevent Employers, for example, project companies, from delaying Contractors and then claiming DLDs. It is discussed in more detail below in the context of extensions of time.

Prior to discussing the correct drafting of liquidated damages clauses to ensure they are not void or unenforceable, it is worth considering the consequences of an invalid liquidated damages regime. If the EPC Contract contains an exclusive remedies clause, the result is simple—the Contractor will have escaped liability unless the contract contains an explicit right to claim damages at law if the liquidated damages regime fails. This is discussed in more detail below.

If, however, the EPC Contract does not contain an exclusive remedies clause, the non-challenging party should be able to claim at law for damages they have suffered as a result of the challenging party's non-or defective-performance. What then is the impact of the caps in the now invalidated liquidated damages clauses?

Unfortunately, the position is unclear in common law jurisdictions, and a definitive answer cannot be provided based upon the current state of authority. It appears the answer varies depending upon whether the clause is invalidated due to its character as a penalty, or because of uncertainty or unenforceability. Our view of the current position is set out below. We note that whilst the legal position is not settled, the position presented below does appear logical.

- **Clause invalidated as a penalty:** When liquidated damages are unenforceable at law because they are a penalty (for example, they do not represent a genuine pre-estimate of loss), the cap on liquidated damages will not act as a cap on damages claims at general law. Equity will also read down a penalty and allow appropriate compensation. This may not be an issue if the provision is less than the loss suffered. We also note that it is rare for a court to find liquidated damages are penalties in contracts between two sophisticated, well-advised parties.
- **Clause invalidated due to acts of prevention by the Principal:** When a liquidated damages clause is invalidated due to an act of prevention by the Principal for which the Contractor is not entitled to an extension of time, the liquidated damages or its cap will not act as a cap on damages claims at general law.
- **Clause void for uncertainty:** A liquidated damages clause which is unworkable or too uncertain to ascertain what the parties intended, is severed from the EPC Contract in its entirety, and will not act as a cap on the damages recoverable by the Principal from the Contractor. Upon severance, the clause is, for the purposes of contractual interpretation, ignored.

However, it should be noted that the threshold test for rendering a clause void for uncertainty is high, and courts are reluctant to hold that the terms of a contract, in particular a commercial contract where performance is well advanced, are uncertain.

Drafting of liquidated damages clauses

Given the role liquidated damages play in ensuring EPC Contracts are bankable, and the consequences detailed above of the regime not being effective, it is vital to ensure they are properly drafted to ensure Contractors cannot avoid their liquidated damages liability on a legal technicality.

Therefore, it is important, from a legal perspective, to ensure DLDs and PLDs are dealt with separately. If a combined liquidated damages amount is levied for late completion of the works, it risks being struck out as a penalty because it will over-compensate the Project Company. However, a combined liquidated damages amount levied for under-performance may under-compensate the Project Company.

Our experience shows that there is a greater likelihood of delayed completion than there is of permanent under-performance. One of the reasons why projects are not completed on time is that Contractors are often faced with remedying performance problems. This means, from a legal perspective, if there is a combination of DLDs and PLDs, the liquidated damages rate should include more of the characteristics of DLDs to protect against the risk of the liquidated damages being found to be a penalty.

If a combined liquidated damages amount includes a NPV or performance element, the Contractor will be able to argue that the liquidated damages are not a genuine pre-estimate of loss when liquidated damages are levied for late completion only. However, if the combined liquidated damages calculation takes on more of the characteristics of DLDs the Project Company will not be properly compensated if there is permanent under-performance.

Where there is significant under-performance such as a failure to meet the minimum performance guarantees, an EPC Contract will generally provide for remedies other than the payment of PLDs. For example, the range of remedies usually included in an EPC Contract in relation to the minimum performance guarantees not being met are:

- the Contractor is required to replace the facility or any part of the facility and repeat the performance tests until the minimum performance guarantees are met
- termination of the contract with the Project Company completing the facility or engaging a third party to do so
- rejection of the facility or part of the facility in which case the Contractor must repay all sums paid by the Project Company and the cost of dismantling and clearing the facility or part of the facility
- issuing a certificate of completion despite the Contractor not meeting the minimum performance guarantees with a corresponding reduction in the contract price.

It is also important to differentiate between the different types of PLDs to protect the Project Company against arguments by the Contractor that the PLDs constitute a penalty. For example, if a single PLD's rate is only focused on output and not efficiency, problems and uncertainties will arise if the output guarantee is met but one or more of the efficiency guarantees are not. In these circumstances, the Contractor will argue that the PLDs constitute a penalty because the loss the Project Company suffers if the efficiency guarantees are not met are usually smaller than if the output guarantees are not met.

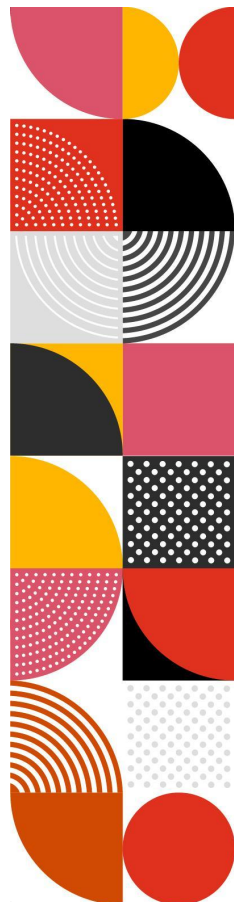
Drafting of the performance guarantee regime

Now that it is clear that DLDs and PLDs must be dealt with separately, it is worth considering, in more detail, how the performance guarantee regime should operate. A properly drafted performance testing and guarantee regime is important because the success or failure of the project depends, all other things being equal, on the performance of the process plant facility.

The major elements of the performance regime are:

- testing
- guarantees
- liquidated damages.

Liquidated damages were discussed above. Testing and guarantees are discussed below.



Testing

Performance tests may cover a range of areas. Three of the most common are:

- **Functional tests:** These test the functionality of certain parts of the facility. For example, pumps, valves, pressure vessels etc. They are usually discrete tests which do not test the facility as a whole. Liquidated damages do not normally attach to these tests. Instead, they are absolute obligations that must be complied with. If not, the facility will not reach the next stage of completion (for example, mechanical completion or provisional acceptance).
- **Emissions tests:** These test compliance against environmental requirements. Again, these are normally absolute obligations because the consequences of failure can be as severe as being forced to shut down the facility. These tests should ensure the most stringent obligations imposed on the Project Company, whether by government regulations or by Lenders, are met. Emissions tests occur at various times, including during and after performance tests. Liquidated damages are sometimes levied if the Contractor fails the emissions tests. However, given emissions tests are usually related to environmental approvals, it is likely that the facility will not be able to operate if the emissions tests are failed. Therefore, passing the emissions tests is usually an absolute obligation not linked to liquidated damages.
- **Performance tests:** These test the ability of the facility to meet the performance criteria specified in the contract. There are often minimum and guaranteed levels of performance specified and, as discussed above, providing the minimum levels are met, the consequence of failure is normally the payment of PLDs. Satisfaction of the minimum performance guarantees¹² is normally an absolute obligation. The minimum performance guarantees should be set at a level of performance at which it is economic to accept the facility. Lender's input will be vital in determining what this level is. However, it must be remembered that Lenders have different interests to the Sponsor. Lenders will, generally speaking, be prepared to accept a facility that provides sufficient income to service the debt. However, in addition to covering the debt service obligations, Sponsors will also want to receive a return on their equity investment. If that will not be provided via the sale of product because the Contractor has not met the performance guarantees, the Sponsor will have to rely on the PLDs to earn their return. In some projects, the performance tests occur after handover of the facility to the Project Company. This means the Contractor no longer has any liability for DLDs during performance testing.

In our view, it is preferable, especially in project-financed projects, for handover to occur after completion of performance testing. This means the Contractor continues to be liable for DLDs until either the facility operates at the guaranteed level or the Contractor pays PLDs where the facility does not operate at the guaranteed level.¹³ Obviously, DLDs will be capped (usually at 20% of the contract price); therefore, the EPC Contract should give the Project Company the right to call for the payment of the PLDs and accept the facility. If the Project Company does not have this right, the problem mentioned above will arise, namely, the Project Company will not have received its facility and will not be receiving any DLDs as compensation.

It is common for the Contractor to be given an opportunity to modify the facility if it does not meet the performance guarantees on the first attempt. This is because the PLD amounts are normally very large and most Contractors would prefer to spend the time and the money necessary to remedy performance instead of paying PLDs. Not giving Contractors this opportunity will likely lead to an increased contract price both because Contractors will over-engineer the facility and will build a contingency for paying PLDs into the contract price. The second reason is because in most circumstances the Project Company will prefer to receive a facility that operates at 100% capacity and efficiency. The right to modify and retest is another reason why DLDs should be payable up to the time the performance guarantees are satisfied.

If the Contractor is to be given an opportunity to modify and retest, the EPC Contract must deal with who bears the costs of the additional feedstock and consumables required to undertake the retesting. The cost of the feedstock in particular can be significant and should, in normal circumstances, be to the Contractor's account because the retesting only occurs if the performance guarantees are not met at the first attempt.

¹² This can be in the form of steady state testing.

¹³ If the contract contains a term that handover will not occur until the performance guarantees are met, there will be a regime by which this may be waived.

Technical issues

Ideally, the technical testing procedures should be set out in the EPC Contract. However, for a number of reasons, including the fact that it is often not possible to fully scope the testing programme until the detailed design is complete, the testing procedures are usually left to be agreed during construction by the Contractor, the Project Company's representative or engineer and, if relevant, the Lenders' engineer. However, a properly drafted EPC Contract should include the guidelines for testing.

The complete testing procedures must, as a minimum, set out details of:

- **Testing methodology:** Reference is often made to standard methodologies, for example, the American Society of Mechanical Engineers methodology.
- **Testing equipment:** Who is to provide it, where it is to be located, how sensitive must it be.
- **Tolerances:** What is the margin of error.
- **Ambient conditions:** What atmospheric conditions are assumed to be the base case (testing results will need to be adjusted to take into account any variance from these ambient conditions).
- **Steady state testing:** Using ordinary parameters to avoid running the plant at unsustainable short-term rates.

Provision of consumables and feedstock

The responsibility for the provision of consumables and feedstock required to carry out the performance tests must be clearly set out in the EPC Contract. In general, the Project Company will be responsible for the provision of both consumables and feedstock.

As the proper interpretation of the Project Company's obligation to supply consumables is often a matter of dispute between the Project Company and Contractor, it is important for the EPC Contract to precisely identify the quality and quantity of consumables to be provided as well as the time for provision of those consumables (which should be linked to the progress of the works rather than a specific date). The responsibility for the cost of providing consumables and feedstock must also be clearly identified. This is discussed in more detail in the section on feedstock specification issues.

An example of the performance testing and guarantee regime we have used on a number of projects is included in Appendix 1 of this paper.

These example clauses are only extracts from a complete contract and ideally should be read as part of that entire contract and, in particular, with the clauses that deal with DLDs, PLDs, liability, the scope of the Contractor's obligations, including any fitness for purpose warranties and termination. Nonetheless, they do provide an example of the way a performance testing and liquidated damages regime can operate.

The process is best illustrated diagrammatically. Refer to the flowcharts below to see how the various parts of the performance testing regime should interface.

Key general clauses in EPC Contracts

Delay and extensions of time

The Prevention Principle

As noted previously, one of the advantages of an EPC Contract is that it provides the Project Company with a fixed completion date. If the Contractor fails to complete the works by the required date, it is liable for DLDs. However, in some circumstances, the Contractor is entitled to an extension of the date for completion. Failure to grant that extension can void the liquidated damages regime and set time at large. This means the Contractor is only obliged to complete the works within a reasonable time.

This is the situation under common law governed contracts due to the Prevention Principle. The Prevention Principle was developed by the courts to prevent Employers, for example, project companies, from delaying Contractors and then claiming DLDs.

The legal basis of the Prevention Principle is unclear and it is uncertain whether you can contract out of the Prevention Principle. Logically, given most commentators believe the Prevention Principle is an equitable principle, explicit words in a contract should be able to override the principle. However, the courts have tended to apply the Prevention Principle even in circumstances where it would not, on the face of it, appear to apply. Therefore, there is a certain amount of risk involved in trying to contract out of the Prevention Principle. The more prudent and common approach is to accept the existence of the Prevention Principle and provide for it in the EPC Contract.

The Contractor's entitlement to an extension of time (**EOT**) is not absolute. It is possible to limit the Contractor's rights and impose pre-conditions on the ability of the Contractor to claim an extension of time. A relatively standard EOT clause would entitle the Contractor to an EOT for:

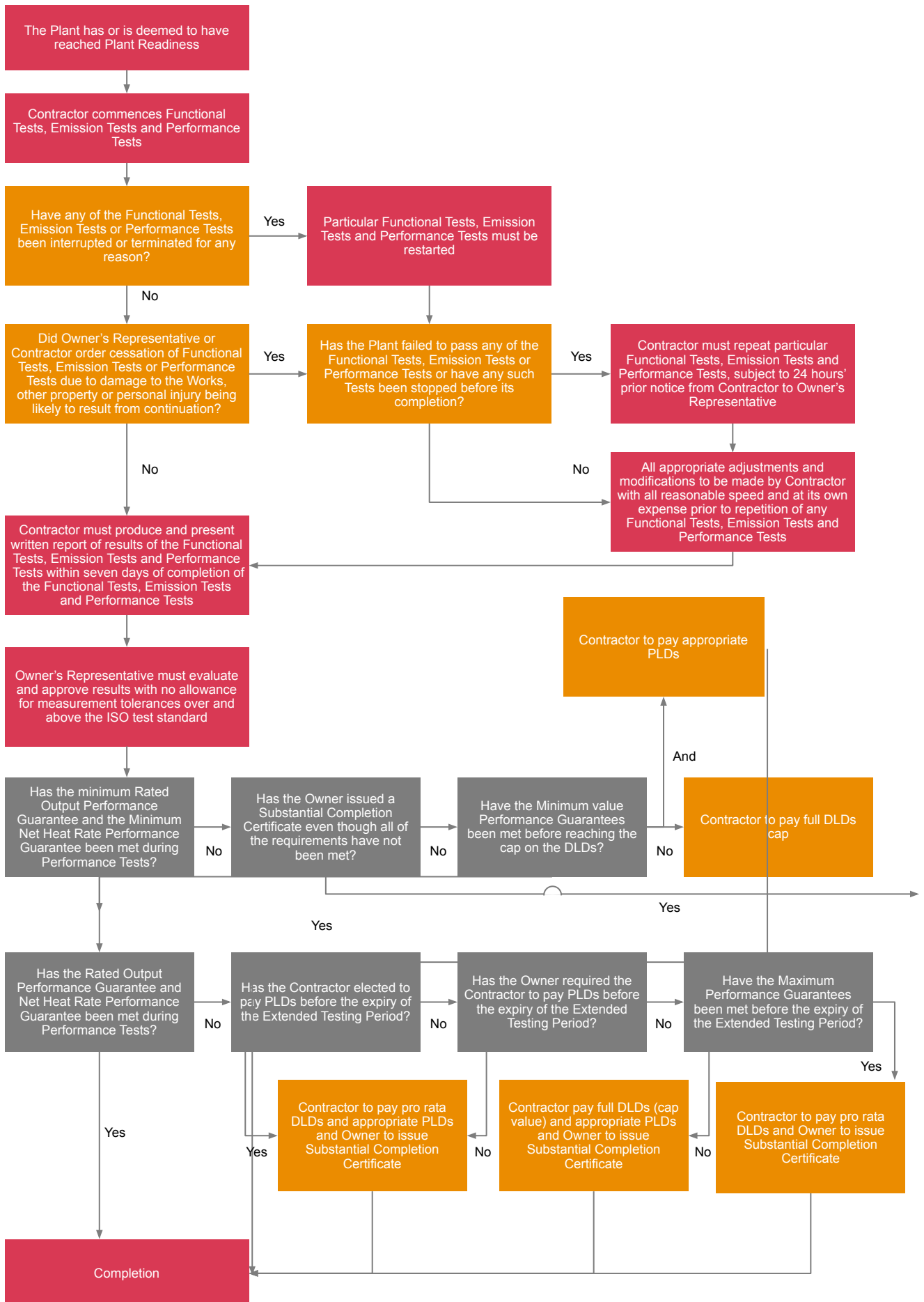
- an act, omission, breach or default of the Project Company
- suspension of the works by the Project Company (except where the suspension is due to an act or omission of the Contractor)
- a variation (except where the variation is due to an act or omission of the Contractor)
- *FM*,

which cause a delay on the critical path and about which the Contractor has given notice within the period specified in the contract. It is permissible (and advisable) from the Project Company's perspective to make both the necessity for the delay to impact the critical path and the obligation to give notice of a claim for an extension of time conditions precedent to the Contractor's entitlement to receive an EOT. In addition, it is usually good practice to include a general right for the Project Company to grant an EOT at any time. However, this type of provision must be carefully drafted because some judges have held (especially when the Project Company's representative is an independent third party) the inclusion of this clause imposes a mandatory obligation on the Project Company to grant an extension of time whenever it is fair and reasonable to do so, regardless of the strict contractual requirements. Accordingly, from the Project Company's perspective, it must be made clear that the Project Company has complete and absolute discretion to grant an EOT, and that it is not required to exercise its discretion for the benefit of the Contractor.

Similarly, following some recent common law decisions, the Contractor should warrant that it will comply with the notice provisions that are conditions precedent to its right to be granted an EOT.

We recommend using the clause in Part 2 of Appendix 1.





Concurrent delay

You will note that in the suggested EOT clause, one of the subclauses refers to concurrent delays. This is relatively unusual because most EPC Contracts are silent on this issue. For the reasons explained below, we do not agree with that approach.

A concurrent delay occurs when two or more causes of delay overlap. It is important to note that it is the overlapping of the causes of the delays, not the overlapping of the delays themselves. In our experience, this distinction is often not made. This leads to confusion and sometimes disputes. More problematic is when the contract is silent on the issue of concurrent delay and the parties assume the silence operates to their benefit. As a result of conflicting case law, it is difficult to determine who, in a particular fact scenario, is correct. This can also lead to protracted disputes and outcomes contrary to the intention of the parties.

There are a number of different causes of delay which may overlap with delay caused by the Contractor. The most obvious causes are the acts or omissions of a Project Company.

A Project Company may have obligations to provide certain materials or infrastructure to enable the Contractor to complete the works. The timing for the provision of that material or infrastructure (and the consequences for failing to provide it) can be affected by a concurrent delay.

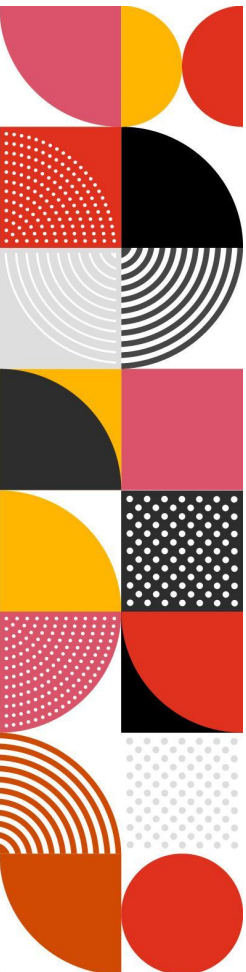
For example, the Project Company may be obliged, as between the Project Company and the Contractor, to provide a pipeline to connect to the facility by the time the Contractor is ready to commission the facility. Given the construction of the pipeline can be expensive, the Project Company is likely to want to incur that expense as close as possible to the date commissioning is due to commence. For this reason, if the Contractor is in delay, the Project Company is likely to further delay incurring the expense of building the pipeline. In the absence of a concurrent delay clause, this action by the Project Company, in response to the Contractor's delay, could entitle the Contractor to an extension of time.

Concurrent delay is dealt with differently in the various international standard forms of contract. Accordingly, it is not possible to argue that one approach is definitely right and one is definitely wrong. In fact, the 'right' approach will depend on which side of the table you are sitting.

In general, there are three main approaches for dealing with the issue of concurrent delay. These are:

- **Option one:** The Contractor has no entitlement to an extension of time if a concurrent delay occurs.
- **Option two:** The Contractor has an entitlement to an extension of time if a concurrent delay occurs.
- **Option three:** The causes of delay are apportioned between the parties and the Contractor receives an extension of time equal to the apportionment. For example, if the causes of a ten-day delay are apportioned 60:40 between the Project Company: Contractor, the Contractor would receive a six-day extension of time.

Each of these approaches is discussed in more detail below.



Option one: Contractor not entitled to an EOT for concurrent delays

A common, Project Company-friendly, concurrent delay clause for this option one is:

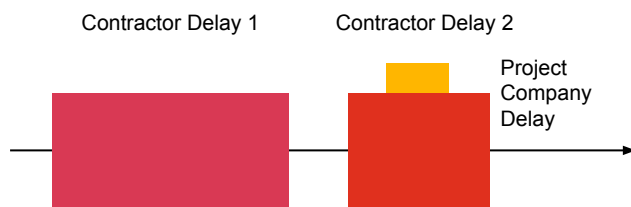
If more than one event causes concurrent delays and the cause of at least one of those events, but not all of them, is a cause of delay which would not entitle the Contractor to an extension of time under [EOT clause], then to the extent of the concurrency, the Contractor will not be entitled to an extension of time.

Nothing in the clause prevents the Contractor from claiming an EOT under the general EOT clause. What the clause does do is to remove the Contractor's entitlement to an EOT when there are two or more causes of delay and at least one of those causes would not entitle the Contractor to an EOT under the general EOT clause.

For example, if the Contractor's personnel were on strike and during that strike the Project Company failed to approve drawings, in accordance with the contractual procedures, the Contractor would not be entitled to an EOT for the delay caused by the Project Company's failure to approve the drawings.

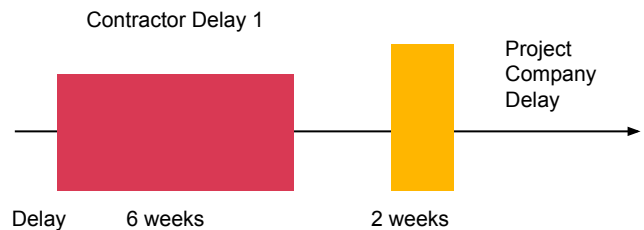
The operation of this clause is best illustrated diagrammatically.

Example 1: Contractor not entitled to an EOT for concurrent delays



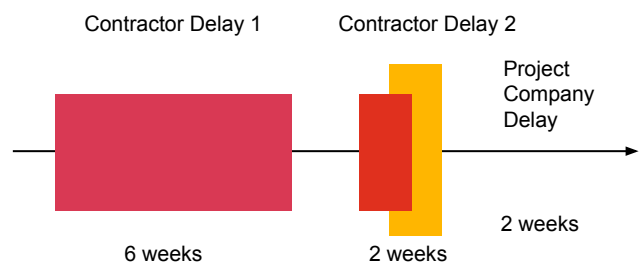
In this example, the Contractor would not be entitled to any EOT because the Contractor Delay 2 overlaps entirely with the Project Company Delay. Therefore, using the example clause above, the Contractor is not entitled to an EOT to the extent of the concurrency. As a result, at the end of the Contractor Delay 2, the Contractor would be in eight weeks' delay (assuming the Contractor has not, at its own cost and expense, accelerated the works).

Example 2: Contractor entitled to an EOT for Project Company-caused delay



In this example, there is no overlap between the Contractor and Project Company Delay events, the Contractor would be entitled to a two-week EOT for the Project Company delay. Therefore, at the end of the Project Company Delay, the Contractor will remain in six weeks' delay, assuming no acceleration.

Example 3: Contractor entitled to an EOT for a portion of the Project Company-caused delay



In this example, the Contractor would be entitled to a one-week EOT because the delays overlap for one week. Therefore, the Contractor is entitled to an EOT for the period when they do not overlap, for example, when the extent of the concurrency is zero. As a result, after receiving the one-week EOT, the Contractor would be in seven weeks' delay, assuming no acceleration.

From a Project Company's perspective, we believe, this option is both logical and fair. For example, if, in example 2, the Project Company Delay was a delay in the approval of drawings and the Contractor Delay was the entire workforce being on strike, what logic is there in the Contractor receiving an EOT? The delay in approving drawings does not actually delay the works because the Contractor could not have used the drawings given its workforce was on strike. In this example, the Contractor would suffer no detriment from not receiving an EOT. However, if the Contractor did receive an EOT, it would effectively receive a windfall gain.

The greater number of obligations the Project Company has, the more reluctant the Contractor will likely be to accept option one. Therefore, it may not be appropriate for all projects.

Option two: Contractor entitled to an EOT for concurrent delays

Option two is the opposite of option one and is the position in many of the Contractor-friendly standard forms of contract. These contracts also commonly include EOT provisions to the effect that the Contractor is entitled to an EOT for any cause beyond its reasonable control which, in effect, means there is no need for a concurrent delay clause.

The suitability of this option will obviously depend on which side of the table you are sitting. This option is less common than option one but is nonetheless sometimes adopted. It is especially common when the Contractor has a superior bargaining position.

Option three: Responsibility for concurrent delays is apportioned between the parties

Option three is a middle ground position that has been adopted in some of the standard form contracts. For example, the Australian Standards construction contract AS4000 adopts the apportionment approach. The AS4000 clause states:

34.4 Assessment

When both non-qualifying and qualifying causes of delay overlap, the Superintendent shall apportion the resulting delay to WUC according to the respective causes' contribution.

In assessing each EOT the Superintendent shall disregard questions of whether:

- a) *WUC can nevertheless reach practical completion without an EOT*
- b) *the Contractor can accelerate, but shall have regard to what prevention and mitigation of the delay has not been affected by the Contractor.*

We appreciate the intention behind the clause and the desire for both parties to share responsibility for the delays they cause. However, we have some concerns about this clause and the practicality of the apportionment approach in general. It is easiest to demonstrate our concerns with an extreme example. For example, what if the qualifying cause of delay was the Project Company's inability to provide access to the site and the non-qualifying cause of delay was the Contractor's inability to commence the works because it had been black-banned by the unions. How should the causes be apportioned? In this example, the two causes are both 100% responsible for the delay.

In our view, an example like the above where both parties are at fault has two possible outcomes. Either:

- the delay is split down the middle and the Contractor receives 50% of the delay as an EOT
- the delay is apportioned 100% to the Project Company and therefore the Contractor receives 100% of the time claimed.

The delay is unlikely to be apportioned 100% to the Contractor because a judge or arbitrator will likely feel that that is unfair, especially if there is a potential for significant liquidated damages liability. We appreciate the above is not particularly rigorous legal reasoning, however, the clause does not lend itself to rigorous analysis.

In addition, option three is only likely to be suitable if the party undertaking the apportionment is independent from both the Project Company and the Contractor.

Exclusive remedies and fail-safe clauses

It is common for Contractors to request the inclusion of an exclusive remedies clause in an EPC Contract. However, from the perspective of a Project Company, the danger of an exclusive remedies clause is that it prevents the Project Company from recovering any type of damages not specifically provided for in the EPC Contract.

An EPC Contract is conclusive evidence of the agreement between the parties to that contract. If a party clearly and unambiguously agrees that their only remedies are those within the EPC Contract, they will be bound by those terms. However, the courts have been reluctant to come to this conclusion without clear evidence of an intention of the parties to the EPC Contract to contract out of their legal rights. This means if the common law right to sue for breach of EPC Contract is to be contractually removed, it must be done by very clear words.

Contractor's perspective

The main reason for a Contractor insisting on a Project Company being subject to an exclusive remedies clause is to have certainty about its potential liabilities. The preferred position for a Contractor will be to confine its liabilities to what is specified in the EPC Contract. For example, an agreed rate of liquidated damages for delay and, where relevant, underperformance of the facility. A Contractor will also generally require the amount of liquidated damages to be subject to a cap and for the EPC Contract to include an overall cap on its liability.

Project Company's perspective

The preferred position for a Project Company is for it not to be subject to an exclusive remedies clause. An exclusive remedies clause limits the Project Company's right to recover for any failure of the Contractor to fulfil its contractual obligations to those remedies specified in the EPC Contract. For this reason, an exclusive remedies clause is an illogical clause to include in an EPC Contract from the perspective of a Project Company because it means that the Project Company has to draft a remedy or exception for each obligation—this represents an absurd drafting position. For example, take the situation where the EPC Contract does not have any provision for the recovery of damages other than liquidated damages. In this case, if the Contractor has either paid the maximum amount of liquidated damages or delivered the facility in a manner that does not require the payment of liquidated damages (for example, it is delivered on time and performs to specification), but subsequent to that delivery the Project Company is found to have a claim, say for defective design which manifests itself after completion, the Project Company will have no entitlement to recover any form of damages as any remedy for latent defects has been excluded.

The problem is exacerbated because most claims made by a Project Company will in some way relate to performance of the facility and PLDs were expressed to be the exclusive remedy for any failure of the facility to perform in the required manner. For example, any determination as to whether the facility is fit for purpose will necessarily depend on the level and standard of the performance of the facility. In addition to claims relating to fitness for purpose, a Project Company may also wish to make claims for, amongst other things, breach of contract, breach of warranty or negligence. The most significant risk for a Project Company in an EPC Contract is where there is an exclusive remedies clause and the only remedies for delay and underperformance are liquidated damages.

If, for whatever reason, the liquidated damages regimes are held to be invalid, the Project Company would have no recourse against the Contractor as it would be prevented from recovering general damages at law, and the Contractor would escape liability for late delivery and underperformance of the facility.

Fail-safe clauses

In contracts containing an exclusive remedies clause, the Project Company must ensure all necessary exceptions are expressly included in the EPC Contract. In addition, drafting must be included to allow the Project Company to recover general damages at law for delay and underperformance if the liquidated damages regimes in the EPC Contract are held to be invalid. To protect the position of a Project Company (if liquidated damages are found for any reason to be unenforceable and there is an exclusive remedies clause), we recommend the following clauses be included in the EPC Contract:

[].1 If clause [DLDs] is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Project Company from claiming DLDs, the Project Company is entitled to claim against the Contractor damages at law for the Contractor's failure to complete the works by the date for practical completion.

[].2 If [].1 applies, the damages claimed by the Project Company must not exceed the amount specified in item [] of Appendix [] for any one day of delay and in aggregate must not exceed the percentage of the EPC Contract price specified in item [] of Appendix [].

These clauses (which would also apply to PLDs) mean that if liquidated damages are held to be unenforceable for any reason, the Project Company will not be prevented from recovering general damages at law. However, the amount of damages recoverable at law may be limited to the amount of liquidated damages that would have been recoverable by the Project Company under the EPC Contract if the liquidated damages regime had not been held to be invalid (see discussion above). For this reason, the suggested drafting should be commercially acceptable to a Contractor as its liability for delay and underperformance will be the same as originally contemplated by the parties at the time of entering into the EPC Contract.

In addition, if the EPC Contract excludes the parties' rights to claim their consequential or indirect losses, these clauses should be an exception to that exclusion. The rationale being that the rates of liquidated damages are likely to include an element of consequential or indirect losses.

Force majeure

What is force majeure?

Force majeure (**FM**) clauses are almost always included in EPC Contracts. However, they are rarely given much thought unless and until one or more parties seek to rely on them. Generally, the assumption appears to be that ‘the risk will not affect us’ or ‘the FM clause is a legal necessity and does not impact on our risk allocation under the contract’. Both of these assumptions are inherently dangerous, and, particularly in the second case, incorrect. Therefore, especially in the current global environment, it is appropriate to examine their application.

FM is a civil law concept that has no real meaning under the common law. However, FM clauses are used in contracts because the only similar common law concept—the doctrine of frustration—is of limited application. For that doctrine to apply, the performance of a contract must be radically different from what was intended by the parties. In addition, even if the doctrine does apply, the consequences are unlikely to be those contemplated by the parties. An example of how difficult it is to show frustration is that many of the leading cases relate to the abdication of King Edward VIII before his coronation and the impact that had on contracts entered into in anticipation of the coronation ceremony.

Given FM clauses are creatures of contract, their interpretation will be governed by the normal rules of contractual construction. FM provisions will be construed strictly and in the event of any ambiguity the *contra proferentem* rule will apply. *Contra proferentem* literally means ‘against the party putting forward’. In this context, it means that the clause will be interpreted against the interests of the party that drafted it and is seeking to rely on it. The parties may contract out of this rule.

The rule of *eiusdem generis*, which literally means ‘of the same class’, may also be relevant. In other words, when general wording follows a specific list of events, the general wording will be interpreted in light of the specific list of events. In this context it means that when a broad catch-all phrase, such as ‘anything beyond the reasonable control of the parties’, follows a list of more specific FM events, the catch-all phrase will be limited to events analogous to the listed events. Importantly, parties cannot invoke a FM clause if they are relying on their own acts or omissions.

The underlying test in relation to most FM provisions is whether a particular event was within the contemplation of the parties when they made the contract. The event must also have been outside the control of the contracting party. There are generally three essential elements to FM:

- it can occur with or without human intervention
- it cannot have reasonably been foreseen by the parties
- it was completely beyond the parties’ control and they could not have prevented its consequences.

Given the relative uncertainty surrounding the meaning of FM, we favour explicitly defining what the parties mean. This takes the matter out of the hands of the courts and gives control back to the parties. Therefore, it is appropriate to consider how FM risk should be allocated.



Drafting force majeure clauses

The appropriate allocation of risk in project agreements is fundamental to negotiations between the Project Company and its Contractors. Risks generally fall into the following categories:

- risks within the control of the Project Company
- risks within the control of the Contractor
- risks outside the control of both parties.

The negotiation of the allocation of many of the risks beyond the control of the parties, for example, latent site conditions and change of law, is usually very detailed so that it is clear which risks are borne by the Contractor. The same approach should be adopted in relation to the risks arising from events of FM.

There are two aspects to the operation of FM clauses:

- the definition of FM events
- the operative clause that sets out the effect on the parties' rights and obligations if a FM event occurs.¹⁴

The events which trigger the operative clause must be clearly defined. As noted above, given the common law meaning of the term FM is not certain and is open to interpretation of the courts, it is in the interests of both parties to ensure that the term FM is clearly defined.

The preferred approach for a Project Company is to define FM events as being any of the events in an exhaustive list set out in the contract. In this manner, both parties are aware of which events are FM events and which are not. Clearly, defining FM events makes the administration of the contract and, in particular, the mechanism within the contract for dealing with FM events simpler and more effective.

An example exhaustive definition is:

An Event of FM is an event or circumstance which is beyond the control and without the fault or negligence of the party affected, and which by the exercise of reasonable diligence, the party affected was unable to prevent provided that event or circumstance is limited to the following:

- Riot, war, invasion, act of foreign enemies, hostilities (whether war be declared or not), acts of terrorism, civil war, rebellion, revolution, insurrection of military or usurped power, requisition or compulsory acquisition by any governmental or competent authority.*
- Ionising radiation or contamination, radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive assembly or nuclear component.*
- Pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds.*
- Earthquakes, flood, fire or other physical natural disaster, but excluding weather conditions regardless of severity.*
- Strikes at national level or industrial disputes at a national level, or strike or industrial disputes by labour not employed by the affected party, its subcontractors or its suppliers and which affect an essential portion of the Works but excluding any industrial dispute which is specific to the performance of the Works or this Contract.*

An operative clause will act as a shield for the party affected by the event of FM so that a party can rely on that clause as a defence to a claim that it has failed to fulfil its obligations under the contract.

An operative clause should also specifically deal with the rights and obligations of the parties if a FM event occurs and affects the project. This means the parties must consider each of the events it intends to include in the definition of FM events and then deal with what the parties will do if one of those events occurs.

An example of an operative clause is:

[].1 Neither party is responsible for any failure to perform its obligations under this Contract, if it is prevented or delayed in performing those obligations by an Event of FM.

¹⁴ A common failing of force majeure in some negotiations is to focus on the definitional issues rather than the consequences. Both issues are important.

- [].2 Where there is an Event of FM, the party prevented from or delayed in performing its obligations under this Contract must immediately notify the other party giving full particulars of the Event of FM and the reasons for the Event of FM preventing that party from, or delaying that party in performing its obligations under this Contract and that party must use its reasonable efforts to mitigate the effect of the Event of FM upon its or their performance of the Contract and to fulfil its or their obligations under the Contract.
- [].3 Upon completion of the Event of FM, the party affected must as soon as reasonably practicable recommence the performance of its obligations under this Contract. Where the party affected is the Contractor, the Contractor must provide a revised programme rescheduling the Works to minimise the effects of the prevention or delay caused by the Event of FM.
- [].4 An Event of FM does not relieve a party from liability for an obligation which arose before the occurrence of that event, nor does that event affect the obligation to pay money in a timely manner which matured prior to the occurrence of that event.
- [].5 The Contractor has no entitlement and the Project Company has no liability for:
- a) Any costs, losses, expenses, damages or the payment of any part of the Contract Price during an Event of FM.
 - b) Any delay costs in any way incurred by the Contractor due to an Event of FM.

In addition to the above clause, it is critical to deal appropriately with other issues that will arise if a FM event occurs. For example, as noted above, it is common practice for a Contractor to be entitled to an extension of time if a FM event impacts on its ability to perform the works. Contractors also often request costs if a FM event occurs. In our view, this should be resisted. FM is a neutral risk in that it cannot be controlled by either party. Therefore, the parties should bear their own costs and neither party should be penalised.

Another key clause that relates to FM type events is the Contractor's responsibility for care of the works and the obligation to reinstate any damage to the works prior to completion. A common example clause is:

- [].1 The Contractor is responsible for the care of the Site and the Works from when the Project Company makes the Site available to the Contractor until 5.00pm on the Date of Commercial Operation.
- [].2 The Contractor must promptly make good loss from, or damage to, any part of the Site and the Works while it is responsible for their care.
- [].3 If the loss or damage is caused by an Event of FM, the Project Company may direct the Contractor to reinstate the Works or change the Works. The cost of the reinstatement work or any change to the Works arising from a direction by the Project Company under this clause will be dealt with as a Variation except to the extent that the loss or damage has been caused or exacerbated by the failure of the Contractor to fulfil its obligations under this Contract.
- [].4 Except as contemplated in clause [].3, the cost of all reinstatement Works will be borne by the Contractor.

This clause is useful because it enables the Project Company to, at its option, have the damaged section of the project rebuilt as a variation to the existing EPC Contract. This will usually be cheaper than recontracting for construction of the damaged sections of the works.



Operation and maintenance

Operating and maintenance manuals

The Contractor is usually required to prepare a detailed Operating and Maintenance Manual (**O&M manual**). The EPC Contract should require the Contractor to prepare a draft of the O&M manual within a reasonable time to enable the Project Company, the Operator and possibly the Lenders to provide comments, which can be incorporated into a final draft at least six months before the start of commissioning.

The draft should include all information which may be required for start-up, all modes of operation during normal and emergency conditions and maintenance of all systems of the facility.

Operating and maintenance personnel

It is common for the Contractor to be obliged to train the operations and maintenance staff supplied by the Project Company. The cost of this training will be built into the contract price. It is important to ensure the training is sufficient to enable such staff to be able to efficiently, prudently, safely and professionally operate the facility upon commercial operation. Therefore, the framework for the training should be described in the appendix dealing with the scope of work (in as much detail as possible). This should include the standards of training and the timing for training.

The Project Company's personnel trained by the Contractor will also usually assist in the commissioning and testing of the facility. They will do this under the direction and supervision of the Contractor. Therefore, absent specific drafting to the contrary, if problems arise during commissioning and/or testing, the Contractor can argue they are entitled to an extension of time etc. We recommend inserting the following clause:

- [].1 *The Project Company must provide a sufficient number of competent and qualified operating and maintenance personnel to assist the Contractor to properly carry out Commissioning and the Commercial Operation Performance Tests.*
- [].2 *Prior to the Date of Commercial Operation, any act or omission of any personnel provided by the Project Company pursuant to GC [].1 is, provided those personnel are acting in accordance with the Contractor's instructions, directions, procedures or manuals, deemed to be an act or omission of the Contractor and the Contractor is not relieved of its obligations under this Contract or have any claim against the Project Company by reason of any act or omission.*

Spare parts

The Contractor is usually required to provide, as part of its scope of works, a full complement of spare parts (usually specified in the appendices (the scope of work or the specification)) to be available as at the commencement of commercial operation.

Further, the Contractor should be required to replace any spare parts used in rectifying defects during the defects liability period, at its sole cost. There should also be a time limit imposed on when these spare parts must be back in the store. It is normally unreasonable to require the spare parts to have been replaced by the expiry of the defects liability period because that may, for some long lead time items, lead to an extension of the defects liability period.

The Project Company also may wish to have the option to purchase spare parts from the Contractor on favourable terms and conditions (including price) after the expiry of the defects liability period. In that case, it would be prudent to include a term which deals with the situation where the Contractor is unable to continue to manufacture or procure the necessary spare parts. This provision should cover the following points:

- written notification from the Contractor to the Project Company of the relevant facts, with sufficient time to enable the Project Company to order a final batch of spare parts from the Contractor
- the Contractor should deliver to, or procure for, the Project Company (at no charge to the Project Company), all drawings, patterns and other technical information relating to the spare parts
- the Contractor must sell to the Project Company (at the Project Company's request) at cost price (less a reasonable allowance for depreciation) all tools, equipment and moulds used in manufacturing the spare parts, to the extent they are available to the Contractor provided it has used its reasonable endeavours to procure them.

The Contractor should warrant that the spare parts are fit for their intended purpose, and that they are of merchantable quality. At worst, this warranty should expire on the later of:

- the manufacturer's warranty period on the applicable spare part
- the expiry of the defects liability period.

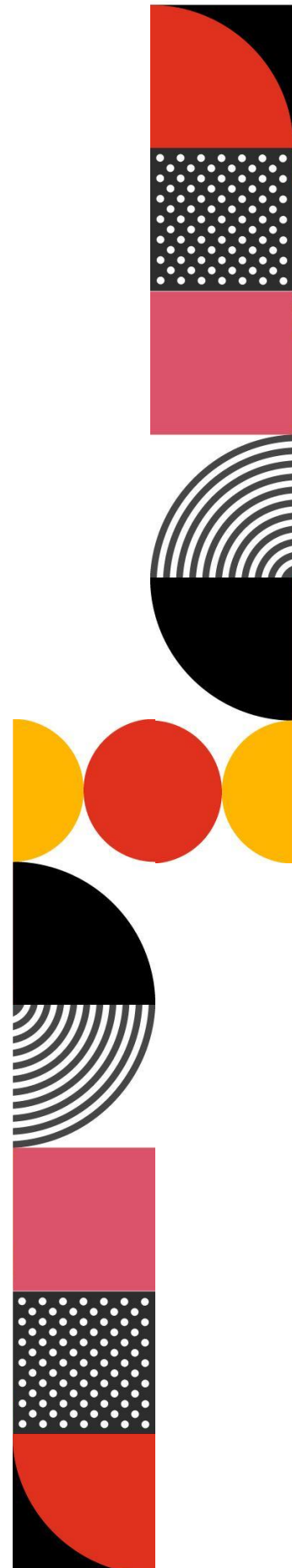
Dispute resolution

Dispute resolution provisions for EPC Contracts could fill another entire paper. There are numerous approaches that can be adopted depending on the nature and location of the project and the particular preferences of the parties involved.

However, there are some general principles which should be adopted. They include:

- having a staged dispute resolution process that provides for internal discussions and meetings aimed at resolving the dispute prior to commencing action (either litigation or arbitration)
- obliging the Contractor to continue to execute the works pending resolution of the dispute
- not permitting commencement of litigation or arbitration, as the case may be, until after commercial operation of the facility. This provision must make provision for the parties to seek urgent interlocutory relief, for example, injunctions and to commence proceedings prior to the expiry of any limitations period. If the provision does not include these exceptions, it risks being unenforceable
- providing for consolidation of any dispute with other disputes which arise out of or in relation to the construction of the facility. The power to consolidate should be at the Project Company's discretion.

We have prepared a paper which details the preferred approach to be taken in respect of dispute resolution regimes in various Asian jurisdictions including the PRC, Philippines, Thailand, Vietnam and Taiwan. You should consult this paper if you want more information on this topic.



Appendix 1

Example clause: Performance testing and guarantee regime

Tests and Inspections

- [].1 The Contractor must, at its own expense, carry out at the place of manufacture and/or on the site, all tests and/or inspections of the equipment and any part of the works as specified in this contract or as required by any applicable laws, and as necessary to ensure the facility operates safely and reliably under the conditions specified in the schedule of scope of work and the schedule of tests. [Appendix 1 should specify all the categories of tests other than the tests (e.g., test at manufacturers plant, test on site, functional test etc.)]
- [].2 The Contractor must also comply with any other requirements of the Principal in relation to testing and inspection.
- [].3 The Principal and the Lenders' representatives are entitled to attend any test and/or inspection by their appointed duly authorised and designated inspector.
- [].4 Whenever the Contractor is ready to carry out any test and/or inspection, the Contractor must give a reasonable advance notice to the Principal of the test and/or inspection and of the place and time. The Contractor must obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Principal's inspector and the Lenders' representative to attend the test and/or inspection.
- [].5 The Contractor must provide the Principal's representative with a certified report of the results of any test and/or inspection within five days of the completion of that test or inspection.
- [].6 If the Principal or the Lenders' representative fails to attend the test and/or inspection, or if it is agreed between the parties that the Principal or the Lenders' representative will not attend, then the Contractor may proceed with the test and/or inspection in the absence of the Principal's inspector and provide the Principal and the Lenders' representative with a certified report of the results.
- [].7 The Principal may require the Contractor to carry out any test and/or inspection not described in this contract. The Contractor's extra costs necessarily incurred, which do not include head office or corporate overheads, profit or loss of profit, in the carrying out of the test and/or inspection, will be added to the contract price only if the test shows that the relevant works conform with the requirements of the contract, but otherwise all costs will be borne by the Contractor.
- [].8 If any equipment or any part of the works fails to pass any test and/or inspection, the Contractor must either rectify to the Principal's satisfaction or replace such equipment or part of the works and must repeat the test and/or inspection upon giving a notice under GC [].4.
- [].9 The Contractor must afford the Principal and the Lenders' representative access at any time to any place where the equipment is being manufactured or the works are being performed in order to inspect the progress and the manner of manufacture or construction, provided that the Principal gives the Contractor reasonable prior notice. The Principal, Principal's representative and the Lenders' representative will have the right to examine and have access to documents relating to the manufacture and assembly of the equipment including the quality control and inspection documentation.
- [].10 The Contractor agrees that neither the execution of a test and/or inspection of equipment or any part of the works, nor the attendance by either or both the Principal and the Lenders' representative nor the issue of any test report pursuant to GC [].5 releases the Contractor from any other responsibilities under this contract.
- [].11 No part of the works are to be covered up on the site without carrying out any test and/or inspection required under this contract and the Contractor must give reasonable notice to the Principal whenever any part of the works are ready or about to be ready for test and/or inspection.
- [].12 The Contractor must uncover any part of the works or make openings in or through the same as the Principal may from time to time require at the site and must reinstate and make good that part.
- [].13 If any part of the works have been covered up at the site after compliance with the requirement of GC [].12 and are found to be performed in accordance with the contract, the Contractor's extra costs, which do not include head office or corporate overheads, profit or loss of profit, necessarily incurred in uncovering, making openings in or through, reinstating and making good the same will be added to the contract price.

Performance tests, procedures and guidelines

- [].14 The performance tests must be conducted by the Contractor after commissioning to ascertain whether the facility can achieve completion and to ascertain whether the facility can meet the performance guarantees.
- [].15 All performance tests must be conducted in a professional, timely, safe and environmentally responsible manner and in accordance with the schedule of scope of work and the schedule of tests, all other terms and conditions of this contract, applicable standards, laws, government approvals, and must be accomplished at no additional cost or expense to the Principal.
- [].16 The facility must not be operated during any performance test in excess of:
 - a the limits allowed by any manufacturer to maintain its warranty
 - b the limits imposed by the law and government approvals applicable standards
 - c the limits stated in the schedule of tests.
- [].17 The Contractor agrees that the Principal and the Lenders' representative will monitor the conduct of the performance testing to ensure compliance with the terms and conditions of this contract.
- [].18 The Contractor agrees that an inspection pursuant to GC [].17 by the Principal and/or the Lenders' representative does not release the Contractor from any other responsibilities under this contract, including meeting the performance guarantees.
- [].19 If a performance test is interrupted or terminated, for any reason, such performance test, must be restarted from the beginning, unless otherwise approved by the Principal or the Lenders' representative.
- [].20 The Principal or the Contractor is entitled to order the cessation of any performance test if:
 - a damage to the works, the facility or other property or personal injury
 - b breach of the conditions specified in the relevant environmental laws or government approvals,is likely to result from continuation.
- [].21 If the Contractor fails to pass a performance test (or any repetition in the event of prior failure) or if a performance test is stopped before its completion, such performance test must, subject to 24 hours' prior notice having been given by the Contractor to the Principal and the Lenders' representative, be repeated as soon as practicable. All appropriate adjustments and modifications are to be made by the Contractor with all reasonable speed and at its own expense before the repetition of any performance test.

- [].22 The results of the performance tests must be presented in a written report, produced by the Contractor and delivered to the Principal and the Lenders' representative within five days of the completion of the tests. Those results will be evaluated by the Principal and the Lenders' representative. In evaluation of the results, no additional allowance will be made for measurement tolerances over and above those specified in the applicable ISO standard or other relevant test standard.
- [].23 Despite any other provision of this contract, the Principal is entitled to all products and revenues generated or earned during pre-commissioning, commissioning and the performance tests.

Mechanical completion, pre-commissioning and commissioning

- [].1 Mechanical completion
 - (a) As soon as the facility, in the opinion of the Contractor, reaches the stage of mechanical completion, the Contractor must give a notice to the Principal's representative.
 - (b) The Principal's representative must, promptly, and no later than five days after receipt of the Contractor's notice under GC [].1(a), either issue a certificate of mechanical completion stating that the facility has reached mechanical completion or notify the Contractor of any defects and/or deficiencies.
 - (c) If the Principal's representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct those defects and/or deficiencies and the procedures described in GCs [].1(a) and (b) must be repeated until the Principal issues a certificate of mechanical completion.
- [].2 Pre-commissioning

After the Principal's representative has issued a certificate of mechanical completion to the Contractor under GC [].1(b), the Contractor must commence pre-commissioning of the facility in accordance with the Principal's requirements and procedures in relation to pre-commissioning as set out in the schedule of scope of work.
- [].3 Commissioning
 - (a) After the successful completion of pre-commissioning under GC [].2, the Contractor must give the Principal a notice that the facility is ready for commissioning.
 - (b) The Contractor must, as soon as reasonably practicable after receipt of a notice under GC [].3(a), issue a notice to the Contractor specifying the date for commencement of commissioning.
 - (c) On the date specified in the notice issued under GC [].3(b), the Contractor must commence commissioning of the facility in accordance with the Principal's requirements and procedures in relation to commissioning as set out in the schedule of scope of work.

Performance tests, completion and final completion

[]1 Performance tests

- (a) After the successful completion of commissioning, the Contractor must give a notice to the Principal's representative that the facility, or that part, is ready for the performance tests and the emissions test.
- (b) The Principal's representative must, as soon as reasonably practicable, after receipt of a notice under GC []1(a), issue a notice to the Contractor specifying the date for commencement of those performance tests if that date is not already identified in the programme and the schedule of tests.

[]2 Completion

- (a) As soon as the facility has passed the performance tests and the emissions test and, in the opinion of the Contractor, the facility has reached the stage of completion, the Contractor must give a notice to the Principal's representative.
- (b) The Principal's representative must, promptly, and no later than five days after receipt of the Contractor's notice under GC []2(a), either issue a certificate of completion stating that the facility has reached completion or notify the Contractor of any defects and/or deficiencies.
- (c) If the Principal's representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct those defects and/or deficiencies and the procedures described in GCs []2(a) and (b) must be repeated until the Principal issues a certificate of completion.
- (d) Despite any other provision of this contract, no partial or entire use or occupancy of the site, the works or the facility by the Principal, whether during the performance tests, or otherwise, in any way constitutes an acknowledgment by the Principal that completion has occurred, nor does it operate to release the Contractor from any of its warranties, obligations or liabilities under this contract.
- (e) Upon the issue of the certificate of completion, the Contractor must hand over care, custody and control of the facility to the Principal.
- (f) Notwithstanding that all the requirements for the issuing of a certificate of completion have not been met, the Principal may at any time, in its absolute discretion, issue a certificate of completion. The issue of a certificate of completion in accordance with this GC []2(f) will not operate as an admission that all the requirements of completion have been met and does not prejudice any of the Principal's rights, including the right to require the Contractor to satisfy all these requirements.

[]3 Final completion

- (a) As soon as the facility, in the opinion of the Contractor, reaches the stage of final completion the Contractor must give a notice to the Principal.

- (b) The Principal's representative must, promptly, and no later than five days after receipt of the Contractor's notice under GC []3(a), either issue a certificate of final completion stating that the facility has reached final completion or notify the Contractor of any defects and/or deficiencies.
- (c) If the Principal's representative notifies the Contractor of any defects and/or deficiencies, the Contractor must then correct those defects and/or deficiencies and the procedures described in GCs []3(a) and (b) must be repeated until the Principal issues a certificate of final completion.
- (d) Despite any other provision of this contract, no partial or entire use or occupancy of the site, the works or the facility by the Principal, whether during the performance tests or otherwise, in any way constitutes an acknowledgment by the Principal that final completion has occurred, nor does it operate to release the Contractor from any of its warranties, obligations or liabilities under this contract including the satisfactory performance of its obligations during the defects liability period, the carrying out of the performance tests and meeting the performance guarantees and the emissions guarantee.

Performance guarantee

[]1 Performance guarantees

- (a) The Contractor guarantees that the facility and all parts will meet the performance guarantees and emissions guarantee as specified in the schedule of performance guarantees and the schedule of tests.
- (b) The Contractor agrees that the emissions guarantee is an absolute guarantee, the meeting of which is a condition precedent to achieving completion.

[]2 Minimum performance guarantees not met

- (a) If, for reasons not attributable to the Principal, the minimum performance guarantees are not met, the Contractor must at its cost and expense make changes, modifications and/or additions to the facility or any part as may be necessary to meet at least the minimum performance guarantees. The Contractor must notify the Principal upon completion of the necessary changes, modifications and/or additions and must, subject to the Principal's rights under GCs []2, []14 and [] [Termination], repeat the overall performance test until the minimum performance guarantees have been met. Nothing in this GC []2 derogates from the Contractor's obligation to meet the performance guarantees.
- (b) Despite this GC [] or any other provision of this contract, if for reasons not attributable to the Principal, the Contractor does not meet the minimum performance guarantees after two repetitions of the overall performance test the Principal may:

- (i) Reject the facility or any part of the facility and the provisions of GC []3 will apply.
- (ii) Require the Contractor to: (A) replace the facility or any part of the facility with all due dispatch and in compliance with the requirements of the contract and (B) repeat the performance tests and the overall performance test.
- (iii) Terminate the contract and, at the Contractor's risk, complete or procure completion of the works in accordance with the contract
- (iv) Require the Principal's representative to issue a certificate of completion notwithstanding that the minimum performance guarantees have not been met. The contract price will then be reduced by such amount as determined by the Principal's representative.

[]3 Consequences of termination or rejection

- (a) If the Principal rejects the facility or any part of the facility under GC []2(b)(i), the Principal will be entitled to recover:
 - (i) All sums paid by the Principal in respect of such part(s) of the facility.
 - (ii) The cost of dismantling those part(s) of the facility.
 - (iii) The cost of clearing the site as appropriate and returning the facility or part thereof to the Contractor.
- (b) If the Principal terminates the contract pursuant to GC []2(b)(iii), then in addition to any *DLDs*, which may be due for delay under GC []2, it will be entitled to recover from the Contractor any loss (including but not limited to any construction and financing costs whether or not determined to be direct loss) it suffers in completing the relevant works to the extent that such loss exceeds the amount that would have been paid by the Principal to the Contractor under the contract had the relevant works been completed by the Contractor in accordance with the contract, as well as any amounts payable under the financing agreements, as a result of the Contractor failing to meet the minimum performance guarantees.

[]4 Satisfaction of performance guarantees

Provided the minimum performance guarantees have been met, the payment of PLDs under GCs, []6, []7 and/or []9 (as the case may be) will be in satisfaction of the relevant performance guarantee.

[]5 Minimum performance guarantees met, but not performance guarantees

Subject to GCs []4, []6 and []7, if, for reasons not attributable to the Principal, the performance guarantees are not met, but the minimum performance guarantees are met during the same overall performance test, the Contractor must, prior to the expiration of the extended remediation period:

- (a) At its cost and expense make changes, modifications and/or additions to the facility or any part as may be necessary to meet the performance guarantees.
- (b) Notify the Principal upon completion of the necessary changes, modifications and/or additions.
- (c) Repeat the overall performance test until the performance guarantees have been met during the same overall performance test.

[]6 PLDs

If the Contractor does not, for reasons not attributable to the Principal, during the same overall performance test, meet the performance guarantees by the expiration of the extended remediation period, but the minimum performance guarantees are met, the Contractor must pay PLDs calculated in accordance with schedule of PLDs.

[]7 Extended remediation period

- (a) Despite GCs []5 and []6, the Contractor may at any time during the extended remediation period elect to pay PLDs in respect of the failure to meet any or all of the performance guarantees (for reasons not attributable to the Principal), provided the minimum performance guarantees and the emissions guarantees have been met.
- (b) Despite GCs []5 and []6, the Principal may at any time, one month after the date for completion, require the Contractor to pay PLDs in respect of the failure to meet any or all of the performance guarantees (for reasons not attributable to the Principal), provided the minimum performance guarantees have been met.

[]8 Aggregate liability

The aggregate liability of the Contractor for PLDs under GC []9 will not exceed the amount calculated in accordance with schedule of PLDs.

[]9 General

PLDs must be invoiced by the Principal and payment must be made within 15 days of the date of the invoice. At the expiration of 15 days, the amount involved will be a debt due and payable to the Principal on demand and the Principal may also have recourse to the security provided under this contract.

[]10 Fair and reasonable pre-estimate

The parties agree that the PLDs in the schedule of PLDs are a fair and reasonable pre-estimate of the damages likely to be sustained by the Principal if the Contractor meets the minimum performance guarantees but fails to meet the performance guarantees.

[].11 Completion

Provided the minimum performance guarantees have been met and subject to [].1(b), the payment of PLDs in relation to the performance guarantees under this [].11 is in complete satisfaction of the Contractor's guarantees under GC [].1. Upon the payment of the PLDs by the Contractor, the Principal must, subject to all other conditions to achieving completion having been satisfied, issue the certificate of completion for the facility or any part in respect of which the PLDs have been paid.

[].12 PLDs additional to DLDs

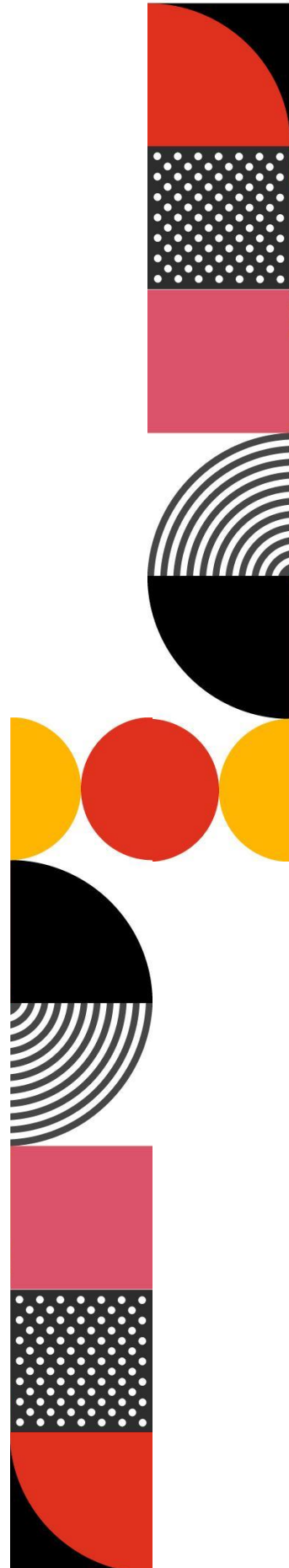
The payment of PLDs and the Contractor's other obligations and liabilities under this GC [] are in addition to any liability of the Contractor for DLDs under GC [].

[].13 Rights at law

If this GC [] (or any part) is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Principal from claiming PLDs, the Principal is entitled to claim against the Contractor for damages at law for the Contractor's failure to meet the performance guarantees. Those damages must not exceed the amounts specified in the schedule of PLDs.

[].14 No benefit

The Contractor is not entitled to the benefit of the exclusion in GC [] **[Prohibition on claiming consequential loss]** in any claim for damages at law by the Principal against the Contractor pursuant to GC [].13 for the Contractor's failure to meet any or all of the performance guarantees.

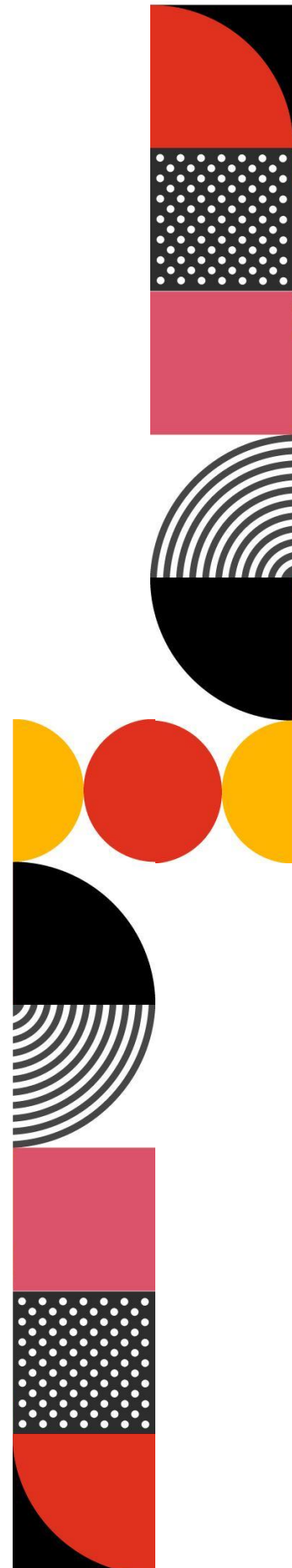


Appendix 2

Example clause: Extension of time regime

- []1 The Contractor must immediately give notice to the Project Company of all incidents and/or events of whatsoever nature affecting or likely to affect the progress of the works.
- []2 Within 15 days after an event has first arisen, the Contractor must give a further notice to the Project Company which must include:
- (a) the material circumstances of the event including the cause or causes
 - (b) the nature and extent of any delay
 - (c) the corrective action already undertaken or to be undertaken
 - (d) the effect on the critical path noted on the programme
 - (e) the period, if any, by which in its opinion the date for commercial operation should be extended
 - (f) a statement that it is a notice pursuant to this GC []2.
- []3 Where an event has a continuing effect or where the Contractor is unable to determine whether the effect of an event will actually cause delay to the progress of the works so that it is not practicable for the Contractor to give notice in accordance with GC []2, a statement to that effect with reasons together with interim written particulars (including details of the likely consequences of the event on progress of the works and an estimate of the likelihood or likely extent of the delay) must be submitted in place of the notice required under GC []2. The Contractor must then submit to the Project Company, at intervals of 30 days, further interim written particulars until the actual delay caused (if any) is ascertainable, whereupon the Contractor must as soon as practicable but in any event within 30 days, give a final notice to the Project Company including the particulars set out in GC []2.
- []4 The Project Company must, within 30 days of receipt of the notice in GC []2 or the final notice in GC []3 (as the case may be), issue a notice notifying the Contractor's representative of its determination as to the period, if any, by which the date for completion is to be extended.
- []5 Subject to the provisions of this GC [], the Contractor is entitled to an extension of time to the date for completion as the Project Company assesses, where a delay to the progress of the works is caused by any of the following events, whether occurring before, on or after the date for completion:
- (a) Any act, omission, breach or default by the Project Company, the Project Company's representative and their agents, employees and Contractors.
 - (b) A variation, except where that variation is caused by an act, omission or default of the Contractor or its subcontractors, agents or employees.
 - (c) A suspension of the works pursuant to GC [], except where that suspension is caused by an act, omission or default of the Contractor or its subcontractors, agents or employees.
 - (d) An event of *FM*.
 - (e) A change of law.
- []6 Despite any other provisions of this GC [], the Project Company may, at any time, and in its absolute discretion, make a fair and reasonable extension of the date for completion.
- []7 The Contractor must constantly use its best endeavours to avoid delay in the progress of the works.
- []8 If the Contractor fails to submit the notices required under GCs []1, []2 and []3 within the times required, then:
- (a) The Contractor has no entitlement to an extension of time.
 - (b) The Contractor must comply with the requirements to perform the works by the date for completion.
 - (c) Any principle of law or equity (including those which might otherwise entitle the Contractor to relief and the Prevention Principle), which might otherwise render the date for completion immeasurable and liquidated damages unenforceable, will not apply.

- [].9 It is a further condition precedent of the Contractor's entitlement to an extension of time that the critical path noted on the programme is affected in a manner which might reasonably be expected to result in a delay to the works reaching completion by the date for completion.
- [].10 If there are two or more concurrent causes of delay and at least one of those delays would not entitle the Contractor to an extension of time under this GC [] then, to the extent of that concurrency, the Contractor is not entitled to an extension of time.
- [].11 The Project Company may direct the Contractor's representative to accelerate the works for any reason including as an alternative to granting an extension of time to the date for completion.
- [].12 The Contractor will be entitled to all extra costs necessarily incurred, by the Contractor in complying with an acceleration direction under GC [].11, except where the direction was issued as a consequence of the failure of the Contractor to fulfil its obligations under this contract. The Project Company must assess and decide as soon as reasonably practical, the extra costs necessarily incurred by the Contractor.





EPC and EPCM
delivery models

16 Engineering, Procurement and Construction Management (EPCM) contracts

Investing in Energy Transition Projects
March 2023



Introduction

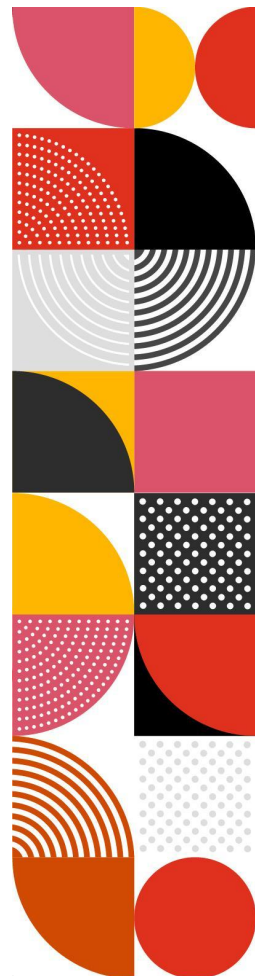
Lump sum Engineering, Procurement and Construction (**EPC**) style contracts which fully allocate risk to a head Contractor for project delivery are often not a suitable delivery method. The reasons include:

- extreme risk of cost rises in a high inflation economy
- supply difficulties
- the use of high risk technologies
- the imperative to start projects before pricing and programming can be finalised to minimise delays caused by supply chain issues
- high demand in the global construction and engineering sectors
- the significant size, complexity and profile of so-called 'mega projects'
- the shortage of Contractors with the experience and resources needed to deliver such mega projects
- the shortage of experienced labour and quality materials and resultant fluctuations in associated costs.

Increasingly, Principals and Contractors are looking for alternatives to the traditional fixed price and time project delivery methods. While the traditional delivery methods remain (such as design and build; EPC; and construct only), the risk allocation and payment arrangements vary significantly.

This paper provides a brief review on the traditional fixed time and cost arrangements and, in the Engineering, Procurement and Construction Management (**EPCM**) context:

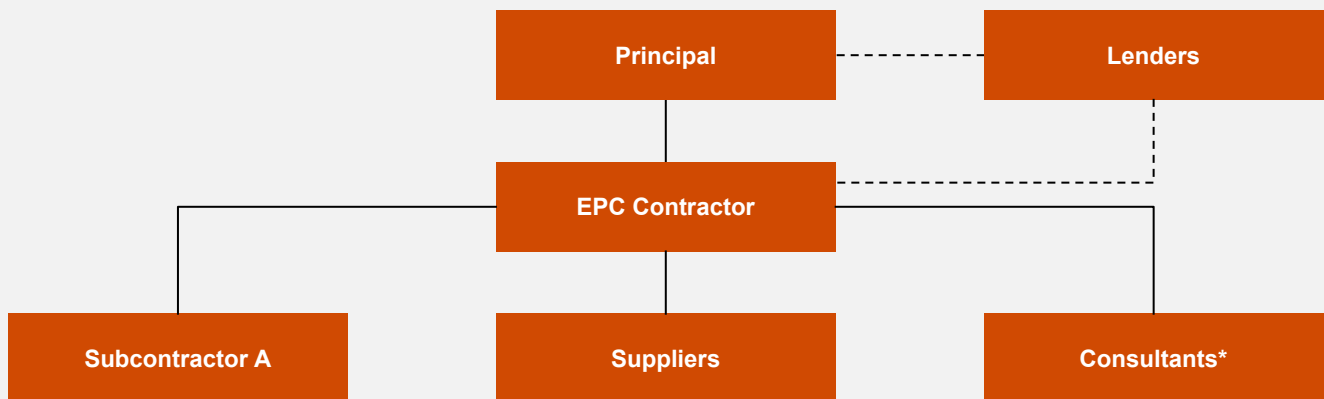
- provides an overview of the main features
- examines each phase of the EPCM delivery method
- discusses other issues, including bankability and Key Performance Indicator (**KPI**) arrangements.



Delivery by traditional fixed time and cost arrangements

Over the past 10-15 years, project delivery methods have generally incorporated some form of fixed time and cost arrangement – whether by construct only, design and build or EPC. These delivery methods were, and remain, popular with Principals and Financiers as the fixed time and cost arrangement provides certainty and, for EPC Contracts, a single source of responsibility. Delay liquidated damages may be levied against the Contractor so as to incentivise them to complete the works on time and the circumstances where the Contractor can claim relief for increases in the cost are carefully limited. Naturally, Contractors seek to price a risk premium into their remuneration to deal with such risk allocation.

Where projects are delivered on a limited or non-recourse financing basis, the need for time and price certainty is magnified. While the recent forces of demand and supply in the construction industry have also impacted the risk allocation on the 'turnkey' EPC Contracts used for such projects, and bank credit committees have relaxed requirements slightly (credit crunch aside), the change in risk allocation has been far more limited.



* including designers, engineers and construction managers – where limited or non-recourse financing is in place



Overview of EPCM arrangements

Under an EPCM Contractor, the Contractor manages the activities required to engineer, procure and construct the project, but does not itself undertake to deliver that project:

- by a set time
- for a fixed price
- to be fit for purpose.

The concept of delivering projects by way of an EPCM Contract is not new. It has wavered in popularity for a number of decades and has, for some time, been used extensively throughout the oil, gas, petrochemical and resources industries, where Principals and Contractors are large, experienced and have ongoing relationships. In the current market, sophisticated Principals are often not prepared to pay large risk premiums and profits to Contractors under traditional fixed time and cost contracts. Add to this, the current boom in the number of projects to be delivered across the globe, increased pressure to fast-track delivery, limitations on Principal's resources, rising prices of materials and labour, and we are witnessing a redefining of the way projects are being delivered. EPCM Contracting is just one of a number of alternative models becoming more widespread.

The form and structure of an EPCM Contract will vary depending on a variety of factors such as the:

- particular industry and project
- sophistication and expertise of the project parties
- Principal's requirements as to level of involvement
- Principal's internal project delivery resources and skill set
- history and level of trust between the Principal and the Contractor
- level of integration between the project parties' respective teams
- level of risk on the project (i.e., technical and commercial/financial).

In its simplest form, an EPCM Contract is a consultancy agreement for the provision of professional or technical services. At one end of the spectrum, an EPCM could be considered to be a pure consultancy-type arrangement and, at the other end, an integrated EPCM Contract could look more akin to an integrated alliance style contract.

The EPCM Contractor is typically responsible for:

- basic and detailed design and engineering
- establishing, implementing and managing tendering processes for procurement of all equipment and materials and awarding and managing works package contracts
- overall project management and administration of work package contracts, including during warranty periods.

Traditionally, the Principal entered into the construction and procurement agreements for the project. However, depending on the project structure, the Principal and the industry, the EPCM Contractor may enter into contracts directly with Contractors and suppliers, as agent for the Principal, (with the EPCM Contractor assuming no or limited liability under such contracts). Where this is the case, there are generally clear procedures and limitations on the EPCM Contractor's ability to execute such contracts.

EPCM Contractors usually do not take full responsibility for:

- delivery of the project by certain key milestone dates
- care and custody of the works (with certain exceptions for arranging security and management of safety etc.)
- the project being delivered in accordance with the project budget.
- The EPCM Contractor is usually heavily incentivised to bring the project to commercial operation on time and under budget, but is not required to indemnify the Principal for failing to do so.

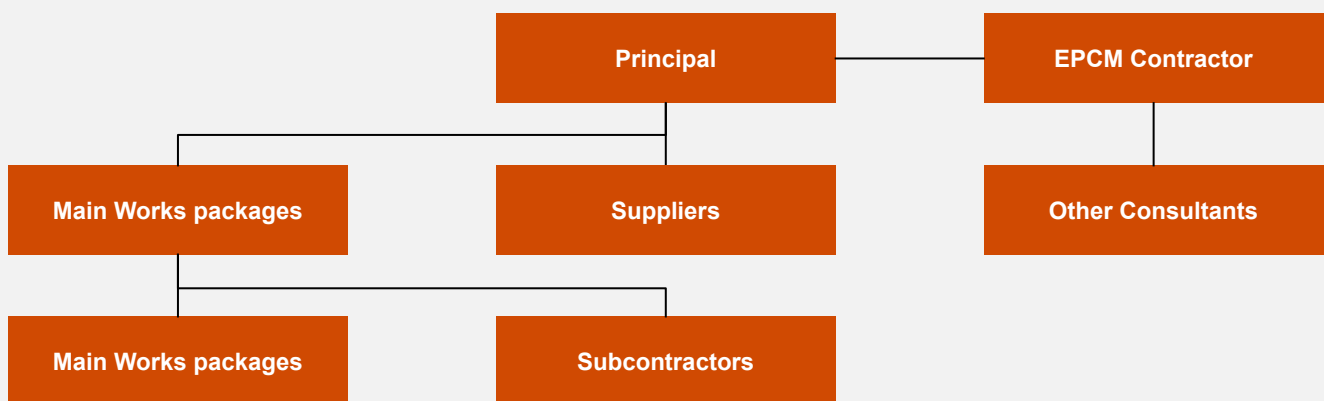
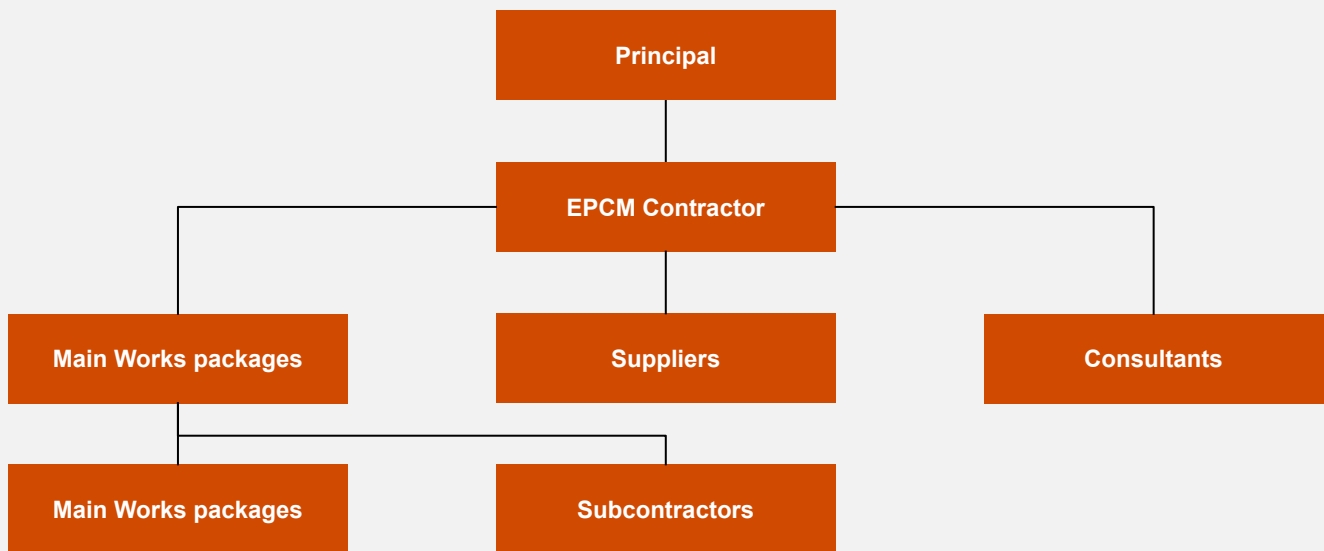
Depending on the scope of services to be provided by the EPCM Contractor, potential liabilities may relate to wilful default, fraudulent behaviour and, after some form of negligence or recklessness, in respect of matters such as:

- performance of the design and engineering
- preparation of the project budget and project schedule
- management of procurement, including a failure to implement an objective and competitive tender process
- management, administration and supervision of the work packages
- coordination of the design and construction works between works package Contractors.

Ordinarily, the maximum liability of the EPCM Contractor is much lower than is usually the case under fixed time and cost arrangements. It is often limited to the re-performance of defective services and capped out at between 5-20% of the total EPCM remuneration (or, more recently, to the value of the profit and sometimes the overhead component as well). There are generally a number of carve-outs from such a limitation, including for losses resulting from fraud or wilful misconduct. Obviously, these arrangements depend on a number of factors and vary widely from project to project.

Model 1: EPCM Contractor has direct contractual relationship with works package Contractors and suppliers.

Model 2: EPCM Contractor procures the entry by the Principal into a direct contractual relationship for the main works package.



Appendix 1 to this paper contains a table summary of some key issues for the appointment of an EPCM Contractor to be considered by Principals when preparing the EPCM Contract.

Typical phases of an EPCM

Design and engineering

It is not unusual to have the engineering arrangements split into a number of components. The EPCM Contractor's engagement may start as early as the feasibility stage of the project. That is, it may be engaged to analyse high level technical aspects and prepare a report on the likely timing and cost, proposed procurement arrangements for long-lead items, local project considerations and other aspects of the proposed project (usually on a straight cost-plus basis).

Following the feasibility study, the Contractor may be appointed to undertake the Front-End Engineering and Design (**FEED**) for the project. Broadly, the FEED phase covers the basic engineering and design for the project and also the development of preliminary project schedules, budgets and work packages. This process allows the Principal to go to the market with sufficient scope definition to ensure that it receives bids which are competitive and realistic – ideally on a lump sum basis although this may only be for the procurement of long-lead critical path items (e.g., key equipment or foundation work/site and access preparation). As with the feasibility stage, this component usually proceeds on a cost-plus basis.

Following the FEED stage, the EPCM Contractor will work the basic engineering and design into the complete detailed engineering package. In many cases, the EPCM Contractor will ultimately be responsible for ensuring that the engineering and design will meet the relevant performance parameters for the project. To this end, it must coordinate these works with the other parties involved to ensure that the engineering and design complies with the overall project specification and other specific requirements.

The EPCM Contract may also be structured in such a way so as to permit the Principal, in its absolute discretion, to instruct the EPCM Contractor to proceed to the next stage. For example, at the conclusion of the feasibility stage, the Principal can elect to dismiss the EPCM Contractor and engage another Contractor to undertake the FEED services regardless of whether the Contractor has properly performed the services. Also, the contract may be structured in such a way so as to have the EPCM Contractor roll into a lump sum EPC after conclusion of the FEED services and therefore taking the turnkey risk on the entire project. This process can provide the Principal with greater flexibility but will obviously depend on the needs and other constraints of each particular project.

Procurement

In addition to undertaking the design and engineering for the project, the EPCM Contractor is usually required to procure, on behalf of the Principal, all of the materials, equipment and construction works necessary for the proper completion of the project. To this end, the EPCM Contractor is required to establish a system or follow procedures for implementing such procurement arrangements. This may be a significant task if the project is broken down into many components and involves the EPCM Contractor preparing a suite of standard form procurement and construction contracts for the project (most EPCM Contractors will have these already), establishing a tender process suitable for the project and works to be approved by the Principal, responding to tender clarification issues, negotiating the commercial terms of all construction works packages and supply contracts and finalising each of the agreements for execution by the Principal or approved by the Principal for execution by the EPCM Contractor.

Construction management

Once the works have started, the EPCM Contractor assumes the role of the Principal's 'engineer' or 'Employer's representative' under the various work package and supply contracts. It manages and supervises each of these contracts. A key role for the EPCM Contractor is coordinating each of the works packages to ensure that all of the works interface as required and that delays and variation claims are minimised where possible. Usually the EPCM Contract will set out the limits on the EPCM Contractor's authority. These limitations generally relate to instructing or agreeing variations, settling of claims, waiving any breach or default and certification of final payments.

Depending on the scope of the EPCM services which, in some cases, evolves as the project proceeds, the EPCM Contractor is usually required to play an active role in monitoring and reporting during the testing and commissioning phase of the works packages. Further, they are generally required to oversee the notification and rectification arrangements during the defects liability period and also to deal with any other warranty issues. In certain cases, the EPCM Contractor is required to take an active role in the management of claims or disputes from work package Contractors. Alternatively, this role may be limited to the provision of advice regarding any disputes that arise during the course of the projects.

Other issues

Bankability and completion guarantees

As mentioned earlier, where the project is financed through limited or non-recourse project financing, Lenders will demand a great deal of outcome certainty in terms of time and cost because their security is heavily reliant on sufficient and timely revenue from the operation phase. The borrower is usually the entity newly established to own the project and this usually precludes the use of EPCM Contracting even though the outcome may be cheaper and faster.

The only circumstances (with some exceptions where there is government support or very strong client-Lender relationships or influence) where EPCM Contracting will be bankable where the Sponsor(s) provide the Lenders with a completion guarantee. That is, it offers the Lenders some form of parent company guarantee until commercial operation or a commitment to cover cost overruns and debt service obligations during a period of delay. Such a guarantee is usually for the total amount of the debt and falls away upon commercial operation.

Depending on the Lenders, the project and the Principal/Contractor's track record for delivering similar projects, the completion guarantee may be more limited and step down prior to commercial operation or as various stages of the project are completed. Conversely, they sometimes linger beyond commercial operation to cover market pricing risk depending on the type of project and output.

Incentivising the EPCM Contractor

KPI and incentive arrangements are very much project-specific. As such, it is difficult to meaningfully suggest project-specific KPI arrangements without first understanding the key commercial considerations driving any particular project. These are usually a combination of time, cost, quality, safety, environment and community. To a certain extent, the corporate philosophy of the Contractor is also important.

Appendix 2 to this paper contains a table summary of various KPIs and related incentive arrangements that may be relevant to the appointment of an EPCM Contractor. Whilst this table is not an exhaustive list, it includes key issues which a Principal should consider in order to encourage the behaviour it requires the EPCM Contractor to display so as to achieve the Principal's objective for its project.

Given the cost-reimbursable nature of most EPCM Contracts, an alignment of interests is obviously extremely desirable from the Principal's perspective to encourage productive behaviour and positive outcomes. However market forces and an environment of rising costs and scarce technical resources have been driving some Contractors' lack of enthusiasm to place too much at risk.

At the early stages of a project, lack of project-definition also complicates the setting of meaningful and precise targets against which performance can be measured and appropriate behaviour encouraged. Setting the framework and principles at an early stage, while there is a competitive environment and balanced bargaining position, is generally the best way for the Principal to lock in KPI arrangements.

As noted earlier, there has been a significant shift in the construction market over the last few years particularly regarding traditional risk allocation. This has also impacted the form of EPCM Contracts being used. Interestingly, some Contractors are preferring to move away from, or limit the extent and impact of, KPIs. This is largely because they believe these arrangements can:

- create uncertainty (and therefore increased risk and are more difficult to achieve in a rising cost market)
- cause additional friction between the parties which does not foster a sense of cooperation or trust or help develop a long-term multi-project relationship
- waste time and resources on trying to monitor, document and agree on whether KPIs have been met (which detracts from the main objective of successfully completing the project).

Some Principals prefer an integrated approach toward administering and managing the project akin to assuming part of, and sharing, the EPCM responsibilities. Given the magnitude, complexity and duration of the 'mega projects', some Contractors may be unwilling to commit a material percentage of their remuneration to an incentive regime structured on a 'whole of project' basis as opposed to one that corresponds with discrete phases of work.

Many projects are almost completely 'schedule' driven. Consequently, and despite both parties' best efforts, an incentive arrangement that predominantly focuses on time may inevitably create inefficiencies which results in increased cost, double handling and/or re-work which also puts pressure on costs. Any KPI arrangement adopted for a particular project must encourage the kind of behaviour the Principal wants the Contractor to display so as to achieve the project's objectives. Above all, any KPI arrangement should focus on maximising productivity and delivering timely and innovative results while striking a balance between time and budget without sacrificing quality or safety or creating inefficiencies. Obviously this is easier said than done.

Cost definition

Where the cost-plus model is used, there needs to be a detailed assessment of what costs are in and which are not. Some EPCM models also separate the direct costs from project and head office overheads and either treat them differently or agree a lump sum or fixed percentage for some or all of the overhead or profit component. Doing so can also tie into the incentivisation regime. If fixed, then the Contractor's margin diminishes the longer the delivery period and/or the greater the reimbursable component becomes.

Alliancing comparisons

The integrated team approach of EPCM Contracting is verging on an alliancing style contract without taking the final step of openly creating a 'no blame' environment. The reality is however, that it becomes increasingly difficult to apportion blame and pursue a Contractor for breach of contract in an integrated team approach where representatives of the Principal and the Contractor work together and make decisions jointly. Conversely, many EPCM Contracts are more similar in style to consultancy contracts and cannot be compared to alliancing.

Conclusion

Current projections indicate that the international construction boom is likely to continue into the foreseeable future. Consequently, more Principals and Contractors will seek to redefine traditional project delivery methods, particularly in response to a variety of economic and market-driven changes. In such an environment, it is likely that rigid fixed time and cost arrangements will become less common and we will see more of cost-plus, alliancing and EPCM arrangements.

As the complexity of so called 'mega projects' increases and labour, materials and professional resources become more difficult or expensive to source, Principals will need to choose between paying an increasing EPC profit/risk premium or placing greater reliance on the expertise and skill of reputable and experienced Contractors to manage the delivery of their projects.

If the latter is the preferred option, a carefully planned EPCM Contract, with appropriate incentivisation arrangements, will go some way to ensuring that the Principal's commercial and other project objectives are achieved.



Appendix 1

Issue	Comment
Form	<p>In its simplest form, an EPCM Contract is a consultancy agreement for the provision of professional and/or technical services. At one end of the spectrum, an EPCM Contract could be considered to be a pure consultancy-type arrangement and, at the other end, it could look more akin to an integrated alliance style contract where the parties' interests' are aligned through the KPI incentive regime.</p> <p>There are many important factors arising out of a project and the current market which will influence the form of the EPCM Contract. They include:</p> <ul style="list-style-type: none"> • the surge in demand in the engineering/project management sector across Australia and internationally • the size, complexity and profile of the project • whether the project is to be delivered on a fast-track schedule • the requirements and approach to allocation of risk of the project Sponsor(s)/Principal's parent company(s) • the requirements of the Lenders where the project is to be financed on a limited or non-recourse basis • the requirements of other stakeholders including governments • the extent of engineering and design already undertaken by the Principal under separate contracts (if any).
Scope of services	<p>The EPCM Contractor's scope of services typically includes:</p> <ul style="list-style-type: none"> • engineering and design • procurement • construction management and administration • the provision of systems and computer software. <p>Design and Engineering</p> <p>It is not unusual to have the engineering arrangements split into a number of components. The EPCM Contractor's engagement may start as early as the feasibility stage of the project. That is, it may be engaged to analyse high level technical aspects and prepare a report on the likely timing and cost, proposed procurement arrangements for long-lead items, local project considerations and other aspects of the proposed project (usually on a straight cost-plus basis).</p> <p>Following the feasibility study, the Contractor may be appointed to undertake the FEED for the project. Broadly, the FEED phase covers the basic engineering and design for the project and also the development of preliminary project schedules, budgets and work packages. This process allows the Principal to go to the market with sufficient scope definition to ensure that it receives bids which are competitive and realistic – ideally on a lump sum basis, although this may only be for the procurement of long-lead critical path items (e.g., key equipment or foundation work/site and access preparation). As with the feasibility stage, this component usually proceeds on a cost-plus basis.</p> <p>Following the FEED stage, the EPCM Contractor will work the basic engineering and design into the complete detailed engineering package. In many cases, the EPCM Contractor will ultimately be responsible for ensuring that the engineering and design will meet the relevant performance parameters for the project. To this end, it must coordinate these works with the other parties involved to ensure that the engineering and design complies with the overall project specification and other specific requirements of the Principal.</p> <p>As discussed below, the EPCM Contract may also be structured in such a way so as to permit the Principal, in its absolute discretion, to instruct the EPCM Contractor to proceed to the next stage.</p> <p>Procurement</p> <p>In addition to undertaking the design and engineering for the project, the EPCM Contractor is usually required to procure, on behalf of the Principal, all of the materials, equipment and construction works Contractors necessary for the proper completion of the project. To this end, the EPCM Contractor is required to establish a system or follow procedures for implementing such procurement arrangements. This may be a significant task if the project is broken down into many components and involves the EPCM Contractor preparing a suite of standard form procurement and construction contracts for the project (in conjunction with the Principal's legal advisors), establishing a tender process suitable for the project and works to be approved by the Principal, responding to tender clarification issues, negotiating the commercial terms of all construction work packages and supply contracts and finalising each of the agreements for execution by the Principal or approved by the Principal for execution by the EPCM Contractor.</p>



Issue	Comment
Scope of services (Cont'd)	<p>Construction Management</p> <p>Once the works have started, the EPCM Contractor assumes the role of the Principal's 'engineer' or 'Principal's representative' under the various work package and supply contracts. It manages and supervises each of these contracts within pre-agreed limits of authority. A key role for the EPCM Contractor is coordinating each of the work packages to ensure that all of the works interface as required and that delays and variation claims are minimised where possible. Usually the EPCM Contract will set out the limits on the EPCM Contractor's authority. These limitations generally relate to instructing or agreeing variations, settling of claims, waiving any breach or default and certification of final payments.</p> <p>Depending on the scope of the EPCM services which, in some cases, evolves as the project proceeds, the EPCM Contractor is usually required to play an active role in monitoring and reporting during the testing and commissioning phase of the work packages. Further, they are generally required to oversee the notification and rectification arrangements during the defects liability period and deal with any other warranty issues. In certain cases, the EPCM Contractor is required to take an active role with the Principal's legal advisors in the management of claims or disputes with work package Contractors. Alternatively, this role may be limited to the provision of advice regarding any disputes that arise during the course of the project.</p> <p>EPCM Contractors usually do not take responsibility for:</p> <ul style="list-style-type: none"> • delivery of the project by certain key milestone dates • care and custody of the works (with certain exceptions for arranging security and management of safety etc.) • the project being delivered in accordance with the project budget. <p>These obligations would be included in the infrastructure contracts and supply agreements.</p>
Remuneration	<p>EPCM Contractors are typically remunerated on a cost-reimbursable basis, including the following components:</p> <ul style="list-style-type: none"> • Fixed Fee: Pre-agreed fixed fee or % of the value for each phase of the project to cover margin and overheads • Actual Personnel Costs: Reimbursement for directly and reasonably incurred personnel costs at pre-agreed rates (fixed for the duration of the EPCM Contract where possible), with typical carve-outs for duplication of work undertaken due to defects in the services or otherwise for the EPCM Contractor's default • Reimbursable Expenses: Reimbursement for a discrete list of reimbursable expenses, subject to the Principal's approval prior to the expense being incurred (i.e., pre-approved work related travel). <p>The EPCM Contractor may also be entitled to bonuses (or subject to a reduction in payment) under an agreed KPI incentive regime.</p>
Bankability	<p>Where the project is to be financed through limited or non-recourse project financing, Lenders will demand a great deal of outcome certainty in terms of time and cost because their security is heavily reliant on sufficient and timely revenue from the operation phase.</p> <p>In these circumstances, to provide cost certainty for the EPCM Contract, the Principal should consider capping individual incentive arrangements (or the aggregate of all) at a certain percentage of the fee or the estimated target costs. The Principal should also consider incorporating a guaranteed maximum or 'ceiling price' cap on the EPCM Contractor's remuneration (i.e., if the target man-hour budget is exceeded, the payments otherwise due to the EPCM Contractor could be deemed not reimbursable). This could apply to price caps for each phase of the project. Obviously this approach would require a certain level of project definition to enable the development of realistic target man-hour budgets during negotiations with the successful Contractor. However, the extent to which the Principal can impose a cap on the EPCM Contractor's remuneration will depend on market conditions at the time of going to tender. In the current market we are seeing this approach rejected by many Contractors because there are opportunities to procure work on a pure cost reimbursable basis, particularly on projects that are not subject to Lender requirements/restrictions.</p> <p>Also, where the borrower is an entity newly established to deliver, own and operate the project, this usually restricts the use of EPCM Contracting even though the outcome may be cheaper and faster (with some exceptions where there is government support or very strong client-Lender relationships or influence). Where EPCM Contracting is used, it is not uncommon for Lenders to require the Sponsor(s) to provide them with a completion guarantee. That is, the Sponsor(s) offers the Lenders some form of parent company guarantee until practical completion/commercial operation or a commitment to cover cost overruns and debt service obligations during a period of delay. Such a guarantee is usually for the total amount of the debt and falls away upon practical completion/commercial operation. Depending on the Lenders, the project and the Principal /Contractor's track record for delivering similar projects, the completion guarantee may be more limited and step down prior to practical/commercial operation or as various stages of the project are completed. Conversely, they sometimes linger beyond commercial operation to cover market pricing risk depending on the type of project and output.</p>
Novation of existing design	<p>Where a major proportion of the engineering and design for the project has already been undertaken under separate design/consultancy packages let by the Principal (i.e., FEED during the project feasibility phase), the Principal must avoid potential gaps in liability by creating a single point of responsibility for the performance of the design of the project through the novation of the existing design to the EPCM Contractor. The Principal must allow sufficient time in the project schedule for the EPCM Contractor to verify and accept responsibility for the existing design.</p>

Issue	Comment
Optional Phases	<p>In most instances the EPCM Contract should be structured in such a way so as to permit the Principal, in its absolute discretion, to instruct the EPCM Contractor to proceed to the next stage.</p> <p>For example, at the conclusion of the feasibility stage, the Principal can elect to dismiss the EPCM Contractor and engage another Contractor to undertake the FEED services regardless of whether the Contractor has properly performed the services. Similarly, where the project is to be financed through limited or non-recourse project financing, the Principal must be entitled to terminate the EPCM Contractor in its absolute discretion if the Lenders do not give finance approval or the Principals cannot raise the required capital.</p> <p>Terms establishing the process, consequences (including payment on termination outlined above) and risk in the services undertaken during a particular phase will need to be clearly articulated in the EPCM Contract.</p> <p>Also, for certain types of projects (i.e., the construction of a facility such as a power station or a process plant) the EPCM Contract may be structured in such a way so as to have the EPCM Contractor roll into a lump sum EPC after conclusion of the FEED services, therefore taking the turnkey risk on the entire project. This process can provide the Principal with a single point of responsibility for design and construction and greater flexibility but will obviously depend on the needs and other constraints of each particular project, including market considerations. For example, rolling an EPCM into a single EPC is unlikely to be suitable on major projects such as integrated mine, port and rail projects where the size, complexity and varying nature of the project components cannot be delivered in its entirety by one EPC Contractor or without significant risk premiums that increase costs to a level that impact on the overall viability of the project.</p>
Insurance	<p>Obviously the whole of project insurance strategy is a critical issue for all projects. It will also impact on the EPCM Contract and extent of insurances to be procured and maintained by the EPCM Contractor. For example, a project wide PI policy may be required to supplement the PI insurance provided by the EPCM Contractor, to avoid gaps in design liability in circumstances where the limit of indemnity provided under the EPCM Contractor's PI insurance is not sufficient to cover the potential loss.</p>
Liability Caps	<p>In the current market, any sophisticated Contractor will require an overall cap on liability and exclusion of liability for consequential loss.</p> <p>The overall limitation could be managed in a number of ways – for example, the EPCM Contractor's exposure could be limited to:</p> <ul style="list-style-type: none"> • 100% of any incentive payment or the component of the price representing the Contractor's profit and/or overhead (or part thereof) • a percentage of the contract price – ideally, this would be the higher of the 'total estimated contract price' or the actual amount of payments made to the EPCM Contractor (to overcome the issue where the EPCM Contract is terminated for breach in the early stages of the project and payments made to the Contractor are insignificant in comparison to the loss suffered by the Principal). <p>Ordinarily, the maximum liability of the EPCM Contractor is much lower than is usually the case under fixed time and cost arrangements. In the current market, and for similar services, overall caps are reported to be typically in the range of 5% – 20% of the total EPCM remuneration (or, more recently, to the value of the profit and sometimes the overhead component as well). This is in addition to proceeds available from project insurance policies. Obviously it is desirable for the Principal to set the cap at the 'high water mark' to satisfy requirements of the Sponsors and Lenders in seeking to minimise gaps in liability and then by transferring liability to Contractors, suppliers and the insurers.</p> <p>These overall caps and exclusion of consequential loss usually do not apply to certain exempt liabilities such as the cost of re-performing defective works, infringement of IP/confidentiality obligations, third party claims, fraud, gross negligence (this is often controversial), wilful misconduct, unlawful acts and liabilities which the EPCM Contractor cannot lawfully contract out of (generally contracts are silent on this – the main one being section 52 of the Trade Practices Act). Having said that, there may be some significant push back by EPCM Contractors on these carve-outs and even limiting consequences of breach largely to re-performance of defective work (more so in an integrated team environment and after considerable debate over what is, or is not, 'defective' work).</p>
Variations	<p>Principals need to develop mechanisms for determining what amounts to a variation (i.e., a major change to the services not contemplated by the parties) and the corresponding cost consequences (i.e., adjustment to fixed fee and overhead component or payment of direct costs only). This area becomes more important in relation to the achievement of KPIs and whether the target costs and time frames are to be adjusted. Pre-award workshops are often conducted with Contractors to define the limited nature of events giving rise to a variation.</p>
Termination Payments	<p>In the current market, where the EPCM Contract is terminated for the Principal's convenience or default during one of the optional phases, the EPCM Contractor is likely to expect to be paid a portion of loss of profit for the balance of that phase and for its reasonable demobilisation expenses which have not been recovered through payment up to the date of termination.</p> <p>Where this is the case, to the extent possible, it is desirable to have pre-agreed fixed amounts. Where this is not possible, the method of calculation should be clearly defined, including what's in and what's out, particularly in respect of any demobilisation entitlement (on other projects we have seen the Principal paying significant sums for staff wages and relocation as part of demobilisation payments).</p> <p>Where the EPCM Contract is terminated for the EPCM Contractor's default any payment should be limited to the services performed up to the date of termination and subject to the Principal's right to set off.</p>

Issue	Comment
Contractor's Security	At the risk of stating the obvious, given the duration of the EPCM services, the likely low caps on liability and the cost of maintaining the performance security (which will ultimately be borne by the Principal), consideration should be given to the value of the security required, rather than simply allocating an arbitrary X% of the estimated contract price.
Project and Services Budgets	The concept of whole of project and/or EPCM services budgets could be incorporated into the EPCM Contract terms to deal with limitations on the cost of certain services or implementation contracts etc. As outlined above, any incentive or KPI arrangement incorporated could be limited where the Principal incurs cost overruns above budgeted amounts of greater than []%.
Contractor's Key Personnel	The traditional provisions regarding personnel (i.e., the EPCM Contractor cannot remove Key Personnel without the Principal's prior approval) may be too inflexible. Given the market squeeze on suitably qualified personnel and resourcing, consideration could be given to alternate arrangements regarding Key Personnel – such as payment of a liquidated amount where senior personnel leave or are taken off the project within a certain period (i.e., within 2 years – we have seen amounts up to USD\$300k for the project director). Possible exceptions to such payment could include illness, incapacitation, and resignation or if the personnel are temporarily absent on annual, sick, long service or compassionate leave etc. If liquidated damages are not suitable, Key Personnel turnover could also be a consideration in any KPI incentive payments (as outlined in Table 1).
Project Control Group	Generally the Principal will establish a form of 'Project Directorate' or management team (Project Control Group) comprising personnel from the Principal, Sponsor(s) and the EPCM Contractor. Terms must be included dealing with the composition, role and powers of the Project Control Group (and various other administrative matters, such as meeting protocols and reporting). These arrangements could also deal with the Principal's 'reserve powers', the flexibility to add other equity participants to the Project Control Group and procedures for determining KPI performance as discussed above.
Health and Safety	The Principal must consider that it will have primary responsibility for implementing the workplace, health and safety obligations for the project. We often see the EPCM Contractor (to the extent permitted by law) assuming primary responsibility for implementing the workplace, health and safety obligations for the services and the overall project (including any and all implementation Contractors and the Principal's personnel at the site).
Disputes	<p>Given the likely duration of the EPCM Contract, the fact that small disputes are likely to occur and a good working relationship must be maintained at the senior project level, it may be beneficial (in terms of certainty and time) for the EPCM Contract to establish a dispute resolution procedure in advance of any arbitration or litigation. For example, negotiation between the parties' representatives; escalation to negotiation by senior representatives not heavily involved in the project (or the Project Control Group); referral to expert determination (or other form of resolution); and then to arbitration or the courts.</p> <p>From an enforceability perspective, arbitration is preferred if contracting with foreign parties (i.e., to be able to rely on the New York Convention).</p>
Reserve Powers	Terms should be added to clarify the 'reserve powers' held by the Principal to manage and direct the project, including approval of systems and procedures governing the project, urgent protection of people and property, issuing bid documents, awarding implementation contracts, approving variations and extensions of time or any event likely to have a major impact on the operation or viability of the project etc.
Lender requirements	Where the project is to be financed through limited or non-recourse project financing, terms must be added to the EPCM Contract regarding the usual Lender requirements (such as step-in rights, cooperation (including providing access to Financiers' engineer), execution of a tripartite deed, the Principal's right to assign its interest in the EPCM Contract etc).



Appendix 2

Incentive Arrangement	Comment
<p>General</p>	<p>Given the cost reimbursable nature of EPCM Contracts, without KPI incentive mechanisms, it is difficult, if not impossible, to instil the same sense of urgency and efficiency in the EPCM Contractor and its personnel over a long period as compared to a fixed price model. Therefore, the KPIs will be critical in incentivising the EPCM Contractor to perform in a safe, productive, efficient and timely manner in order to ensure the Principal's key commercial objectives for the project are realised – usually time, cost, quality, safety, environment and community or some combination of these.</p> <p>It is critical to the success of the KPI incentive regime that, when formulating the targets and methods of measuring performance, there is sufficient clarity of project scope and the Principal's requirements. Whenever possible, the Principal must allow sufficient time and resources to agree and clearly articulate quantifiable KPI targets and corresponding methods of measuring performance in the EPCM Contract. Obviously, formulating incentive arrangements is problematic where they need to be agreed through the execution phase. This approach is not recommended as the parties often fail to reach agreement, in which case the incentive regime has little or no value.</p> <p>The KPI incentive regime should focus on maximising productivity and timely delivery whilst striking a balance between time and budget, and without sacrificing quality or safety. We have seen very detailed and sophisticated KPI incentive regimes, particularly in an alliancing or relationship contracting context and where project deliverables are to be measured over long time frames.</p> <p>Conversely, some EPCM Contractors prefer to move away from (or limit the extent and impact of) KPI incentive regimes, largely because they believe these arrangements can create uncertainty (and therefore some risks in a rising cost market) and additional friction between the parties, which does not foster a sense of co-operation or trust. Where this is the case, we see Principals often opting for an integrated approach toward administering and managing the project (akin to assuming part of, and sharing, the EPCM responsibilities). In the current market we are also seeing that some EPCM Contractors are unwilling to put a material percentage of their remuneration at risk based on a KPI incentive regime.</p> <p>However, if the KPI incentive regime is structured with proper recognition of the current market conditions and the issues below are addressed then successful outcomes are achievable.</p>
<p>KPI – Cost</p>	<p>The cost incentive arrangements can be structured on a 'whole of project basis' or a 'phase by phase' basis with an underlying 'whole of project' component (which directs the EPCM Contractor to also focus on the integration of the phases into the overarching project). For the 'whole of project' component there needs to be a meaningful target reimbursable cost – something that might not be available with any degree of accuracy at the time the Principal elects to go to the market.</p> <p>The Principal should consider whether it has sufficient detail to develop realistic target man-hour budgets. If the target man-hour budget is exceeded, certain components of the payments otherwise due to the EPCM Contractor could be deemed not reimbursable (unlikely to be acceptable in this market), or there could be some reduction in the incentive payment (likely to be more acceptable).</p> <p>Another alternative is to set a fixed profit and off-site overhead component as part of the EPCM Contractor's remuneration. If the project takes longer than anticipated or more man-hours are required, the profit and overhead component does not change. It diminishes as a percentage of the overall project value (unless there is a very significant/fundamental change in scope).</p>
<p>KPI – Schedule</p>	<p>The traditional schedule disincentive arrangements of liquidated damages for delays are not generally applicable in the EPCM context. This is because the EPCM Contractor does not have complete control over the delivery of the works and achieving project milestones.</p> <p>On projects where time is of critical importance, the 'carrot' rather than the 'stick' approach seems more commonly used. This can be done by agreeing fixed bonuses up front (typically where the additional revenue/cost savings to the Principal resulting from early completion can be assessed at the outset), or by including schedule KPIs as part of an overall weighted performance measurement calculation used to determine bonuses or abatements. As noted above, schedule incentive can also be dealt with indirectly, by setting a fixed profit and off-site overhead component (i.e., if the project takes longer than anticipated, the profit and overhead component diminishes as a percentage of the overall project value).</p>

Incentive Arrangement	Comment
KPI – Schedule (Cont'd)	<p>Many projects are almost completely 'schedule driven'. Despite both parties' best efforts, any arrangement that predominantly focuses on time may inevitably create inefficiencies (resulting in increased cost, double handling and/or re-work which ultimately puts pressure on costs and impacts on quality and safety). Therefore, it is important to try, if possible, to ensure that the KPI incentive regime is not solely 'schedule' driven to eliminate those inefficiencies. Obviously, too great an emphasis on schedule incentive arrangements can jeopardise or undermine other objectives of the project – ie cost, safety, quality, environmental performance, community relations and minimising operational expenditure.</p>
KPI – Performance	<p>There are many other ways in which to incentivise Contractors regarding performance. It is not unusual to see performance incentive arrangements where performance by the EPCM Contractor which:</p> <ul style="list-style-type: none"> • exceeds pre-agreed fixed targets will lead to better than normal returns for the EPCM Contractor • falls short of the pre-agreed fixed targets will lead to poorer than normal returns for the EPCM Contractor. <p>It is important to set targets that can be effectively measured to collect demonstrable performance information. This is easier said than done and requires specific project management expertise. If this is not possible, or it is difficult, there is a real prospect of dispute and the incentive arrangement will be of little value. Regular meetings of a Project Control Group where performance issues are raised and areas for improvement are identified are important (as are outcomes and objectives reached during any pre-contract workshops to set targets).</p> <p>It is also common to see KPI incentive mechanisms whereby the Contractor's overall bonus (or reduction in fee) is determined using weighted performance measurement across several pre-agreed targets (i.e., time, cost, safety, environment and community). The weightings and formula are agreed and recorded in the EPCM Contract from the outset. The weightings reflect the importance placed on each target in achieving the Principal's commercial and other objectives for the project (it is common to see safety with the greatest weighting).</p> <p>Often it is the role of a Project Control Group to analyse performance against targets and determine the inputs to the formulae used to determine the adjustment to the Contractor's fee (if any). To avoid disputes over performance it is important that the measurement of performance is based on quantifiable targets and not open to subjective interpretation. However, in circumstances where the Project Control Group is unable to reach agreement on performance, the determination is typically made by the Principal's representative or an independent expert (the latter generally considered the fairer option, while recognising that appointment of the expert will be an additional cost to the parties).</p> <p>Under a weighted performance mechanism, the Contractor may be entitled to a bonus, despite failing to achieve one of the KPI targets. Alternatively, the EPCM Contractor's bonus or the fee payable may be reduced where the EPCM Contractor achieves some but not all of the targets.</p>
KPI – Safety	<p>Generally, KPI arrangements for safety are largely based on the corporate policy of the Principal or the project Sponsors (i.e., zero deaths and/or lost time injuries (LTIs)), many of which are absolute.</p> <p>Other factors that may be relevant include:</p> <ul style="list-style-type: none"> • compliance with safety management plans, procedures and policies (and diligence in reporting and/or ensuring other parties comply with these) • number of accidents, near misses or project-related injuries • Contractor's management and administration of accidents, near misses and project-related injuries (i.e., reporting, preparation of hazard assessments etc). <p>It is likely that many of the safety incentive arrangements for the EPCM Contract will also take into account the performance of the other Contractors appointed by the Principal on the project. This is typically the case where the Principal wants the EPCM Contractor to drive safety KPIs and culture across the whole project.</p> <p>Also, it is not uncommon to see the achievement of certain safety KPIs as a mandatory requirement to the EPCM Contractor receiving any incentive bonus. In these circumstances, where the Contractor fails to achieve these KPIs, they often forfeit the entire project incentive arrangement (not just for safety) that would have otherwise been available to them. For example where there is a major personal injury suffered by a person involved with the project, which results in permanent disability or death.</p> <p>However, the mandatory requirement to the incentive bonus may not be appropriate in the context of a single or several LTIs, particularly where the EPCM services are to be performed over one to three years. This is because it is likely that the EPCM Contractor (or one of the Principal's other Contractors) will suffer an LTI at some stage during this period, which would render the whole incentive regime void.</p> <p>Obviously, the Principal should also consider the corporate policy of the Sponsor(s)/Principal's parent company(s) in setting safety KPIs for the EPCM Contract.</p>
KPI – Quality	<p>Quality incentive arrangements are not always afforded a great deal of attention in many KPI arrangements (generally at the expense of time and cost issues).</p> <p>It is important to ensure that the end product is of the specified quality to minimise impact on the long term operational expenditure and profitability of the project. Generally, it will be the EPCM Contractor's responsibility to identify and instruct the Principal's other Contractors when certain performance or quality guarantees are not being met under the various work packages.</p>

Incentive Arrangement	Comment
KPI – Quality (Cont'd)	<p>Factors that may be integral in any assessment of the EPCM Contractor's quality performance include:</p> <ul style="list-style-type: none"> instances of defective services, equipment, systems or re-work by the EPCM Contractor failure to meet the Principal's performance and other design requirements on, and after, commissioning failure to identify defective work, equipment or plant of other Contractors and suppliers functionality, throughput, availability and reliability of the supply chain; compliance with quality management plans, including conduct of audits and inspections (and diligence in ensuring other parties comply with these) failure to meet reporting obligations failure to properly administer contracts on behalf of the Principal poor communications or responsiveness failure to comply with relevant project approvals, regulations and standards. <p>Back to back obligations would also be included in the implementation phase infrastructure contracts and supply agreements.</p>
KPI – Environmental and Community Impacts	<p>A project's impact on the environment and community are often of key concern to the Principal and other stakeholders.</p> <p>Certain KPIs can encourage the EPCM Contractor to ensure it, and the Principal's other Contractors, diligently comply with their environmental obligations and meet the project's environmental objectives.</p> <p>Factors we have seen that may influence any environmental and community incentives include:</p> <ul style="list-style-type: none"> quality and timing of responses to environmental and other complaints from the community and stakeholders where relevant, management of community (including Indigenous) consultation and education number of incidents of environmental harm and the timing and quality of the corresponding response to such incidents compliance with environmental management plans (and diligence in ensuring other parties comply with same) compliance with the conditions and reporting requirements under any statutory approval establishment of effective administrative procedures to deal with notifications under any implementation phase infrastructure contract or supply agreement.
KPI – Key Personnel	<p>Given the current pressure in the market on retaining skilled and appropriately experienced personnel, securing and retaining quality personnel for any project will be critical.</p> <p>Retention of sufficient numbers and Key Personnel has been an issue that commonly arises (especially where the project spans many years) and often results in negative cost and time outcomes due to a lack of resources and continuity of key people.</p> <p>Approaches to Key Personnel KPIs that may be considered include a reduction in the EPCM Contractor's fee:</p> <ul style="list-style-type: none"> for high turnover rate of personnel (outside of pre-agreed parameters) for replacement of personnel during a 'project introduction phase' (based on discounted rates) for the number of personnel removed as a result of incompetence, negligence etc. <p>The Principal may also consider some form of direct bonus for the retention of individual Key Personnel over certain timeframes or the life of the project or the reimbursement of recruitment costs.</p> <p>Some EPCM Contracts also include payment of liquidated damages by the EPCM Contractor where senior personnel leave or are taken off the project within a certain period.</p>
Assessment	<p>There are many ways that KPIs can be assessed including:</p> <ul style="list-style-type: none"> through the use of a formula or other mutually agreed procedure whereby the Contractor's performance is evaluated against set criteria. This is often a detailed schedule to the EPCM Contract that sets out where the risk and reward lies through a procedure to be agreed by the parties after the EPCM Contract is signed (although as outlined above we do not recommend that you adopt this approach) use of a committee to agree the measurement of KPIs with a dead lock or dispute resolution mechanism. <p>As discussed above, it is important that the assessment of performance is based on quantifiable targets and not open to subjective interpretation.</p>
Structure	<p>The Principal should consider how KPIs are going to be structured, such as:</p> <ul style="list-style-type: none"> a percentage of the EPCM Contractor's profit a percentage of other amounts payable under the EPCM Contract (for example, profit and overhead but not direct costs) a bonus pool or discrete cash amount set up only for the calculation of KPIs and independent of the payment provisions under the EPCM Contract.

Incentive Arrangement	Comment
Timing	<p>There are a number of alternatives regarding the timing of any incentive payment:</p> <ul style="list-style-type: none"> • a one off 'bullet' payment at the end of the project • payments to be made at the end of each discrete phase with an additional 'whole of project' payment or fee reduction made at the end of the project • payments offered on a calendar or financial year basis (to coincide with the Principal's reporting or other project obligations) • certain incentive payments could be contingent upon the happening of a set event (i.e., timely delivery of key materials, return of performance security etc) • a combination of the above.
Other Considerations	<p>The Principal may also want to consider the following:</p> <ul style="list-style-type: none"> • whether each incentive arrangement (or the aggregate or all) will be capped (for example, at a certain % of the fee or the target costs), particularly where the project is financed through limited or non-recourse project financing because Lenders will demand a great deal of outcome certainty in terms of time. This can be for both individual and overall KPIs • how often the incentive arrangements will be assessed and the relevant processes that must be followed • how often the incentive arrangements will be paid or deducted. This is particularly important as some KPIs can only be assessed after completion of the project • whether the incentive arrangements can be challenged and, if so, how this is done. For example, the parties could agree to establish a Senior Management Group made up of senior executives of the Principal and the EPCM Contractor to review and attempt to agree upon any disputed decisions in relation to incentive payments prior to litigation or arbitration. Alternatively the EPCM Contract could provide for independent determinations of such disputes • whether there is a mechanism to vary any of the incentive arrangements to account for the changing emphasis and priorities of the project and drive preferred Contractor behaviour. Such a mechanism could also be used to address incentive arrangements that are not working as anticipated or those that have become less relevant. It could also address the timing of payment, amount of payment, method of calculation, criteria, addition of other incentive arrangements etc.



EPC and EPCM
delivery models

17 Engineering, Procurement and Construction Management (EPCM) and Delivery Partner Models

Investing in Energy Transition Projects
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Key features of EPCM and Delivery Partner Models

Summary of key takeaways

- There is no 'one size fits all approach' or definition of the Engineering, Procurement and Construction Management project delivery model (**EPCM Model**) and Delivery Partner Models. Both models are adaptable depending on client and project requirements.
- Neither model replaces traditional contracting approaches for individual packages such as PPP, Alliance or D&C but rather supplements the risk allocation achieved under the contracting approaches with additional design development and a disaggregated, progressive approach to project packaging and procurement.
- The drivers for appointing an EPCM/Delivery Partner vary in line with client and project specific requirements and each client's core business and level of experience and expertise in project delivery.
- While EPCM/Delivery Partner means different things to different market participants, commonly accepted hallmarks of the EPCM/Delivery Partner approach are:
 - access to an additional pool of highly specialised project delivery resources
 - stage gated engagement across the project lifecycle
 - detailed scope development prior to investment decision and going to market
 - end-to-end procurement and project delivery focus based on overall critical path to completion
 - application of accountability and incentive mechanisms
 - a disaggregated, more granular packaging approach to project delivery
 - enhanced management of client risk including integration risk
 - application of specialised systems and processes which span the project lifecycle.

1.1 Introduction

Over the course of PwC's experience working with clients on large scale public infrastructure projects, it has become apparent that there are significant differences in the application and understanding of both the EPCM and Delivery Partner Models. Rather than reporting on the sometimes contradictory views, this paper provides a description and discusses the application of the models, incorporating PwC's experience and observations in the application of the models.

It is also apparent from PwC's experience that:

- other than identified differences in the level of accountability
- the extent of self-performance of design

the key features and drivers for using the EPCM and Delivery Partner Models are largely the same. Accordingly, except where the context requires the models to be distinguished, this section uses the terms 'EPCM/Delivery Partner Models' and 'EPCM/Delivery Partner' interchangeably. This paper is prepared on the basis that the client is the project Principal.

1.2 Overview of the EPCM/Delivery Partner Models

A recurrent theme from PwC's industry experience is that there is no precise or universally accepted definition of EPCM Model or Delivery Partner Model. The definition of each model varies from project to project depending on the project characteristics, delivery requirements and resourcing needs of the client.

The EPCM Model is a project delivery and client-side resourcing approach for complex mega projects. It has been used extensively in the oil and gas, petrochemical and mining and resources industries. The model is centred on the staged engagement of a multi-disciplinary organisation (**EPCM Partner**) throughout the project lifecycle under a professional services agreement. The EPCM Partner provides specialist project delivery resources (including personnel, systems and processes) for the project engineering, procurement and construction management interface and coordination functions.

The Delivery Partner Model is a more recent emanation of relationship contracting/partnering used on complex mega projects in the public sector. The Delivery Partner Model shares many characteristics of the EPCM, Managing Contractor and Alliancing models and has been adopted on projects in the United Kingdom, including London Olympics, Crossrail and, in Australia, on the RMS led Woolgoolga to Ballina Pacific Highway Upgrade, and in part on Western Sydney Airport and Sydney Metro. As with engaging an EPCM Partner, clients use delivery partners (**Delivery Partners**) to assist with project planning, programming, design management, procurement and construction management functions across various stages of the project lifecycle.

Under both the EPCM and Delivery Partner Models, the client adopts a disaggregated project procurement strategy. With the assistance of the additional EPCM/Delivery Partner resources, the client disaggregates, and progressively procures the project scope with multiple Contractors and suppliers under separate packages and potentially different delivery models. This is opposed to a single point of responsibility procurement approach where the client engages one entity (or a consortium) under a single contractual arrangement to deliver the entire project scope, creating a contractual layer and separation between the client and the rest of the construction supply chain.

The disaggregated procurement approach is predominantly selected where the scale of the project, combined with contracting market capacity constraints and competition issues, preclude procurement of the entire project scope under one package.

The disaggregated procurement approach is predominantly selected where the scale of the project, combined with contracting market capacity constraints and competition issues, preclude procurement of the entire project scope under one package. However, disaggregation results in an increase in complexity (particularly in respect of interface coordination) and client retained risk to be managed. The EPCM/Delivery Partner is typically engaged by the client to manage these resultant factors by supplementing its internal project delivery capability and capacity with additional specialist project delivery resources.

EPCM/Delivery Partners are often engaged early in the project feasibility analysis and early planning stage and provide services for the remainder of the project lifecycle on a staged engagement basis. In most instances, the client will have the option to end the engagement at key project decision points which are aligned (such as the outcomes of project feasibility studies or external finance credit approval).

Typical activities performed by the EPCM/Delivery Partner include:

- management of engineering and design (and in EPCM some instances of self-performance of Front End Engineering and Design (**FEED**) and detailed engineering and design, albeit some clients may preclude the EPCM from any self-performance due to perceived conflicts of interest)
- procurement and packaging options analysis
- implementation and management of the tendering and procurement processes for the various work packages
- overall project and construction management, including interface coordination and claims management.

Further examples of typical EPCM/Delivery Partner activities over the project lifecycle are outlined in Section 1.11. The scope of services and EPCM/Delivery Partner accountability varies and is tailored for each project based on a range of factors. These are discussed in further detail below.

1.3 Integration with traditional contracting and procurement approaches

The EPCM/Delivery Partner Model does not replace traditional contracting and procurement approaches, such as Construct Only, Design and Construct (**D&C**), Supply and Install (**S&I**), Engineering, Procurement and Construction (**EPC**), Public Private Partnerships (**PPPs**) or Alliance Contracting.

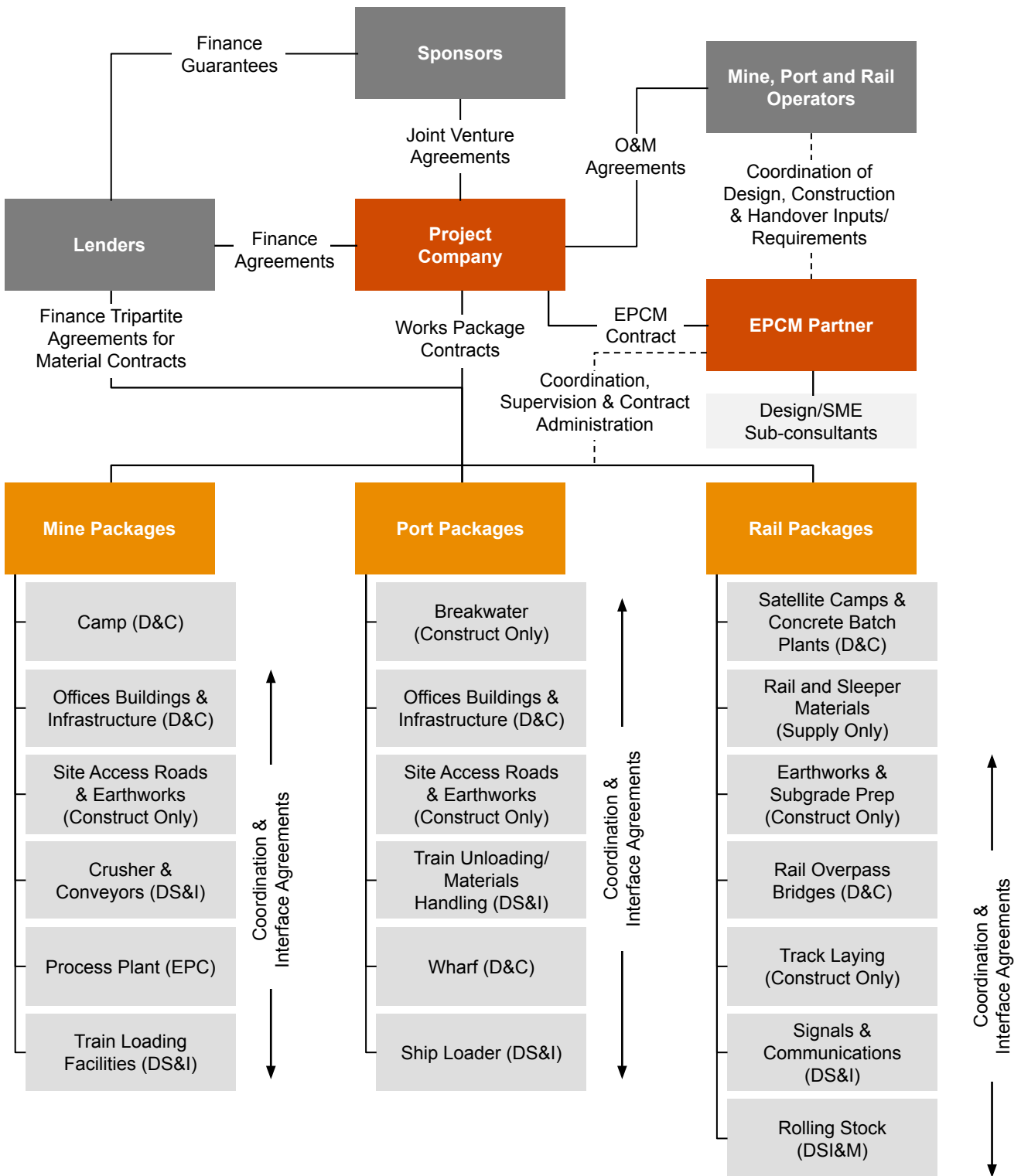
Rather, the EPCM/Delivery Partner Model facilitates and enables the appropriate use of traditional contracting and procurement approaches for the various work packages under a disaggregated project package structure.

In the private sector, clients and EPCM/Delivery Partners have traditionally relied more upon Construct Only, D&C, S&I and EPC approaches for the procurement of those works packages.

An example EPCM Model contractual framework diagram for the delivery of a large, complex mine expansion, deep water port and heavy haul rail project in the private sector, where these models have been extensively used in the past, is illustrated in **Figure 1**.

It shows the indicative project participants and contractual relationships, together with the work packages for the main project scope components and contracting and procurement approaches for each package. It also illustrates how the EPCM Model incorporates multiple interfacing work packages.

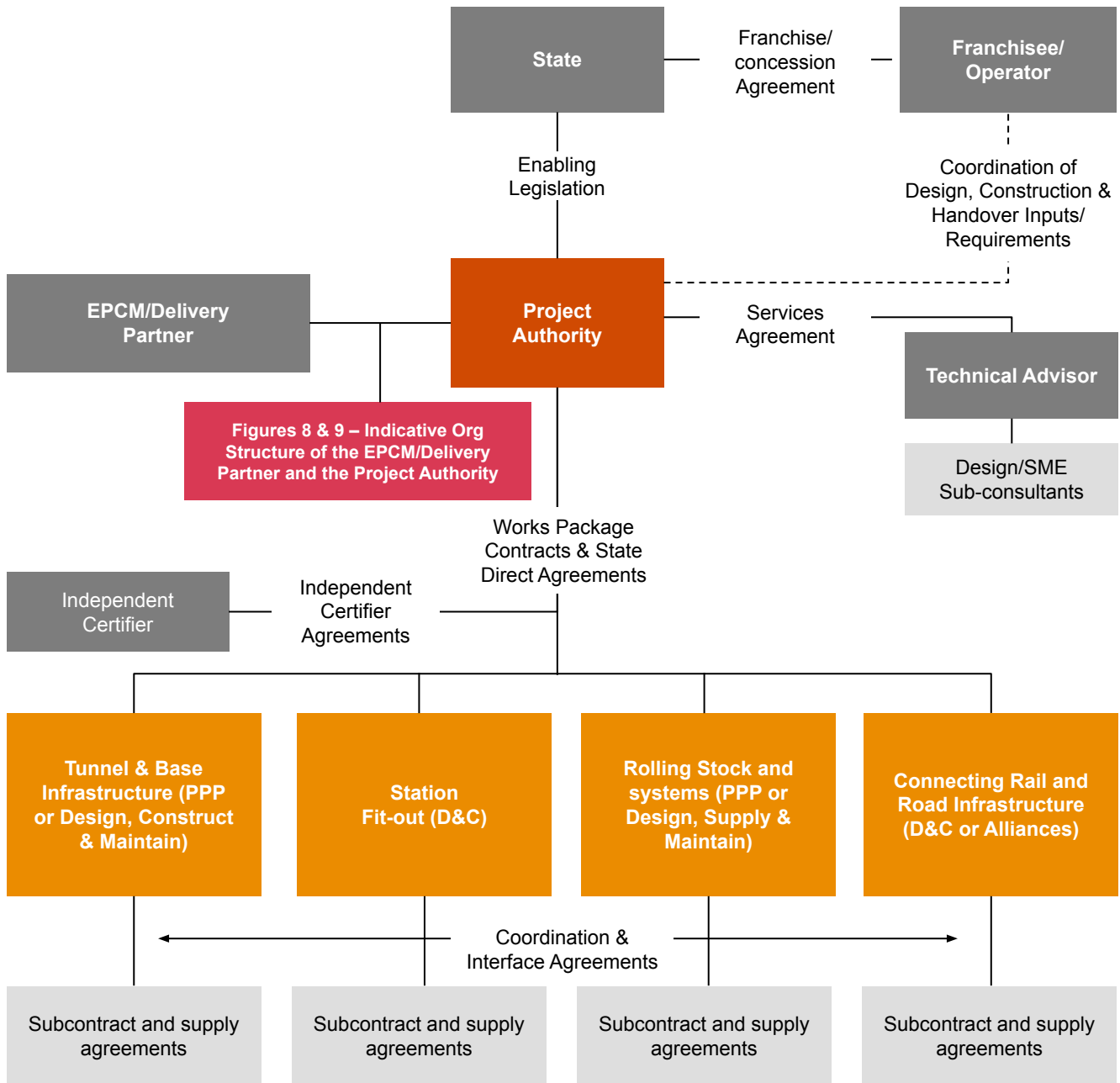
Figure 1: Example EPCM Model contracting structure and key packages for a multi-billion dollar interfacing mine, port and rail project



In the public sector, clients and EPCM/Delivery Partners have relied upon a combination of multiple interfacing work packages for separate contracting and procurement and, increasingly, PPP and Alliance approaches for the procurement of major works packages (e.g. rolling stock). For example, each of Crossrail, Sydney Metro and, we understand, Western Sydney Airport have adopted both PPP and Alliance contracting and procurement approaches for certain packages.

An example EPCM/Delivery Partner Model contractual framework diagram for the delivery of a mega transport project, incorporating some of the traditional contracting approaches used by public sector clients, is illustrated **Figure 2**.

Figure 2: Example EPCM/Delivery Partner Model contracting framework diagram for the delivery of a public sector mega transport project



1.4 Impact of EPCM/Delivery Partner Model on risk allocation

For each of the Crossrail, Sydney Metro Central and Southwest and Pacific Highway public sector mega transport projects, the intention in engaging an EPCM/Delivery Partner was to:

- maximise the likelihood of achieving project objectives
- ensure appropriate resourcing to manage the complexity, interfaces and client retained risks of mega projects.

Importantly, engaging an EPCM/Delivery Partner does not necessarily alter the contractual allocation of risk under the various work packages. Nor does engaging an EPCM/Delivery Partner avoid the client retaining overall accountability for the coordination and integration of the various work packages. These risks and responsibilities are ultimately retained by the client where it elects to procure projects in multiple, disaggregated packages, irrespective of whether the client engages an EPCM/Delivery Partner.

Example

For the RMS led Pacific Highway Upgrade Project, New South Wales Government standard form contracts were used to contract for discrete works packages. This means that the standard allocation of risk as between the State and actual delivery Contractor was unaltered by adoption of a Delivery Partner on that project. Rather than risk allocation, the motivation for appointing a Delivery Partner on this project was to enable rapid assembly of a client-side team, accelerate overall programme delivery and access a broader cross-section of the contracting market for package delivery. The Pacific Highway Upgrade Project is discussed further in **Figure 3** below.

So, rather than operating as a mechanism for the contractual allocation of project delivery risk, engaging an EPCM/Delivery Partner is more about providing additional project delivery assurance as part of the client's strategy for managing client retained risks and responsibilities.

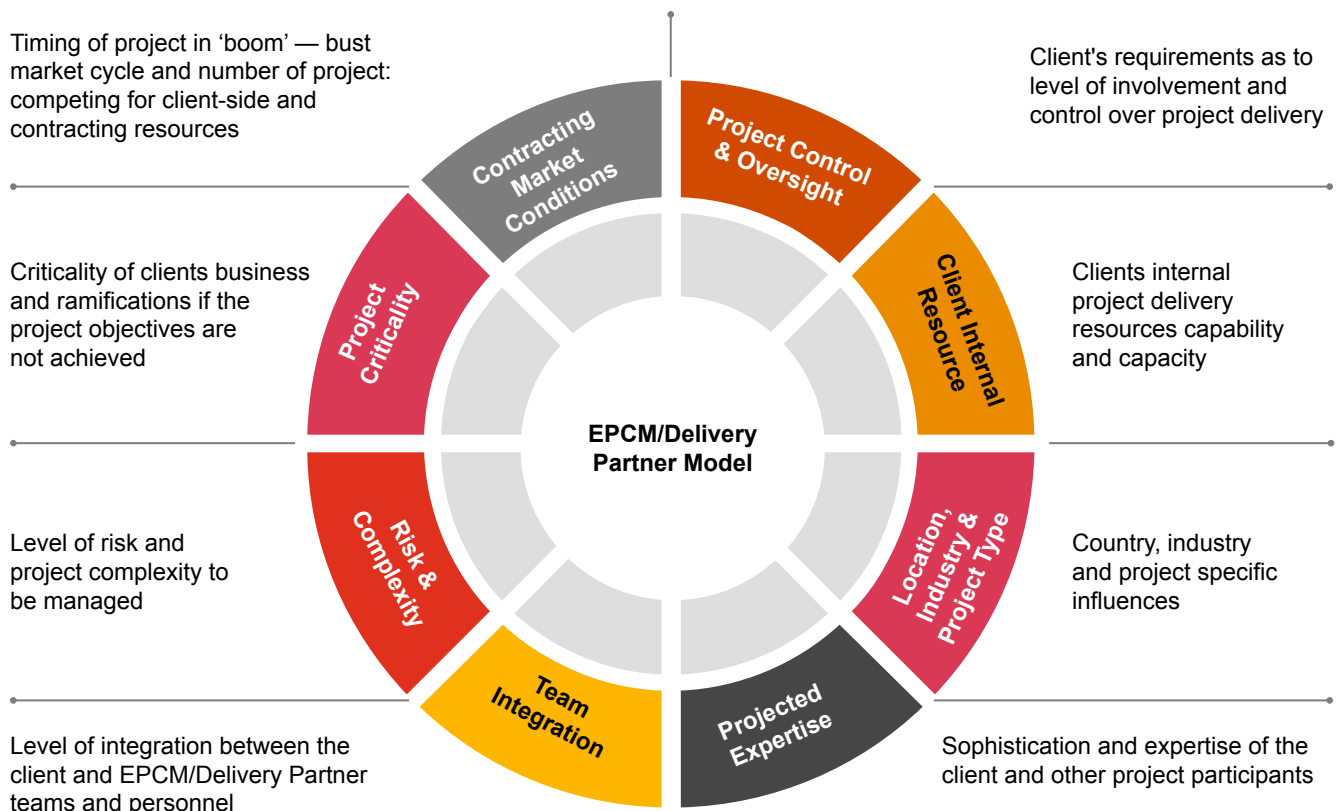
EPCM/Delivery Partners are typically required by clients to put a component of their fees at risk aligned to the achievement of measurable project outcomes. Outside those incentive arrangements and any design warranties provided by EPCM/Delivery Partners, they do not take overall project completion, integration or performance risk.

In that context, the relationship between the client and EPCM/Delivery Partner reflects more of a partnering arrangement along the lines of an integrated team. Typical EPCM/Delivery Partner incentive arrangements are discussed in Section 1.13 of this paper in terms of their potential application in the public sector context.

1.5 Structure and features of the EPCM/Delivery Partner Model

The structure and features of the EPCM/Delivery Partner Model vary from project to project. **Figure 3** identifies the key factors influencing the model.

Figure 3: Factors influencing the use and structure of the EPCM/Delivery Partner Model



While the detailed application and structure of the EPCM/Delivery Partner Model varies, there are a number of key features that appear across mega projects. These are described in **Table 1**.

Table 1: Key features of EPCM/Delivery Partner Model

Feature	Description
Engagement of external engineering and project delivery resources across the project lifecycle	<ul style="list-style-type: none"> • Rapid deployment of multi-disciplinary project resources drawn from a global employee pool that transfers from project to project and between different countries and regions based on engagements. • Still requires integration with local subject matter expert and operations/maintenance resources for certain project scope elements or location and industry specific requirements and nuisances. • EPCM/Delivery Partner commonly brings proprietary and other project delivery processes and systems which incorporate lessons learned from accumulated experience in project delivery over many years. To a degree, these processes and systems can be tailored to integrate with existing client systems and processes. • Clients retain overall decision making and leadership control and continue to directly employ and engage resources to perform project delivery functions that the client is better placed to manage (i.e. planning and regulatory approvals, financial and legal advisory functions, stakeholder negotiations etc).
Staged engagement aligned to client's investment approval stage gates	<ul style="list-style-type: none"> • EPCM/Delivery Partner engagement terms typically include progressive award of scope and commencements of services aligned to the client's investment approval stage gates (with the client having the option to end the engagement at each gateway). • EPCM/Delivery Partner's level of accountability and extent of commercial incentives increases as its engagement progresses through each stage gate.
Staged procurement throughout the project	<ul style="list-style-type: none"> • EPCM/Delivery Partner Model is typically only used on large complex projects where disaggregation of the project scope into multiple packages is unavoidable due to resourcing, material supplier and contracting market competition constraints. • Increased complexity and volume of work arises from having multiple packages and interfaces, as opposed to contracting with one party for the entire scope. • EPCM/Delivery Partner acts as the client's representative while the client retains overall accountability for the end-to-end integration and delivery of a project. • Client retains overall project delivery accountability and control throughout the project lifecycle rather than handing over accountability and transferring risk for project implementation to another party. • EPCM/Delivery Partner Model approach seeks opportunities to further disaggregate project scope (either horizontally or vertically) and optimise work package sizes during FEED development and procurement to align with Contractor specialisations and to maximise Contractor and supply competition and broaden resource capability and capacity.
Developed scope and design prior to investment decision and going to market	<ul style="list-style-type: none"> • Client investment parameters and/or financier requirements generally dictate more advanced scope development (i.e. in the order of 20-40% design development) to support the capital cost and programme estimates underpinning the investment decision. • The scope development and FEED process incorporate constructability assessments, operations and maintenance and procurement analysis from the outset and throughout the design process to inform and optimise the design and engineering solutions and reduce risk of scope creep in later stages of the project. • Typically, more developed designs (for example issued for construction) are developed prior to going to market. This is with a view to paying less upfront risk premiums to Contractors and seeking to derive more value from progressive allocation of risk to the contracting market as the design matures (i.e., rather than transferring risk to a Contractor at an earlier stage of design development when scope is more uncertain and risks are less defined).

Table 1: Key features of EPCM/Delivery Partner Model (Cont'd)

Feature	Description
End-to-end procurement and project delivery focus based on overall critical path to completion	<ul style="list-style-type: none"> • As the project is not delivered under one package with risk transferred to a single contracting entity, there is a shift in focus from managing a single transaction and contracting entity to managing multiple packages and interfaces and counterparties. • Resources, activities and procurement are allocated and prioritised based on the critical path to completion of the project rather than achievement of transaction milestones. • An EPCM/Delivery Partner is typically engaged from early in the project lifecycle and is required to adopt an end-to-end project focus and incentivised to assist the client to achieve whole-of-life project objectives, rather than a focus on achieving specific transaction milestones (i.e. contractual or financial close).
Staged procurement of work packages	<ul style="list-style-type: none"> • The scope and procurement approach for each work package is identified in the project work package breakdown structure. This remains a live document and is updated if required to respond to programme updates or market sounding and tender responses. • Work package scope and battery limits are determined based on a combination of factors including: <ul style="list-style-type: none"> – the critical path to project completion i.e. the procurement of project scope is broken down and prioritised based on what is needed to achieve overall project completion milestones – maximising the pool of available Contractor resources for delivery and creating appropriate levels of competition – the number of other projects competing for resources at the same time and manufacturing and materials availability. • The drivers must be balanced against the client's appetite for interface risk and financier requirements for bundling of packages to reduce dilution of performance and completion guarantees underpinning the project finance arrangements. • The FEED process continues throughout the procurement phase to avoid gaps in scope and ensure end-to-end design and system integration between work packages. A disciplined approach to change management is required to ensure ongoing design changes are minimised and scope creep that doesn't deliver the required return on investment hurdle rate is avoided.
Risk allocation and incentive mechanisms	<ul style="list-style-type: none"> • EPCM/Delivery Partners do not take overall project completion or performance risk which is typical for professional services and project management arrangements. • EPCM/Delivery Partners are generally incentivised by having a component of their fees and/or bonuses at risk, aligned to achievement of project objectives. The extent of incentivisation and skin in the game varies for each engagement. It is a point of distinction from standard technical adviser and project manager engagements which are often only based on reimbursable fee for services arrangements. • Incentive regimes usually incorporate both behavioural and harder project outcomes based Key Responsibility Areas (KRAs) and Key Performance Indicators (KPIs), assessed on both a rolling and end of project basis. • Extent of the EPCM/Delivery Partner risk and 'skin in the game' is influenced by the extent of the role and fees to be generated and the level of accountability and ability to influence project outcomes.

1.6 Common variables identified in EPCM/Delivery Partner Models

There are a number of variables across projects at both ends of the spectrum (i.e. active client and 'light' EPCM/Delivery Partner and passive client and 'heavy' EPCM/Delivery Partner). These are outlined in **Table 2**.

In practice, the approach adopted for each variable is determined by client resource requirements, project specific characteristics and market capability and capacity.

Table 2: EPCM/Delivery Partner Model common variables

Variable	Active Client – EPCM/Delivery Partner 'light'	Passive Client – EPCM/Delivery Partner 'heavy'
Level of EPCM/Delivery Partner resource engaged	<ul style="list-style-type: none"> • Predominately client employed project leadership and delivery resources. • EPCM/Delivery Partner provides specialised resource augmentation integrated with existing client team and governance structures. • Use of established client systems and processes with EPCM/Delivery Partner supplementing some processes and systems. 	<ul style="list-style-type: none"> • Thin client organisation with limited internal project delivery capability. • Majority of project leadership staff and project delivery resources sourced from EPCM/Delivery Partner, with minimal client interface other than at very senior levels. • EPCM/Delivery Partner provides all or the majority of project governance and delivery systems and processes.
Level of delegated authority	<ul style="list-style-type: none"> • EPCM/Delivery Partner does not have any delegated authority to commence market engagement, enter into contracts or otherwise make commitments on behalf of the client without the client's prior approval. • EPCM/Delivery Partner is required to follow procurement procedures and processes, and use tender and contract documentation prepared and ultimate final approval by the client's commercial and legal team in procuring all work packages. • EPCM/Delivery Partner is required to review and provide its opinion on the contractual risk allocation from a market and value for money perspective but the client retains ultimate final approval rights. 	<ul style="list-style-type: none"> • EPCM/Delivery Partner has delegated authority to commence market engagement and enter into contracts on behalf of the client without the client's prior approval for certain work packages up to pre-agreed contract values. All other commitments remain subject to client prior approval. • EPCM/Delivery Partner implements its own procurement procedures and processes incorporating client approval in line with the agreed delegated authority. • EPCM/Delivery Partner proposes proprietary standard contract forms which are reviewed and amended based on comments from the client's commercial and legal teams.
Extent of project disaggregation and interface risk	<ul style="list-style-type: none"> • Client and/or financier requirements dictate a limited number of horizontally integrated work packages • Scope components are bundled and delivery risks wrapped to the greatest extent possible based on contracting market capacity and appetite for risk • Clients prepared (or required by financiers) to pay an upfront risk premium to reduce interface risk and wrap a greater amount of risk under individual packages. 	<ul style="list-style-type: none"> • Client is funding project on balance sheet and not restricted by finance requirements and/or is in a position to provide its own completion guarantees to financiers. • Client has the appetite and track record to successfully manage interface risk and divides the project scope into many horizontally and/or vertically integrated work packages, seeking to create greater competition from reducing package sizes and derive greater value from progressive allocation of risk to the contracting market. • A fast track project schedule and hard completion deadlines require long lead items that need to be procured immediately and the progressive procurement of scope elements in many separate work packages to maintain progress in line with the project critical path.

Table 2: EPCM/Delivery Partner Model common variables (Cont'd)

Variable	Active Client – EPCM/Delivery Partner ‘light’	Passive Client – EPCM/Delivery Partner ‘heavy’
Timing and duration of EPCM/Delivery Partner engagement	<ul style="list-style-type: none"> EPCM/Delivery Partner is engaged after investment approval primarily to assist the client with procurement and construction management. Primarily performs a project management support function (i.e. akin to a project management Contractor arrangement). Engagement ends on achievement of practical completion of the project, with the client responsible for managing defects and warranty periods and project close-out activities. 	<ul style="list-style-type: none"> EPCM/Delivery Partner is engaged in stages throughout the project lifecycle, from pre-feasibility through to final completion. EPCM/Delivery Partner’s ongoing participation in the project is a requirement of client investment committee and finance approval. The EPCM/Delivery Partner resources ramp up and down in line with typical project s-curve, and the engagement does not end until expiry of defects and warranty periods and project close-out and knowledge transfer activities are complete.
Engineering and design accountability	<ul style="list-style-type: none"> No self-performance of design. Management and limited peer review of design prepared by other consultants engaged by the client. Very limited or no accountability for design. 	<ul style="list-style-type: none"> Self-performance of FEED where permitted by the client, reference designs for D&C work packages and detailed design for Construct Only work packages. Review and coordination of detailed design prepared by work package Contractors and certification and inspection of works for compliance with approved design. EPCM/Delivery Partner has level of accountability for self-performed FEED and detailed design achieving agreed cost, constructability and performance parameters. EPCM/Delivery Partner has level of accountability for end-to-end design integration for both self-performed design and compliant design prepared by work package Contractors. Extent of EPCM/Delivery Partner design accountability and liability is typically capped to re-performance of defective services and a component of the fee at risk, plus any proceeds recoverable from PI insurance.
Business case and investment recommendation	<ul style="list-style-type: none"> No involvement in or accountability for business case development. Limited accountability for peer reviewing and commenting on project cost and schedule estimates prepared by or on behalf of the client. No self-performance of FEED for the business case and limited constructability peer review of design prepared by, or on behalf of, the client. 	<ul style="list-style-type: none"> EPCM/Delivery Partner performs a major role in preparing the business case. EPCM/Delivery Partner has level of accountability for business case development and recommendations, primarily in respect of project cost and schedule estimates, plus the FEED upon which those estimates are based. Extent of EPCM/Delivery Partner accountability and liability is typically capped to a component of the fee and/or incentive payment at risk, plus any proceeds recoverable from professional indemnity insurance for design. The accountability is also diluted by client inputs and decisions influencing business case recommendations.

Table 2: EPCM/Delivery Partner Model common variables (Cont'd)

Variable	Active Client – EPCM/Delivery Partner ‘light’	Passive Client – EPCM/Delivery Partner ‘heavy’
Amount of incentivisation (‘skin in the game’)	<ul style="list-style-type: none"> • Incentive arrangements based on KRAs and KPIs in respect of the EPCM/Delivery Partner’s performance and retention of integrated personnel. • Relatively low percentage of fees/bonus payments at risk, reflecting limited involvement in business case and augmented resources structure and with delegated authority or project delivery autonomy to influence project outcomes. 	<ul style="list-style-type: none"> • Base incentive arrangements based on KRAs and KPIs in respect of the EPCM/Delivery Partner’s behaviours, timely performance of activities and deliverables, scope control and change management, retention of key personnel and demonstrated use of both local content and a global pool of client-side resources. • Additional incentive arrangements based on overall project KRAs and KPIs in respect of the overall project objective (i.e. output performance, cost and on time delivery), incorporating mechanisms to adjust for material adverse events or major project scope changes outside the EPCM/Delivery Partner’s control. • Higher percentage of fees/bonus payments at risk, reflecting greater involvement in business case, team comprised majority of EPCM/Delivery Partner resources structure and with greater delegated authority or project delivery autonomy to influence project outcomes.

The EPCM/Delivery Partner ‘heavy’ approach outlined above is generally only adopted by clients where project delivery is not their core business and their preference is to outsource the majority of the project delivery function rather than develop in-house capability. This is most commonly the case in the oil and gas, petrochemical and mining and resources sectors.

The ‘heavy’ approach is not typically used where a client actively participates in project delivery and has a track-record in delivering major projects with sophisticated project delivery frameworks and in-house capability. In those circumstances, the client is more informed and better placed to take an active role and lead the project because it has delivered similar projects before and can draw on proven success factors and lessons learned from those projects.

Chevron, Roads and Maritime Services, Crossrail and Sydney Metro demonstrate that even active project developers with sophisticated internal project delivery capability see value in engaging an EPCM/Delivery Partner under a ‘light’ approach. This is particularly in relation to accessing additional specialised resources to enhance or supercharge existing internal capability and capacity for certain functions or in jurisdictions where the client has not previously delivered projects. Those entities recognise there is a commercial trade-off between retaining overall project delivery control and authority and the extent to which the entity can allocate risk of not achieving project objectives to the EPCM/Delivery Partner.

1.7 How is it different from the appointment of a Technical Adviser(s)

The following table sets out the differences between the appointment of a technical adviser(s) and the appointment of a Delivery Partner.

Table 3: Differences between the appointment of a Technical Adviser(s) and a Delivery Partner

Feature	Technical Adviser(s)	Delivery Partner
Front-end Engineering and Design	Focus on discrete deliverables: <ul style="list-style-type: none"> • Reference design • Process map 	Focus on whole of life project needs: <ul style="list-style-type: none"> • Constructability • Market conditions • Raw material availability
Commercial terms of engagement	Typically employed on a 'Fee for Service' basis.	Long term contract with KPI regime tied to specific project outcomes including: <ul style="list-style-type: none"> • Accuracy of cost estimates • Adherence to planning requirements • Staff retention • Organisational/cultural cohesion <p>Ongoing commercial tension throughout project lifecycle provided from stage gates, and the Principal's prerogative to expand or diminish Delivery Partner's role.</p>
Market conditions	Very high quality pool of existing resources. However, scale of current infrastructure Programme means this market is at or over capacity.	Limited existing Delivery Partner presence in Victorian civil infrastructure market. However deep pool of available expertise and appetite from: <ul style="list-style-type: none"> • International DP/EPCM firms • Resources currently working in other sectors (mining/petrochemicals) • Technical Advisers looking to scale up into DP/EPCM Contractors
Resource mobilisation	Technical design and engineering expertise deployed in response to discrete tasks as procured by delivery authority. Limited capability in procurement and construction management.	Ability to rapidly scale up DP capability using international resources, including access to highly specialised technical skills.
Resource retention	Ability to incentivise retention of key resources limited by 'fee for service' nature of contract.	Can incentivise retention of key resources over the project lifecycle through DP contract.
Design risk	Varies depending on procurement method adopted. On PPP project, transferred to private sector through tender process.	Design risk stays with the Principal, but allows cost control through value engineering and refinement throughout project delivery.
Procurement milestones	First major procurement milestones occur with tending and award of primary D&C/PPP package(s).	First major procurement milestones occur during development phase, with appointment of Delivery Partner.

1.8 Drivers for using the EPCM/Delivery Partner Model

There are a number of key drivers for using the EPCM/Delivery Partner Model. These are summarised in **Table 4**, which includes examples identified from case studies to provide further context.

A recurring theme is that the EPCM/Delivery Partner Model is primarily adopted to access an additional pool of specialised project delivery resources. Accessing these additional resources is intended to maximise the likelihood of achieving project objectives and ensure the client is appropriately resourced to manage the additional complexity, interfaces and client retained risks arising in complex mega projects.

Another key driver for adopting the EPCM/Delivery Partner Model is the need for greater project disaggregation and progressive procurement of work packages in response to contracting market constraints and competition issues in a booming market, and to achieve aggressive fast-track target delivery timeframes to achieve project benefit realisation as early as possible (for example 'first ore on ship' ahead of competitors in the mining and resources context).

Table 4: Drivers for adopting EPCM/Delivery Partner Model

Drivers	Context	Examples
Thin/passive client driver	<ul style="list-style-type: none"> Delivery of projects is not the client's core business or the client otherwise wants to retain a thin organisational structure and outsource the majority of the project delivery functions. Client does not see value in investing in developing its own project delivery systems and processes for one project and wants to leverage an EPCM/Delivery Partner's purpose built project delivery systems and processes. 	<ol style="list-style-type: none"> Small or mid-cap mining company with extensive in-house exploration and mining expertise but limited mining infrastructure delivery experience. Only has one project with investment approval and does not want to develop internal project delivery capability. Is also open to divesting interest in the project as it progresses and is de-risked and wants to maintain minimal permanent overheads and to outsource project delivery to an EPCM/Delivery Partner. Special purpose organisation or project vehicle established solely for the purpose of delivering one project. With a finite purpose and duration, the client's preference is to only directly retain a number of key personnel and outsource the balance of the project delivery functions to an EPCM/Delivery Partner.
Client-side resource constraints in heated market	<ul style="list-style-type: none"> Booming market conditions with a large number of competing existing projects and project in the pipeline. Client needs rapid access to an additional pool of client-side resources to properly staff its project and wants to leverage an EPCM/Delivery Partner's established network of existing resources and expertise. 	<ol style="list-style-type: none"> Mining company seeking to deliver a project during the mining boom. Is not able to recruit and retain the necessary resources to deliver its project by target deadlines. The resultant project delivery delays and extended time frames risk the overall project viability as the client will lose sales if it is not able to complete the project and deliver ore earlier to customers. Despite paying a premium it elects to engage an EPCM/Delivery Partner on the basis it can rapidly deploy the necessary resources within required timeframes. Client has a number of large projects to deliver in parallel. It has extensive internal project delivery capability and experience. However, the scale, complexity and number of parallel projects has exhausted internal capacity. Rather than defer the project until other projects are completed and resources become available, the client elects to engage an EPCM/Delivery Partner to assist it to deliver one of its projects under the direction of a client project leadership team.

Table 4: Drivers for adopting EPCM/Delivery Partner Model (Cont'd)

Drivers	Context	Examples
<p>Larger more complex projects with greater disaggregation required</p>	<ul style="list-style-type: none"> Client is forced to split the project scope into a number in response to specialised technology needed and/or contracting market constraints and competition issues. 	<ol style="list-style-type: none"> The project value is greater than AUD10 billion and is too big even for a consortium of large Contractors to wrap the delivery. Client also wants to restrict joint venture arrangements to maintain competition. The client is forced to split project scope into a large number of smaller packages resulting in more client-side work and resources required to manage additional complexity and risks. Client has internal project delivery capability and experience in delivering projects of less than AUD3 billion in value and wants to supplement that expertise with additional EPCM/Delivery Partner resources with complex mega project experience. Client intends to deliver a highly complicated petrochemical plant with multiple specialist equipment suppliers and first of its kind technology. It is not practical or commercially feasible to obtain a wrap of all or major scope components. The client has to break the project up into a large number of smaller more manageable specialist trade packages. While the client has internal project delivery capability and experience, it does not have sufficient resources currently available to manage the additional complexity, volume of work and interface risk. It elects to engage an EPCM/Delivery Partner to assist it to manage these factors on a staged engagement basis.
<p>Project delivery in foreign country or different industry sector or asset type</p>	<ul style="list-style-type: none"> Client is expanding its business into new markets and needs to develop infrastructure assets in those countries to support the business' expansion. Client has significant internal domestic project delivery experience but limited experience in those countries or access to resources on the ground in those locations. Alternatively, the client may have delivered projects in the country but not the type assets needed. 	<ol style="list-style-type: none"> Client intends to deliver a petrochemical plant in a country in the Middle East. It has a core team of experienced project delivery personnel who have delivered similar projects that will be deployed to the project location. However, it has not previously delivered a project in the Middle East and elects to engage an EPCM/Delivery Partner which has a team of personnel with a proven track-record of delivering similar projects in the region which it will make available for the project. Client is a mining company with assets in China. It is in the process of a major mine expansion and needs to develop new rail, port and power infrastructure to support the expansion and provide supply chain certainty to customers. The client has delivered mine infrastructure assets in China previously but not rail, port or power assets. It engages an EPCM/Delivery Partner to who was recently involved delivering similar assets in another region of China.

Table 4: Drivers for adopting EPCM/Delivery Partner Model (Cont'd)

Drivers	Context	Examples
Criticality of achieving project objectives and on time project delivery	<ul style="list-style-type: none"> Client is embarking on the delivery of a major strategic infrastructure asset that is critical to the overall business strategy. The ramifications to the business if the project is not delivered on time and in accordance with other objectives are such that it requires an additional level of project assurance and the client is prepared to pay a premium to secure the necessary resources. Client engages an EPCM/Delivery Partner to gain access to additional 'best in class' global project delivery to supercharge its existing project delivery capability with experience and lessons learned from delivering projects under similar brownfield conditions and levels of public scrutiny. 	<ol style="list-style-type: none"> Client has secured several major offtake agreements that will underpin its profits for the next ten years. Management is confident it has the resources it needs to deliver the infrastructure assets required to meet the commitments. However, the penalties under the offtake arrangements and consequential business interruption impacts if the assets are not delivered on time to deliver on supply commitments are such that the Board requires a greater level of project assurance and directs the engagement of an EPCM/Delivery Partner to supplement the internal resources. Client is a special purpose government agency established to deliver a major international sporting event. On time delivery of the required stadiums and associated infrastructure is imperative and not negotiable. In response, the government agency engages an EPCM/Delivery Partner consortium to gain access to 'best in class' global project delivery resources with experience and lessons learned from delivering projects under similar brownfield conditions and levels of public scrutiny.



1.9 Opportunities for the EPCM/Delivery Partner Model to add value

For both private sector market participants and government stakeholders, there are several opportunities where an EPCM/Delivery Partner may add value. These observations were made in light of the current infrastructure boom and indications of a potential up-turn in project development in the mining and resources sector. These conditions are resulting in increased competition to secure both client-side and contracting resources, similar to the conditions encountered during the mining and resources and oil and gas boom in Australia a decade ago.

The main opportunities identified for an EPCM/Delivery Partner to add value include:

- **Access to additional specialised resources** – access to, and rapid deployment of, highly specialised project resources with mega project experience to respond to a heated and resource constrained domestic project environment and future pipeline.

How: The domestic infrastructure market is increasingly facing a drain of specialised client-side project delivery resources and is nearing or is at capacity. Some global EPCM/Delivery Partners have established domestic and international pools of resources which can be drawn upon as required at various stages of the project lifecycle. This enables the client to leverage core project delivery disciplines and subject matter expertise which can be deployed in multiple locations and across different time zones. For example, certain EPCM/Delivery Partners use locally based core project delivery resources and subject matter experts, combined with offshore global experts and design hubs (for more generic or non-location specific aspects of design) to introduce efficiencies into the project scope definition and design development process. Some EPCM/Delivery Partners may also have global procurement arrangements in place with international material suppliers and equipment manufacturers which a client can leverage to increase competition and potentially secure priority manufacturing slots at competitive rates (i.e. for steel supply or tunnel boring machines). Access to an established pool of resources can also enhance a client's ability to rapidly deploy additional procurement and implementation resources and respond to surges in project activity in the event that tender and contracting market responses dictate further disaggregation of project scope into smaller packages.

- **Flexibility for greater project disaggregation – access to a broader cross section of the contracting market** – by adopting an EPCM/Delivery Partner Model approach to project disaggregation, procurement of work packages can occur progressively once project scope and design matures. Further disaggregation can also increase competition in an already constrained contracting market facing increasing capacity constraints and competition issues.

How: Dividing the project scope into a greater number of smaller, more manageable, packages enables tendering across a broader contracting pool than would be possible under a single contract package. This is particularly the case for projects where some Contractors may have significant project delivery capability, but for commercial reasons are only prepared to contract directly with the client and are not willing to subcontract to a tier 1 head Contractor consortium. This outcome of the Delivery Partner Model can be observed on the Pacific Highway Upgrade Project, where project disaggregation increased the number of tier 2 Contractors able to tender for work packages. Broadening the pool of Contractors able to bid on projects is expected to become increasingly important in enabling delivery of mega projects in the pipeline that are so large that even a consortium of tier 1 Contractors is unable or unwilling to wrap the delivery of the end-to-end project under a single contracting arrangement given the extent of project delivery risks and balance sheet constraints. However, the benefits of reducing the size and increasing the number of work packages to address competition issues has to be balanced against the client's appetite for managing interface risk and financier requirements for bundling of packages where applicable.

- **Flexibility for greater project disaggregation – progressive allocation of risk as the scope definition matures** – there is an opportunity to derive more value from progressive allocation of risk to the contracting market as the design matures and external stakeholder requirements and risks are better understood by all parties.

How: The procurement of project scope is broken down and procurement activities prioritised based on design maturity and what scope components need to be prioritised to achieve overall project completion milestones. Other than critical long lead items and scope components which need to commence earlier, tender packages are generally only released once the relevant reference design has reached an appropriate level of design development and the project scope, stakeholder requirements and risks have been assessed. The FEED process continues throughout the procurement phase to avoid gaps in scope and ensure end-to-end design and system integration between work packages. This requires a disciplined approach to change management to ensure ongoing design changes and scope creep are controlled and minimised where it doesn't deliver the required benefits/return on investment. Again, the number of work packages has to be balanced against the client's appetite for managing interface risk and financier requirements where relevant.

- **Enhanced management of client risk** – Incentivising external client-side resources to drive best for project behaviours and outcomes – adoption of typical EPCM/Delivery Partner accountability allocations and incentive regimes, if structured appropriately, can drive better alignment and best for project behaviours to support achievement of overall project objectives. This is as opposed to traditional fee for services arrangements for external engineering and project delivery resources which rely heavily on reputation and existing relationships, and have generally been structured around achieving a single transaction outcome and assisting the client to ensure the contracting entity delivers the contracted project outcomes and obligations.

How: While engaging an EPCM/Delivery Partner does not fundamentally alter the allocation of risk between client and Contractor based on chosen contracting approach, it can provide access to additional resources (personnel and systems) to manage client retained risks.

Complementing this is the ability to impose commercial incentives which drive an EPCM/Delivery Partner to manage risk on a whole of project basis rather than transactional basis (i.e. working to achieve project delivery rather than to achieve, for example, contract or financial close). The respective roles and responsibilities of the client, EPCM/Delivery Partner and other client-side resources are established during upfront alignment sessions and clearly documented in accountability matrices. Tailored incentive arrangements aligned to interim and overall project specific objectives are agreed and assessed on both a rolling and end of project/engagement basis. As with any incentive based regimes, appropriate and measurable KRAs and KPIs need to be agreed and documented to reflect required behaviours and outcomes. However, the extent of the EPCM/Delivery Partner's 'skin in the game' and effectiveness of the incentive regime will be largely dependent on how early in the project lifecycle the EPCM/Delivery Partner is engaged and the extent of its authority and ability to influence project outcomes.

- **Additional project wide controls, supervision and contract administration resources** – Adoption of typical EPCM/Delivery Partner Model approach to client controlled project programme, systems and records, combined with access to highly specialised project delivery resources to enable the client to be better informed on project progress and issues, and be in a better position to respond to and resolve major claims and disputes. This is critical on disaggregated mega projects where the client has to manage multiple Contractors and ultimately takes to end-to-end project integration risk. These risks include exposures to underperformance of one Contractor materially impacting and delaying other work packages for which the client bears the risk above EPCM/Delivery Partner liability caps.

How: It is generally accepted that EPCM/Delivery Partners have deep programming, site supervision and contract management expertise. A client can leverage that expertise to ensure it is more fully informed and has access to the necessary information and records throughout the implementation phase to assess actual progress versus the target project critical path and the root causes of delays and scope variations. It was observed that a lack of detailed information and records on actual progress and performance on site is a major hindrance for the client to be in a position to properly respond to and defend claims if necessary. EPCM/Delivery Partner Model also adopts a 'one source of the truth' approach similar to Alliances, where the client, with the assistance of the EPCM/Delivery Partner, establishes and maintains project wide programme, systems and records which Contractors are required to integrate with and use but which are ultimately controlled by the client.

Example

Large clients in the oil and gas and petrochemical sectors often undertake project delivery as an important part of their core business. Those clients actively participate in project delivery and have established project governance frameworks and processes developed over many years. They also retain specialised project delivery and technical engineering specialists that are arguably leaders in their respective fields. These clients have established project leadership approaches and ways of working that draw on demonstrated success factors and lessons learned over many years on past projects. In these circumstances, an EPCM/Delivery Partner 'heavy' approach with a large team and significant delegated authority is not required. In addition, deploying such an approach may disrupt and adversely impact established project delivery behaviours and cultures seen by the client as critical project success factors. However, these 'sophisticated' active clients acknowledge the depth of highly specialised project delivery resources retained in-house by EPCM/Delivery Partner organisations and frequently engage them on an integrated EPCM/Delivery Partner 'light' basis to supplement the client's internal capability and capacity.

1.10 Constraints in deriving value from EPCM/Delivery Partner Model

Elements of the EPCM/Delivery Partner Model can add value to most projects. However, engaging an EPCM/Delivery Partner may not be appropriate and will not deliver value in all instances.

Many clients actively participate in project delivery and have established and sophisticated project delivery frameworks and capability in-house, including engineering and project delivery personnel with significant practical experience delivering projects in the relevant industry. Not surprisingly, this internal capability reduces the benefits and value that can be realised by a client from engaging an EPCM/Delivery Partner, particularly the use of the passive client 'heavy' EPCM/Delivery Partner approach described in Section 1.6. This is not a practical or economical option in those circumstances.

It was generally accepted that brownfield projects, particularly in urban environments, are subject to a large number of external factors and stakeholder requirements. These factors are typically beyond the control of an EPCM/Delivery Partner and require retention of a sophisticated client team to mitigate impacts on project progress and risks of material scope changes.

Other constraints in applying and/or deriving value from the EPCM/Delivery Model include:

- Potential for cannibalisation of existing local expertise and resources which are already in high demand in a heated and resource constrained domestic project environment.
- Higher demand on client resources to manage the EPCM/Delivery Partner. Specialised EPCM/Delivery Partner resources come at a cost premium and their engagement and ongoing management requires disciplined management by dedicated client resources.
- Inserting an extra layer between the client and Contractors may cause additional tensions and disputes which needs to be considered in the context of retaining existing strong client/contracting market relationships.
- Advancing the FEED and design development prior to going to market may, to an extent, stifle Contractors' ability to gain a competitive advantage and/or increase in margin during the tender and detailed design phases.

- Without appropriate change control processes and EPCM/Delivery Partner contractual disincentives, there is potential for scope creep from ongoing design development. The EPCM/Delivery Partner also needs to be managed to ensure disaggregation is controlled and an optimum work package breakdown structure is adopted that reduces interfaces and EPCM/Delivery Partner resources.
- The benefits of disaggregation and the progressive procurement of work packages in an EPCM/Delivery Partner Model approach will be significantly reduced, where disaggregation is constrained by a client's limited appetite for managing interface risks and/or financier requirements for bundling of work packages to the greatest extent possible.
- Under more heavily disaggregated work package breakdown structures there are greater difficulties in coordinating and avoiding gaps in liabilities between the individual Contractors. There are also typically lower levels of liquidated damages and overall caps on liabilities.

Further comparative analyses of the advantages and disadvantages of the EPCM/Delivery Partner Model and other delivery models are discussed in other briefing papers in this series.



1.11 Typical EPCM/Delivery Partner activities over project lifecycle

The EPCM/Delivery Partner is typically engaged in stages aligned to the client's internal gated project approval and governance frameworks.

The client usually retains the discretion whether or not it will direct the EPCM/Delivery Partner to proceed with the next stage of services beyond each stage gate. The EPCM/Delivery Partner's scope of services also needs to be aligned with its level of accountability and the risks it is assuming for project outcomes.

Typical activities performed by an EPCM/Delivery Partner are summarised in **Table 5**.

Table 5: EPCM/Delivery Partner typical activities

Phase	Role	Typical activities
Business Case	Supporting or delivering the business case that underpins the project investment decision.	<ul style="list-style-type: none"> • Basic and detailed engineering and design (often referred to as pre-feasibility/concept design and FEED). • Constructability analysis. • Materials and resource availability assessment and contracting market sounding. • Work package breakdown structure and procurement approach recommendations in respect of each package.
Procurement	Procurement planning, package preparation, implementation and management.	<ul style="list-style-type: none"> • Ongoing FEED, including development of work package performance specifications, reference designs and detailed designs for Construct Only work packages). • End-to-end design and systems integration of the separate work packages. • Further market sounding, preparation of tender packages, tendering, tender evaluations and recommendations for award of project packages. • Dynamic updating of work package breakdown and associated procurement approaches reflecting the outcomes of market sounding and tender responses. • Prioritising procurement of packages based on the overall project critical path, maturity of design and certainty of scope and stakeholder requirements. • Overall procurement process management in accordance with the client's internal governance frameworks and approved delegations of authority.
Implementation	Construction management, coordination, supervision and contract administration.	<ul style="list-style-type: none"> • Design and systems integration management and coordination between work packages, including reviewing detailed designs prepared by work package Contractors. • Site inspections and certification of completed work. • Work package coordination and interface management. • Construction Programme monitoring and scenario analysis. • Contract administration and claims management. • Contractor defect rectification management.

1.12 Typical process for engaging EPCM/Delivery Partner

For both private sector market participants and government stakeholders, the process for engaging an EPCM/Delivery Partner varies significantly from project to project.

Where clients have an existing relationship, and have successfully delivered projects with the assistance of a particular EPCM/Delivery Partner, it is common for them to engage the same partner on a single source procurement basis. In doing so, both parties leverage existing relationships, proven team and project success factors and lessons learned on the past projects. To ensure competitive pricing, clients reference the pricing and build on commercial arrangements used on the previous projects. Open book pricing is often used and informed clients generally have a good understanding of current market rates for project delivery personnel.

Alternatively, the scale of the project and number of personnel to be provided by the EPCM/Delivery Partner may necessitate a competitive tender process. In addition to creating competition, this enables a client to compare capability and ability to access best in class personnel across a range of tenderers. Subject to overriding time constraints, this would typically follow an expression of interest and request for tender process for professional services, including evaluation and down selection of tenderers in several stages. One or more preferred candidates is then selected to proceed to a final pricing and team selection and alignment phase before award of the contract.

Clients often adopt a two stage engagement process. Under this approach, a client will initially only tender for and engage an EPCM/Delivery Partner for the feasibility and business case preparation phase of the project under a fixed or capped fee professional services arrangement.

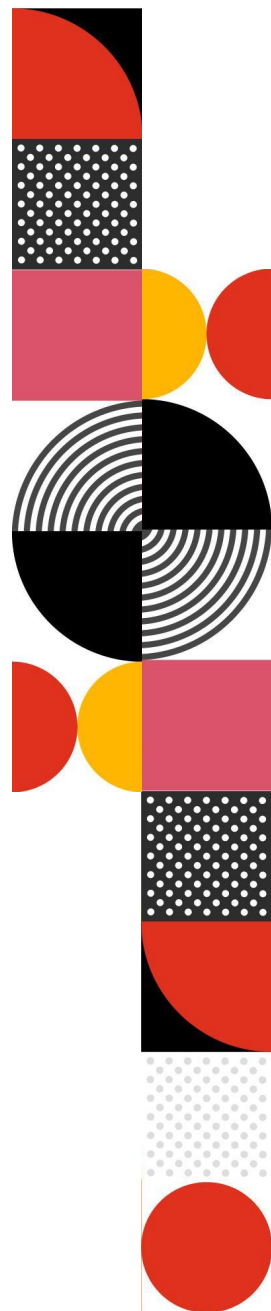
In parallel with the performance of their respective activities and the project scope development during that phase, the parties continue to assess and align on the project organisational structure and the extent and timing of EPCM/Delivery Partner resources required for subsequent phases of the project. They also continue to negotiate the commercial terms and incentive arrangements under a professional services agreement for the balance of the project phases, which is aligned to the agreed resources, accountabilities and delegated authority (if any) of the EPCM/Delivery Partner (**EPCM/Delivery Partner Contract**).

Where the parties reach agreement on the scope and commercial terms, the client will engage an EPCM/Delivery Partner under a fully termed EPCM/Delivery Partner Contract. This form of contract is typically subject to conditions precedent, including client investment committee approval and financial close (if external project financing is required). Clients also typically reserve the right to go back to the market and tender the EPCM/Delivery Partner services for the remaining phases of the project or operations and maintenance, if for any reason the client is not satisfied with the incumbent EPCM/Delivery Partner's performance or its personnel during the initial phase, or the parties are otherwise unable to reach agreement on commercial terms. These provisions are often referred to as 'off ramps' or 'stage gates' in an EPCM/Delivery Partner engagement.

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Clients have noted a need for commercial protection from price increases as an EPCM/Delivery Partner becomes more embedded in a client team over the project lifecycle. To achieve some level of insulation from future price increases, EPCM/Delivery Partners are often required to commit to personnel pricing and margins (spanning the project lifecycle) while there is competitive tension during EPCM/Delivery Partner procurement.

Critical to the success of the EPCM/Delivery Partner Model is allowing appropriate time to undertake a client-side organisational capability and capacity gap analysis prior to procuring an EPCM/Delivery Partner. This process is necessary to determine the supplementary project delivery skills and experience required from the EPCM/Delivery Partner.



1.13 Key contractual concepts between the client and the EPCM/Delivery Partner

The EPCM/Delivery Partner Contract is usually a bespoke professional services agreement prepared by the client's commercial and legal teams. Some EPCM/Delivery Partners propose their own forms of amended industry standard agreements incorporating collaborative contracting elements which they have used on past projects. This is not a recommended approach as it will not take into account client-side preferences or reflect the public sector staged approach to engagement.

In its simplest form, an EPCM/Delivery Partner Contract is a consultancy services agreement for the provision of professional and technical services. At the other end of the spectrum, it is more akin to an integrated Alliance style contract where the parties' interests are aligned and risks are shared through open book compensations frameworks and KRA and KPI incentive mechanisms built into the agreement.

There are many factors which influence the form of, and risk allocation under, the EPCM/Delivery Partner Contract. They include:

- the current market demand in the engineering/project management sector.
- the size, complexity and risk profile of the project.
- whether the project is to be delivered on a fast-track schedule.
- the requirements and approach to allocation of risk of the project Sponsor(s).
- the requirements of the Lenders where the project is to be financed on a limited or non-recourse basis.
- the requirements of other stakeholders.
- the extent of engineering and design already undertaken by the client under separate contracts (if any).

Whatever form of contract is used, the terms need to be tailored for each project with clear delineation of the respective roles and accountabilities of the client and the EPCM/Delivery Partner. Carefully considered incentive arrangements aligned to the client's project objectives are also critical to driving the appropriate behaviours and successful project outcomes. The EPCM/Delivery Partner Contract will also usually incorporate the award and commencement of the EPCM/Delivery Partner's services in stages aligned with the client's project lifecycle phases and investment decision points/gateways.

Some of the contractual concepts to be considered for an EPCM/Delivery Partner engagement are summarised in **Table 7**. This table is not an exhaustive list and further detailed analysis of typical EPCM/Delivery Partner contractual issues and incentive arrangements are also discussed in other briefing papers in this series.



Table 7: Key EPCM/Delivery Partner contractual concepts

Concept	Description
Staged engagement with optional phases	<p>Contracts are typically structured in such a way so as to permit the client, in its absolute discretion, to instruct the EPCM/Delivery Partner to proceed to the next stage. For example, at the conclusion of the feasibility stage, the client can elect to end the engagement and go to market regardless of whether an incumbent EPCM/Delivery Partner has properly performed the services. Similarly, where the project is to be financed through limited or non-recourse project financing, the client must be entitled to terminate the contract in its absolute discretion if the Lenders do not give finance approval or the clients cannot raise the required capital.</p> <p>Terms establishing the process, consequences (including payment on termination outlined above) and risks in the services undertaken during a particular phase will need to be clearly articulated in the contract.</p>
Project objectives and project scope	<p>The contract should include a description of the client’s overarching project goals, list of project objectives and a detailed description of the scope and the client’s project requirements. This would usually be aligned to the business case objectives, scope and assumptions underpinning the investment decision.</p> <p>Traditional provisions regarding obligations to use all reasonable endeavours to perform the services to ensure the defined scope is delivered in accordance with the project objectives and requirements should be included. This also becomes the reference point for determining whether a change is material giving rise to a variation or adjustment to KRA and KPI targets upon which incentive payments are based as discussed below.</p>
Accountability matrix	<p>In addition to the detailed scope of services and agreed personnel and resource schedules, the contract should include a detailed accountability matrix for each phase of the services.</p> <p>This is typically in the form of a table and includes a detailed list of all key project tasks and activities during each phase, and delineates, at a high-level, the accountability of the client, EPCM/Delivery Partner and other key project participants for the performance of or contribution to each task or activity. The accountability matrix must align with the client governance and organisational structure and the agreed resources to be provided by EPCM/Delivery Partner. The process of preparing it often provides a good opportunity to identify and correct any misalignment between the parties in terms of respective roles and responsibilities.</p>
Client reserve powers and delegated authority	<p>Provisions should be included in the contract which clarify the ‘reserve powers’ held by the client to manage and direct the project, including:</p> <ul style="list-style-type: none"> • approval of systems and procedures governing the project • urgent protection of people and property • issuing bid documents • awarding implementation contracts • approving variations and extensions of time or • any event likely to have a major impact on the operation or viability of the project etc. <p>The extent of the EPCM/Delivery Partner’s delegated authority (if any) also needs to be clearly articulated and remain subject to change at the client’s discretion. Terms establishing the process and consequences (including any impact on incentive arrangements) for a change in the EPCM/Delivery Partner’s delegated authority must be clearly articulated.</p>
Retention of key personnel	<p>The traditional provisions regarding key personnel (i.e. the EPCM/Delivery Partner cannot remove them without the client’s prior approval) are likely to be too inflexible for complex mega projects delivered over several years. Consideration should be given to alternate arrangements such as incentives or payment of a liquidated amount where senior key personnel leave or are taken off the project within a certain period. There will typically be exceptions to such payment for illness, incapacitation and resignation, or if the personnel are temporarily absent on, for example, annual, sick, long service or compassionate leave (provided a suitable replacement is deployed to the project).</p>

Table 7: Key EPCM/Delivery Partner contractual concepts (Cont'd)

Concept	Description
Overall design integration responsibility, constructability warranties and novation of exiting design	<p>Early consideration of the scope of the EPCM/Delivery Partner’s design obligations is vital. In particular, a client must consider whether an EPCM/Delivery Partner is responsible for:</p> <ul style="list-style-type: none"> • the end-to-end design integration of the various work packages • guaranteeing that, when integrated, the design of the various project scope elements will enable the overall project to meet the client’s functional and performance requirements for the whole project. <p>If an EPCM/Delivery Partner is responsible for end-to-end integration, there will need to be certain carve-out to the design warranties for latent errors or deficiencies in detailed engineering and design performed by the works package Contractor and Suppliers.</p> <p>Where the EPCM/Delivery Partner is permitted by the client to self-perform FEED and detailed design, it should be required to provide design constructability warranties and also warrant that the design of the works will be fit for the purposes it was intended for.</p> <p>In the event a major proportion of the engineering and design for the project has already been undertaken under separate design/consultancy packages let by the client (i.e. FEED during the initial project feasibility phase), the client should consider avoiding potential gaps in liability by creating a single point of responsibility for the performance of the FEED. This is achieved, in part, through the novation of the existing design to the EPCM/Delivery Partner so that it has contractual rights against those consultants. If the EPCM/Delivery Partner is to be a single point of responsibility for the performance of the FEED, the client must allow sufficient time and budget for the EPCM/Delivery Partner to verify and correct errors or deficiencies in the existing design. Field engineers coordinate specialist design and engineering resources to resolve design and engineering issues until the works have been fully commissioned.</p>
Intellectual property	<p>The contract intellectual property (IP) regime needs to reflect:</p> <ul style="list-style-type: none"> • the range of Contractor and Supplier background IP being contributed • the range of project IP being developed at the work package and supply contract level • the corresponding need for licences and rights to use and develop that IP, including ensuring appropriate IP warranties and indemnities in the work package and supply contracts. <p>The client should also ensure it retains ownership of and rights to use and adapt the IP in the FEED and other materials prepared by or on behalf of the EPCM/Delivery Partner as part of the business case. This will prevent the client from being restricted in using that material in the event it elects to terminate the EPCM/Delivery Partner’s engagement at the end of the feasibility and business case phase. The client should also specify the format and form by which this IP is handed over in the event of a termination of engagement.</p>
Insurance	<p>The whole of project insurance strategy is critical and will impact on the contract risk allocation and extent of insurances to be procured and maintained by the EPCM/Delivery Partner. In addition to any project wide insurance policies, the EPCM/Delivery Partner will usually take out and maintain public liability and professional indemnity insurance. In reality the scope of the professional indemnity insurance may not underwrite all of the contractually assumed liabilities under the contract, in particular EPCM/Delivery Partner warranties and indemnities. This may or may not influence negotiations of contract terms, including liability cap, depending on the EPCM/Delivery Partner’s balance sheet capacity to meet its liabilities. The EPCM/Delivery Partner’s liability caps are sometimes limited to the amount recoverable under insurance policies maintained under the contract. If this position applies, the EPCM/Delivery Partner’s policy must operate on an ‘each and every claim basis’ rather than an ‘in the aggregate basis’.</p>
Overall project cost and programme control	<p>The EPCM/Delivery Partner is usually required to prepare a capital cost budget and programme for the business case. Once approved, the EPCM/Delivery Partner becomes responsible for monitoring and managing actual cost and progress against the approved budget and Programme, and for providing the Principal with regular costs and Programme updates. Although the EPCM/Delivery Partner does not take the risk of delivering the project on time and on budget, it generally has an obligation to use reasonable endeavours to do so, and is incentivised to manage the budget and Programme to ensure project cost or Programme overruns are avoided or minimised through incentive payments.</p>

Table 7: Key EPCM/Delivery Partner contractual concepts (Cont'd)

Concept	Description
EPCM/Delivery Partner remuneration	<p>EPCM/Delivery Partners are typically remunerated on an cost-reimbursable basis, including the following components:</p> <ul style="list-style-type: none"> • Fixed Fee: Pre-agreed fixed fee or percentage of the estimated cost for each phase of the project to cover margin and overheads. • Actual Personnel Costs: Reimbursement for directly and reasonably incurred personnel costs at pre-agreed rates or on an open book costs basis, with typical deductions for duplication of work undertaken due to defects in the services or otherwise for the EPCM/Delivery Partner’s default. • Reimbursable Expenses: Reimbursement for a discrete list of reimbursable expenses, subject to the client’s approval prior to the expense being incurred (i.e. pre-approved work related travel). <p>The EPCM/Delivery Partner will typically also be entitled to bonuses (or subject to a reduction in payment) under an agreed incentive regime as outlined below. The EPCM/Delivery Partner may also agree to fixed-fee arrangement for certain activities where it is able to reasonably estimate the extent of work and resources required. However, any fixed fee or capped fee arrangements need to be considered carefully and structured in a way that does not create behaviours which are not in the overall project’s best interests.</p>
Material variations	<p>Not all project scope changes will constitute a variation under the Contract which should include mechanisms for determining what amounts to a material variation (i.e. a major change to the project scope or other material adverse event not contemplated by the parties) and the corresponding cost consequences (i.e. adjustment to fixed fee and overhead component or payment of direct costs only). This area becomes more important in relation to the achievement of KRA and KPI targets and whether the target costs and time frames are to be adjusted. Pre-award workshops are often conducted to define the limited nature of events giving rise to a variation.</p>
Incentive arrangements	<p>Given the cost reimbursable nature of the contracts, without incentive mechanisms, it is difficult, if not impossible, to instil the same sense of urgency and efficiency in the EPCM/Delivery Partner and its personnel over a long period as compared to a fixed price model. Therefore, the regime will be critical in incentivising the EPCM/Delivery Partner to perform in a safe, productive, efficient and timely manner in order to ensure the client’s key objectives for the project are realised – usually a combination of time, cost, quality, safety, environment, stakeholder and community management.</p> <p>It is critical when formulating the targets and methods of measuring performance, that there is sufficient clarity of project scope and the client’s requirements. Whenever possible, the Principal must allow sufficient time and resources to agree and clearly articulate quantifiable KRA and KPI targets and corresponding methods of measuring performance against those targets.</p> <p>The incentive regime should focus on maximising productivity and timely delivery whilst striking a balance between time and budget, without sacrificing quality or safety. We have seen very detailed and sophisticated incentive regimes, particularly in an Alliancing or relationship contracting context and where project deliverables are to be measured over long time frames. Conversely, some parties prefer to move away from (or limit the extent and impact of) incentive regimes, because they believe these arrangements can create uncertainty (and therefore some risks in a rising cost market) and drive the wrong behaviours due to additional friction between the parties, which does not foster co-operation or trust between the parties. Some EPCM/Delivery Partners are also unwilling to put a material percentage of their remuneration at risk based on an incentive regime. However, if the incentive regime is structured with proper recognition of the current market conditions and the issues below are addressed then successful outcomes are achievable.</p>

1.14 Financing a mega project using an EPCM/Delivery Partner Model

For private sector projects financed through limited or non-recourse project financing, the syndicate of Lenders often demand certainty in terms of time and cost. This is because security is reliant on achieving completion and satisfying the completion tests to allow project revenues to flow during the operations phase.

Where the borrower is an entity newly established to deliver, own and operate the project, this usually restricts the use of an EPCM/Delivery Partner Model even though the outcome may potentially be cheaper and faster (with some exceptions where there is government or Export Credit Agency support or very strong Principal-financier relationships or influence).

Where an EPCM/Delivery Partner Model is used, it is not uncommon for Lenders to require the client to provide them with a completion guarantee. That is, the client (or its ultimate parent company) provides the Lenders with some form of company guarantee until practical completion/commercial operation or a commitment to cover cost overruns, delay costs and debt service obligations during a period of delay.

That guarantee is usually capped, falling away upon practical completion/commercial operation. Depending on the requirements of the Lenders, the project characteristics and the client's and EPCM/Delivery Partner's track record for delivering similar projects, the completion guarantee may be more limited and step down prior to practical/commercial operation or as various stages of the project are completed. Conversely, it may extend beyond commercial operation to cover market pricing risk depending on the type of project and output.

The processes that Lenders use to identify, allocate and manage risks prior to financial close and during the construction phase include:

- obtaining due diligence (including technical, environmental and financial) as part of the credit process.
- appointing Lenders' technical consultants to review project cost estimates and revenue projections, as well as monitoring the progress of the project.
- appointing a certifier to assess the value of the work completed and what it will cost to complete the construction of the project.
- only allowing further drawdowns of the debt facilities if the latest forecast 'cost to complete' does not exceed the project company's available funding and the latest forecast date of completion will occur before the debt sunset date.

Where government funded disaggregated mega projects are financed by drawing on revenue through the State budget, the EPCM/Delivery Partner can assist the State by providing the same level of project due diligence and by monitoring cost and time overruns in the absence of private sector project finance by:

- being engaged as part of FEED to prepare cost, budget and schedule estimates based on experience with other mega projects, and the parallel activities being done in collaboration with the client's team in respect of scope definition work, development of the preliminary/full business case and design engineering development.
- monitoring and reporting on anticipated costs of the Project as well as the progress of the build.
- implementing cost controls incentivised through the incentive regime.
- playing an active role in monitoring and reporting during the testing and commissioning phase of the works packages.
- applying its integration management expertise.
- taking end to end design responsibility.





General

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March 2023



Introduction

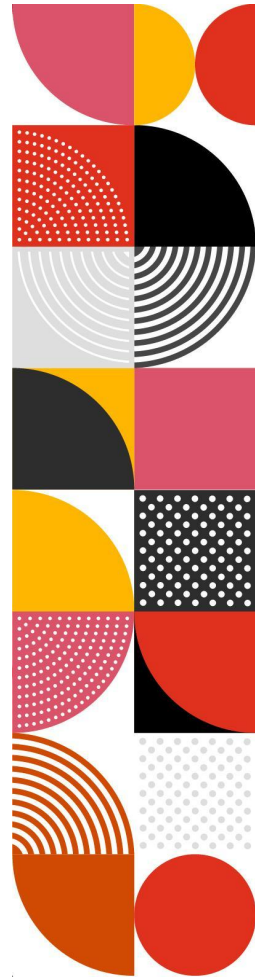
An unconditional undertaking, sometimes referred to as a bond, is a promise given by a financial institution, usually a bank or an insurance company (**Promisor**), to pay an identified beneficiary (**Beneficiary**) on demand by the Beneficiary. In the context of construction contracts the Beneficiary is usually the Principal.

The bond is:

- unconditional
- valid up to a nominated amount
- usually valid for a specified time period
- usually not able to be assigned.

Unconditional undertakings are an essential part of most security packages in connection with major projects. They should be assessed in the context of the other elements of the security package, including retentions and third party guarantees; and other terms of the contract, including the payment system, set off provisions, liquidated damages and advance payment bonding.

The terms of the bond and the applicable contract (see below) will be the subject of detailed examination by financiers if it becomes necessary to call on the bond.



Contract structure

Bonds form part of a tripartite contract structure under which:

- the requirement to procure the bond is set out in the contract between the Principal (the Beneficiary) and the Contractor (**Underlying Contract**)
- the bond is a unilateral promise by the Promisor to the Beneficiary, effectively in the form of a deed poll
- the arrangements between the Contractor and the Promisor are set out, including the fees and the consequences of a demand on the bond.

Underlying Contract

The bond itself is unconditional (see below) and the Promisor must pay on demand notwithstanding the relevant context. However, it is the Underlying Contract that dictates the ability to make a demand on the bond and to disburse the proceeds of the bond.

The fundamental issues to be addressed in the Underlying Contract are whether:

- notice of the demand must be provided by the Beneficiary to the Contractor
- the Beneficiary must first establish a breach of the Underlying Contract as a condition for calling on the Bond.

The issue of notice is usually the subject of vigorous negotiation.

While the Beneficiary typically wants to avoid giving notice to limit the opportunities to injunct the demand, the Contractor is more likely to want notice so that it can either seek such an injunction or otherwise avoid the demand.

The second issue that goes to the heart of the purpose of the bond is the need for an established default. This is necessary to properly distinguish between the provision of the bond as a source of interim liquidity as the project proceeds and its provision as a security in the event that a default is ultimately established.

Both financiers and the Beneficiary will regard the bond as an interim liquidity measure to provide funds to complete the project, rather than as a conventional security.

This is usually the case given that establishing the default through dispute resolution may take years and incur substantial costs.

A balanced bond clause in the Underlying Contract will include the following elements:

- **The nature of the Promisor and its required credit rating:** The Promisor will usually be required to be a bank with an appropriate banking licence or a named financial institution with the required credit rating. The identity of the Promisor is usually subject to the reasonable approval of the Beneficiary.
- **When the bond must be provided and returned:** Bonds will be required to be provided to the Beneficiary either prior to, simultaneously with or shortly after the execution of the Underlying Contract. The bonds are typically returned in part on practical or mechanical completion and returned completely when all defects notified during the defects period have been rectified.

- **Grounds for calling on the bond that include a bona fide claim:** The grounds should include a bona fide claim by the Beneficiary for an amount payable under the Underlying Contract or for a breach of the Underlying Contract.
- **An express statement that the proceeds of a demand on the bond are NOT held on trust:** This is an important provision. The proceeds of the demand on the bond should be owned by the Beneficiary and not held on trust. If the funds are held on trust, then the Beneficiary will attract unwanted fiduciary obligations to the Contractor.
- **The period for which the bond must be valid and an obligation to replace the bond if completion has not been achieved by that time:** The period will be linked to the projected date for completion plus a margin to account for delays.
- **If agreed, a short notice period, but with the caveat that it does not diminish the bond's unconditionality:** The period, if agreed, should be no more than 48 hours.
- **The requirement to replace the Promisor should its rating fall below the required level.**
- **The consequences of the failure to provide or replace the bond:** This will usually be a termination event.
- **The consequences of a wrongful demand on the bond:** It should be stipulated that it is not a breach, but that there is a requirement to repay the funds with interest.



General

19 Key issues for force majeure

Investing in Energy Transition Projects
March 2023



Introduction

Force majeure (**FM**) clauses have long been used in contracts; however, the COVID-19 pandemic has brought their operation into renewed focus.

The purpose of this paper is to explain the operation of FM clauses in major projects and contrast them with the operation of extension of time clauses.

Anatomy of a force majeure clause

A typical FM clause will consist of the following elements:

- the definition of the events and circumstances that can give rise to FM (**FM Events**)
- the requirement that the occurrence of the FM Event is beyond the control of the party asserting FM
- the process required to initiate the FM relief
- the consequences of the FM
- the requirement to re-commence the affected activities after the cessation of the FM.

FM Events

FM Events are particular events or circumstances that are beyond the control of the party affected whose effects have not been priced or programmed in the contract metrics. Hence, if they occur, they are beyond the scope, price and timing basis on which the contractual relationship is based.

FM Events can be defined by reference to a closed list of specific events or an open list, being examples of circumstances that are 'beyond the reasonable control of the party affected'.

The former approach is preferable in major projects. It provides certainty to all stakeholders and permits them to price and programme an accurate risk profile from the outset of the project.

The FM Events should be considered in the specific context of the project.

For example, rather than referring to weather events in general, it may be more appropriate to refer to:

- specific rainfall or wind levels
- particular levels of rainfall over a specified period
- fires that do not emanate from the site or a site where work or fabrication is being undertaken.

It should also be considered whether the event or circumstance must occur in the city, region, state or country in which the project is being undertaken, or whether the location of the event is immaterial.

Control

The occurrence of the FM Event must be beyond the actual control of the party affected and, in some cases, must also be beyond the control of a competent person in the position of the affected party.

Process

The process should require a written notification setting out:

- the FM Event
- the effect of that FM event
- why the FM Event is beyond the control of the affected party
- the measures being implemented to mitigate the FM event.

It is also desirable that the notice be delivered within a specified time and updated at regular intervals.

Consequences

In general, the effect of FM clauses is to relieve the affected party from the performance of its obligations to the extent that their performance has been detrimentally affected by the FM Event.

This is a complex concept and can lead to confusion and disputes when applied in practice.

The first issue is the factual enquiry as to:

- the effect of the FM Event and the extent and nature of the detrimental effect on the party's performance
- the extent to which the affected party has mitigated the impact.

The detrimental effect of an FM Event will usually impact on the time, cost or availability of a specified matter, such as a particular material, item of equipment or construction method.

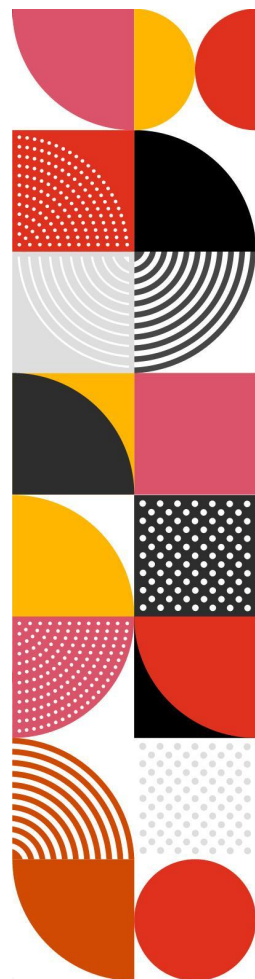
That being so, it can be more effective to deal with the occurrence of an FM event as part of the delay, delay cost and intervening event provisions in the contract, rather than through a separate FM clause. The FM Event becomes one of the grounds for an EOT, delay costs or, in the case of a services contract, such as an O&M agreement, the intervening event regime.

If the FM Event has a catastrophic effect on the performance of the contract, it might be that the contract has been frustrated.

Re-commencement

The affected party will be obliged to re-commence the affected part of its activities as soon as practicable after the cessation of the FM Event. This might not be straightforward. For example, a natural disaster might cause delays well after the event itself has ceased.

It might also be the case that the FM Event has caused the parties, especially the Principal, to fundamentally re-consider how to develop the project or, indeed, whether to proceed with the project. In those circumstances the FM provisions will overlap with clauses such as those dealing with variations, suspension and termination.



The difference between conditional and unconditional performance bonds

A conditional bond may only be called on actual proof of default and damage, such as an arbitration award or court judgment, and the payment will only cover the proven loss sustained by the Beneficiary up to the amount stated in the bond or bank guarantee.

Conditional bonds are rarely used in Commonwealth jurisdictions, particularly in projects with a high level of non-recourse financing.

Unconditional bonds must be paid on demand without any inquiry as to whether there has been a default.

Restraining payment or expenditure

Contractors will frequently seek to restrain the making of a demand on a bond, payment by the Promisor or the expenditure of the funds by seeking an injunction.

The injunction sought will be interim, in that the Contractor will seek to have the relevant conduct restrained until the issues can be heard in a full hearing. This might take a number of years to occur.

It is in this context that the terms of the Underlying Contract are crucial, as the terms of the bond itself will be completely unconditional.

If the terms of the Underlying Contract require that the default is first established, then the Court will restrain its use and the Beneficiary will be in breach of the Underlying Contract.

However, if the terms of the Underlying Contract only require that the Beneficiary has a bona fide claim before being entitled to act in relation to the bond, it will be far more difficult to restrain its actions.

Period of validity

Bonds will rarely be open ended. Therefore, the parties to the Underlying Contract will agree on the period of time that the bond is available. This is usually linked to the anticipated date of completion.

The Beneficiary can protect itself from the expiry of the bond by requiring that it be replaced prior to completion if it appears that completion will not be achieved by the projected date.





General

20 Key issues for security of payment

Investing in Energy Transition Projects
March 2023





Purpose

The Security of Payment Acts (**SOPA**) establish a legislative entitlement for Contractors, subcontractors, consultants and suppliers in the contractual chain to receive progress payments when undertaking construction work. The purpose of this paper is to provide a general overview of the operation of the SOPA regime in Australia.

Basic mechanics

SOPA is primarily aimed at facilitating timely payment by Principals and Contractors down the contractual chain by operating on a 'pay now, argue later' approach. This is achieved through:

- granting claimants the right to apply to court for progress payments where the Principal or Head Contractor has not made payment in accordance with the time period required by the infrastructure contract or enactment (as the case may be)
- establishing a mandatory adjudication scheme for the interim resolution of payment claim disputes.

SOPA applies to contracts for construction work, the supply of related goods and services, and preparatory work done in anticipation of construction (including, for example, design consultancy services). 'Infrastructure contracts', 'construction work' and 'related goods and services' are defined by the enactments to include a wide scope of activities, which vary between the states and territories. The full text of these definitions and extent to which they vary between states and territories is contained in Appendix 1 of this paper.

Security of payment laws run concurrently alongside entitlements under an infrastructure contract and claims for payment can proceed to adjudication even if the formal dispute resolution procedure under the infrastructure contract has commenced.



State variances

Security of payment laws are in place in every state and territory. However, there is no standardised Australia-wide approach to security of payment. There is a clear delineation between the approach taken by Western Australia and the Northern Territory (**West Coast Model**), and the remaining states and territories (**East Coast Model**).

East Coast Model enactments	
Victoria	Building and Construction Industry Security of Payment Act 2002 and the Building and Construction Industry Security of Payment Regulations 2013
New South Wales	Building and Construction Industry Security of Payment Act 1999 and the Building and Construction Industry Security of Payment Regulation 2020
Australian Capital Territory	Building and Construction Industry (Security of Payment) Act 2009
Queensland	Building Industry Fairness (Security of Payment) Act 2017 and the Building Industry Fairness (Security of Payment) Regulations 2018
South Australia	Building and Construction Industry Security of Payment Act 2009 and the Building and Construction Industry Security of Payment Regulations 2011
Tasmania	Building and Construction Industry Security of Payment Act 2009

West Coast Model enactments	
Western Australia	<p>The new Building and Construction Industry (Security of Payment) Act 2021 will apply to contracts for the carrying out of 'construction work' or supply of 'related goods and services' after 1 August 2022</p> <p>Construction Contracts Act 2004 and the Construction Contracts Regulations 2004 will continue to apply to 'construction contracts' entered into prior to 1 August 2022.</p>
Northern Territory	Construction Contracts (Security of Payments) Act 2004 and the Construction Contracts (Security of Payments) Regulations 2005



Some key differences between the East Coast Model and West Coast Model include:

- **Overriding contractual mechanisms:** The East Coast Model prescribes a statutory payment scheme that overrides any inconsistent contractual provisions.¹ The West Coast Model only provides legislative assistance where the infrastructure contract does not have agreed payment provisions. This is achieved through the implication of terms relating to payment for construction works where the infrastructure contract is silent.² For parties entering into contracts after 1 August 2022, Western Australia has a new statutory progress payment regime under the *Building and Construction Industry (Security of Payment Act) 2021 (WA) (WA SOP Act)*. The new regime, in line with the East Coast Model, is mandatory and cannot be excluded by contract.
- **Procedure for payment claims:** The East Coast Model creates a statutory payment system whereby the claimant must (except in NSW) endorse its payment claim as being made under the relevant Act, and serve it upon the respondent before proceeding in accordance with that Act. Payment claims under the West Coast Model are made pursuant to the procedure of each infrastructure contract, with statutory adjudication available only where a dispute arises during the contractual payment claim procedure. The new WA SOP Act creates a statutory entitlement to a progress payment with a right to make a payment claim under the Act once per month. The payment claim must state that it is made under the Act and can take a variety of forms.
- **Payments able to be claimed:** The East Coast Model provides for recovery of progress payments up the contractual chain. Therefore, the adjudication procedure under East Coast Model enactments may only be used by Contractors and suppliers to recover payment from a Principal or Head Contractor. The scope of the West Coast Model is wider, allowing either party to make an adjudication application for any payment disputes, including debts and damages claims. The new WA SOP Act only permits a party who does construction work or who supplies related goods and services under a construction contract (claimant) to serve a payment claim. There is no right for the party *receiving* construction work or related goods and services to make a payment claim under a contract (such as a claim for liquidated damages for delay).
- **Default penalty:** The East Coast Model penalises a party who fails to respond to a payment claim with a payment schedule by rendering it liable to pay the whole of the claimed amount. The West Coast Model does not impose such a penalty. Under the new WA SOP Act, for parties entering into contracts after 1 August 2022, the full amount of the payment claim becomes a **statutory debt** and the claimant is **entitled to payment in full** if the respondent does not provide a payment schedule within time. There are no exceptions, even if the respondent has genuine reasons for withholding payment or why it failed to provide a payment schedule (which could include oversights or administrative errors).



¹ See, for eg: Vic Act s 48; NSW Act s 34; or SA Act s 33, each of which hold a provision of an agreement void if the operation of the Act is, or is purported to be, excluded, modified or restricted or it may reasonably be construed as an attempt to deter a person from taking action under the Act.

² Where a construction contract does not contain written provisions with respect to matters such as variations, payment entitlement progress payments or the mode and manner of making payment claims, *Construction Contracts Act 2004 (WA)* ('WA Act') pt 2 div 3, sch 1 or NT Act pt 2 div 2, sch 1 will imply terms. For a discussion of implied terms, particularly in the context of construction contracts, see *Codelfa Constructions v State Rail Authority of New South Wales* (1982) 149 CLR 337 (although please note the controversy as to the ongoing application of *Codelfa: Mount Bruce Mining Pty Ltd v Wright Prospecting Pty Ltd* [2015] HCA 37).

Procedure

Security of payment laws only apply to a payment dispute arising out of a contract for construction work. A payment dispute will arise if:

- the amount claimed in a payment claim is due to be paid under the contract, and the amount has not been paid in full, or the claim has been rejected or wholly or partly disputed
- any money retained by a party under the contract has not been paid when it is due to be released, or
- any security held by a party under the contract is due to be returned under the contract, and has not been returned.

The phrase 'due to be paid' is significant. This assumes that time for payment is expressly included in the contract. However, not all contracts contain an express term with respect to time for payment. In these cases, security of payment laws require that the time for payment be a certain number of days from receipt of the payment claim.

The state-by-state variances in procedure are set out in the schedule to this paper.



Drafting implications

While parties cannot contract out of the obligations created by security of payment laws,³ the legislation does allow the parties to stipulate how they should apply. The following issues should be considered when drafting payment provisions in infrastructure contracts:

- **Amount of a progress payment**

Under the East Coast Model, there are two ways of determining the amount of a progress payment:

- **Method 1:** Where the infrastructure contract expressly provides a method for calculating the value of a progress payment, it is to be determined in accordance with those terms.⁴ In Victoria, this is subject to the following qualifications (notwithstanding anything to the contrary in the infrastructure contract):
 - claimable variations may be taken into account⁵
 - excluded amounts must not be taken into account.⁶
- **Method 2:** Where the infrastructure contract makes no express provision for the amount of a progress payment, the amount will be calculated on the basis of the value of work carried out or undertaken to be carried out.⁷ The value of the work is calculated with regard to the contract price, other prices, defects and variations.⁸

For Contractors and Principals who value certainty, stipulating the method for calculation of a progress payment is essential. If the parties do not stipulate a method by which a progress payment should be calculated, the Principal particularly is exposed to the risk that the Contractor may claim any number of expenses which are not agreed.

Under the West Coast Model, where the underlying contract is silent, there will be an implied term that the Contractor has an entitlement to be paid a 'reasonable amount for performing its obligations'.⁹ With no specific provision for the valuation of a 'reasonable amount', parties that do not stipulate calculation of progress payment terms in the infrastructure contract may be exposed to significant variations in the amount of a progress payment.

³ Vic Act s 48; NSW Act s 34; Qld Act s 200; ACT Act s 42; SA Act s 33; Tas Act s 11; NT Act s 10; WA Act s 53.

⁴ Vic Act s 10(1)(a); NSW Act s 9(a); Qld Act s 71(a); SA Act s 9(a); Tas Act s 13(1); ACT Act s 11(a).

⁵ Vic Act s 10(2).

⁶ Ibid s 10(3).

⁷ Vic Act s 10(1)(b); NSW Act s 9(b); Qld Act s 71(b); SA Act s 9(b); Tas Act s 13(2); ACT Act s 11(b).

⁸ Vic Act s 11; NSW Act s 10; Qld Act s 72; SA Act s 10; Tas Act s 13(2); ACT Act s 12.

⁹ WA Act s 14 ('Contractor's entitlement to be paid'); sch 1, div 2 ('Contractor's amount to be paid'); NT Act s 17 ('Contractor's entitlement to be paid'), sch 1, div 2 ('Contractor's entitlement to be paid').

- **Time periods for payment**

Under the East Coast Model, a progress payment becomes payable in accordance with terms of contract.¹⁰ Payment due dates, where the contract makes no express provision for payment, are set out in the table below.

Jurisdiction	Days (after claim is made) when payment due
Victoria	10 business days ¹¹
Queensland	10 business days ¹²
New South Wales	15 business days for Head Contractors ¹³ 30 business days for subcontractors ¹⁴
South Australia	15 business days ¹⁵
Tasmania	20 business days for claims relating to residential structures, where the respondent is the owner of the land or where the respondent is not a building practitioner ¹⁶ 10 business days for any other case ¹⁷
Australian Capital Territory	10 business days ¹⁸

Parties to construction contracts under the East Coast Model should carefully consider whether there are any applicable default payment provisions in the jurisdiction in which they are operating. Parties should ensure that the payment terms outlined in the construction contract do not contravene the relevant statutory payment terms, thereby ensuring the parties are not exposed to default payment provisions.

For parties operating in Western Australia, who entered into contracts before 1 August 2022, and the Northern Territory, it is notable that both jurisdictions prohibit terms in construction contracts that provide for payment to be made more than 50 days after the payment is claimed. In each jurisdiction, the contractual time period is read down to 28 days after payment is claimed.¹⁹

Under the new WA SOP Act, for parties who entered into a contract after 1 August 2022, the payment date for construction contract and home building work becomes payable in accordance with the terms of the contract.²⁰ Payment due dates, where the contract makes no express provision for payment is:²¹

- 20 business days after a payment claim is made by a Head Contractor
- 25 business days after a payment claim is made by a subcontractor.

- **Pay when paid provisions**

Some construction contracts may include terms that seek to make a party's liability under a contract conditional on them receiving payment from another person, whether or not they are a party to the contract (a 'pay when paid' provision). A party would be inclined to include such a clause in order to protect their cash flow in the event that an upstream Contractor failed to make timely payment.

However, under security of payment laws, 'pay when paid' provisions are void or of no effect in each jurisdiction.²² As a result, parties must carefully plan their expected cash flow and ensure they have contingencies in place to meet liabilities in the event that another party does not pay them.

¹⁰ Vic Act s 12(1)(a); NSW Act s 11(1); Qld Act s 73; SA Act s 11(1)(a); Tas Act s 15(1); ACT Act s 13(1)(a).

¹¹ Vic Act s 12(1).

¹² Qld Act s 73.

¹³ NSW Act s 11(1A)(a).

¹⁴ Ibid s 11(1B)(a).

¹⁵ SA Act s 11(1)(b).

¹⁶ Tas Act ss 15(2), 19(3)(a).

¹⁷ Ibid ss 15(2), 19(3)(b).

¹⁸ ACT Act s 13(1)(b).

¹⁹ WA Act s 10; NT Act s 13.

²⁰ WA SOP Act s 20(2), (3).

²¹ WA SOP Act s 20(1)(a)(b).

²² See: Vic Act s 13; NSW Act s 12; ACT Act s 14; NT Act s 12; Qld Act s 74; SA Act s 12; Tas Act s 16; WA Act s 9.

Drafting implications

The application and content of security of payment laws vary from state to state. When drafting payment provisions in a construction contract, parties should ensure that they are aware of the statutory terms that operate alongside express terms in a construction contract, and those which serve to override contractual terms where those terms are not in line with those provided for under statute.

Liquidated damages clauses and security of payment legislation

Victoria

The law in Victoria is that liquidated damages cannot be taken into account when assessing the amount of a payment claim made under the *Building and Construction Security of Payment Act 2002 (Vic)* (**Vic SOP Act**). This is because these amounts constitute 'excluded amounts' for the purposes of section 10B of the Vic SOP Act. This is so even where the construction contract provides otherwise: *Seabay Properties Pty Ltd v Galvin Construction Pty Ltd* [2011] VSC 183. The Supreme Court in *Seabay Properties* found that claims for liquidated damages (or any amount claimed under a construction contract for compensation due to time-related costs) are to be resolved under the general law, supported by court or arbitration proceedings, rather than adjudication.

A later decision in *Shape Australia Pty Ltd v The Nuance Group (Australia) Pty Ltd* [2018] VSC 808 further found that a claimant cannot seek to recoup an entitlement to liquidated damages on a reconciliation basis where the items in the payment claim have already been paid for. This means, unless a liquidated damage deduction was immediately taken to adjudication, a subsequent claim for the return of those monies could be characterised as an attempt to 'claw back' or 'recoup' liquidated damages, and be classified as an 'excluded amount'.

However, the more recent decision of the Supreme Court of Victoria in *Goldwind Australia Pty Ltd v ALE Heavylift (Australia) Pty Ltd* [2021] VSC 625 removed the risk for claimants who do not immediately enter into an adjudication for a liquidated damages claim. The Court held that:

- failure to adjudicate an earlier payment claim for work done does not prevent a claimant from recovering payment for that work in a later progress payment
- a subsequent payment claim claiming work done, which may include an amount previously levied for liquidated damages, is not a claim for excluded amounts under section 10B of the Vic SOP Act.

The respondent (Goldwind) deducted liquidated damages for delay in a payment schedule that was issued to the claimant (ALE) in September 2020. The claimant issued a new payment claim under the Vic SOP Act that ignored the delay deduction and made a claim for works performed in September 2020. These works were previously claimed, but unpaid as a result of the delay deduction. The respondent issued another payment schedule, again applying the delay deduction. The claimant then made an adjudication application under the Vic SOP Act.

The Supreme Court of Victoria allowed the claimant to recover payment under the Vic SOP Act for an amount that had been the subject of an offset for liquidated damages in an earlier payment schedule. The Court allowed this because the claim was characterised as being for works performed, not as a recoupment of liquidated damages. Justice Stynes also rejected the argument that if a claimant fails to immediately dispute the liquidated damages that it somehow changes the nature of the claim to a claim to 'claw back' previously uncontested deductions.

This decision means claimants do not need to dispute the liquidated damages as soon as they are applied. Instead, claimants can make a calculated decision as to when they should apply for an adjudication to recover payment for the works that have been performed but not paid due to the deduction of liquidated damages.

NSW

The law in New South Wales is that liquidated damages can be taken into account when assessing the amount of a payment claim made under the *Building and Construction Security of Payment Act 1999 (NSW)* (**NSW SOP Act**) so long as the construction contract contains a provision which enables that calculation to be made in assessing a progress payment: *J Hutchinson Pty Ltd v Glavcom Pty Ltd* [2016] NSWSC 126.

In this case, Glavcom (subcontractor) initially served on Hutchison (builder) a payment claim. Hutchison then served a payment schedule in response, which included a significant deduction for liquidated damages for delay. The Court held that Hutchison was not entitled to deduct liquidated damages in its payment schedule. Given the subcontract did not contain a provision which identified how progress payments were to be calculated, the amount of the progress payment was to be determined in accordance with section 9(b) of the NSW SOP Act. Section 9(b) 'says nothing about set-off' and does not entitle a respondent to deduct liquidated damages by way of set-off against the amounts due to a claimant for work it has done.

Appendix 1

Variations in definitions

Scope of application to 'construction contracts'

NSW

Section 4

Construction contract is defined to mean a contract or other arrangement under which one party undertakes to carry out construction work, or to supply related goods and services, for another party.

Section 7

The Act applies to any construction contract (written or oral), even if the contract is expressed to be governed by the law of another jurisdiction. The Act does not apply to construction contracts:

- that form part of a loan agreement, contract of guarantee or contract of insurance under which a recognised financial institution undertakes to:
 - lend money or to repay money lent
 - guarantee payment of money owing or repayment of money lent
 - provide an indemnity with respect to construction work carried out, or related goods and services supplied, under the construction contract
- under which it is agreed that the consideration payable is to be calculated otherwise than by reference to the value of the work carried out or the value of the goods and services supplied.

Section 7(3)

The Act also does not apply to a construction contract to the extent it contains provisions under which a party undertakes to:

- lend money or to repay money lent
- guarantee payment of money owing or repayment of money lent
- provide an indemnity with respect to construction work carried out, or related goods and services supplied, under the construction contract.

VIC

Section 7

Substantially the same as NSW. The Act does not apply to contracts governed by the *Domestic Building Contracts Act 1995* (Vic), except:

- contracts where the building owner is in the business of building residences and the contract is entered into during the course of that business
- contract is incidental to work carried out under another construction contract.

QLD

Section 3

Substantially the same as NSW. The Act does not apply to contracts governed by the *Domestic Building Contracts Act 2000* (Qld).

Note: In Queensland subcontractors may choose between the Act and the *Subcontractors' Charges Act 1974* (Qld). This legislation enables subcontractors to secure a statutory charge over money payable (or to be paid in the future) to them by their Contractor without having first obtained a court judgment for the alleged debt. The giving of a notice of claim of charge under this legislation effectively suspends any rights that a subcontractor may have under the *Building and Construction Industry Payments Act 2004* (Qld) and prevents them from taking any steps to recover outstanding money under that Act.



Scope of application to 'construction contracts'

SA Section 7

Identical drafting to NSW. The Act does not apply to contracts governed by the *Building Work Contractor Act 1995* (SA).

ACT Section 9

Substantially the same as NSW except as stated below. The Act does not apply to contracts governed by the *Building Act 2004* (ACT).

TAS Section 7

Substantially the same as NSW except that:

- the Act applies to a supply in Tasmania, even though the construction work is being performed outside Tasmania
- the Act also applies to residential structures and resident owners.

WA WA Act (Old Act)

Section 3

Construction contract is defined to mean a contract or other agreement, whether in writing or not, under which the Contractor has one or more of the following obligations:

- carry out construction work
- supply to the site any goods that are related to the construction work
- provide (on or off-site) professional services which are related to the construction work
- provide on-site services that are related to the construction work.

Section 7(2)

The Act applies to any construction contract (written or oral or part thereof), irrespective of where the contract was entered into or whether it is expressed to be governed by the law of another jurisdiction.

Section 7(3)

The Act does not apply to construction contracts to the extent it contains provisions under which a party undertakes to carry out construction work, or supply related goods and services, as an employee of the party for whom the work is to be carried out or to whom the related goods and services are to be supplied.

WA SOP Act (New Act) – Applicable for contracts entered into after 1 August 2022

Section 5

Construction contract is defined to mean a contract, agreement or other arrangement under which one party undertakes to:

- carry out construction work
- to supply related goods and services, for another party.

Section 9(2)

The Act applies to any construction contract (written or oral or part thereof), irrespective of where the contract was entered into or whether it is expressed to be governed by the law of another jurisdiction.

Section 10(2)

The Act does not apply to construction contracts to the extent it contains provisions under which a party undertakes to carry out construction work, or supply related goods and services, as an employee of the party for whom the work is to be carried out or to whom the related goods and services are to be supplied.

Section 10(3)

This Act does not apply to a construction contract to the extent that it provides that a party undertakes to carry out construction work, or supply related goods and services, as a condition of a loan agreement with a recognised financial institution.



Scope of application to 'construction contracts'

Section 10(4)

This Act does not apply to a construction contract to the extent that it forms part of a loan, guarantee or insurance agreement under which a recognised financial institution undertakes any of the following or to the extent that it provides that a party to the contract undertakes any of the following:

- to lend money or to repay money lent
- to guarantee payment of money owing or repayment of money lent
- to provide an indemnity with respect to construction work carried out, or related goods and services supplied, under the contract.

Section 10(5)

This Act does not apply to a construction contract to the extent that it provides that the consideration payable for construction work carried out, or for related goods and services supplied, under the contract that:

- is not monetary consideration
- is to be calculated otherwise than by reference to the value of the work carried out or the goods and services supplied.

Section 10(6)

This Act does not apply to a construction contract to the extent that it deals with construction work carried out outside Western Australia or with related goods and services supplied for construction work carried out outside Western Australia.

NT Sections 5 and 9: Identical drafting to WA Act.



NSW Section 5(1)

Construction work means any of the following work:

- the construction, alteration, repair, restoration, maintenance, extension, demolition or dismantling of buildings or structures forming, or to form, part of land (whether permanent or not)
- the construction, alteration, repair, restoration, maintenance, extension, demolition or dismantling of any works forming, or to form, part of land, including walls, roadworks, power-lines, telecommunication apparatus, aircraft runways, docks and harbours, railways, inland waterways, pipelines, reservoirs, water mains, wells, sewers, industrial plant and installations for purposes of land drainage or coast protection
- the installation in any building, structure or works of fittings forming, or to form, part of land, including heating, lighting, air-conditioning, ventilation, power supply, drainage, sanitation, water supply, fire protection, security and communications systems
- the external or internal cleaning of buildings, structures and works, so far as it is carried out in the course of their construction, alteration, repair, restoration, maintenance or extension
- any operation which forms an integral part of, or is preparatory to or is for rendering complete, work of the kind referred to in the above paragraphs including:
 - site clearance, earth-moving, excavation, tunnelling and boring
 - the laying of foundations
 - the erection, maintenance or dismantling of scaffolding
 - the prefabrication of components to form part of any building, structure or works, whether carried out on-site or off-site
 - site restoration, landscaping and the provision of roadways and other access works
- the painting or decorating of the internal or external surfaces of any building, structure or works
- any other work of a kind prescribed by the regulations for the purposes of this subsection.

Section 5(2)

Construction work does not include:

- the drilling for, or extraction of, oil or natural gas
- the extraction of minerals, including tunnelling or boring, or constructing underground works, for that purpose
- any other work of a kind prescribed by the Regulations. Currently, the Regulations do not prescribe any other kind of excluded work.

Section 6

Related Goods and Services means any of the following goods and services:

- materials and components to form part of any building, structure or work arising from construction work
- plant or materials (whether supplied by sale, hire or otherwise) for use in connection with the carrying out of construction work
- the provision of labour to carry out construction work
- architectural, design, surveying or quantity surveying services in relation to construction work
- building, engineering, interior or exterior decoration or landscape advisory services in relation to construction work
- goods and services of a kind prescribed by the regulations for the purposes of this subsection.



Scope of application to 'construction contracts'

VIC **Section 5**

Identical to the NSW definition.

QLD **Section 65**

Identical to the NSW definition save for some minor wording and syntax changes and the express inclusion of the testing of soils and road making materials.

Also includes building work within the meaning of the *Queensland Building and Construction Commission Act 1991* (Qld), namely:

- the erection or construction of a building
- the renovation, alteration, extension, improvement or repair of a building
- the provision of lighting, heating, ventilation, air conditioning, water supply, sewerage or drainage in connection with a building
- any site work (including the construction of retaining structures) related to work of a kind referred to above
- the preparation of plans or specifications for the performance of building work
- contract administration carried out by a person in relation to the construction of a building designed by the person
- fire protection work
- carrying out site testing and classification in preparation for the erection or construction of a building on the site
- carrying out a completed building inspection
- the inspection or investigation of a building, and the provision of advice or a report, for termite management systems for the building, and termite infestation in the building.

SA **Section 5**

Substantially the same as the NSW definition and includes fencing work.

ACT **Section 7**

Substantially the same as the NSW definition.

Also includes building work within the meaning of the *Building Act 2004* (ACT), namely:

- work in relation to the erection, alteration or demolition of a building, and includes disposal of waste materials generated:
 - by the alteration of a building other than a building excluded under the Regulations
 - by the demolition of a building (but not part of the building)
- work in relation to repairs of a structural nature to a building.

TAS **Section 5**

Incorporates most of the elements of NSW definition but with the addition of passenger and goods lifts, plumbing installations, and alterations in terminology ('docks and harbours' has been replaced by 'marine infrastructure' and 'power lines' has been replaced by 'energy infrastructure').



WA WA Act (Old Act)

Section 4(2)

Construction work means any of the following work on a site in Western Australia, whether on land or off-shore:

- reclaiming, draining, or preventing the subsidence, movement or erosion of, land
- installing, altering, repairing, restoring, maintaining, extending, dismantling, demolishing, or removing, any works, apparatus, fittings, machinery, or plant, associated with any work referred to above
- constructing the whole or a part of any civil works, or a building or structure, that forms or will form, whether permanently or not and whether in WA or not, part of land or the sea bed whether above or below it
- fixing or installing on or in any thing referred above and any fittings forming, or to form, whether permanently or not, part of the thing, including:
 - fittings for electricity, gas, water, fuel oil, air, sanitation, irrigation, telecommunications, air-conditioning, heating, ventilation, fire protection, cleaning, the security of the thing, and the safety of people
 - lifts, escalators, insulation, furniture and furnishings
- altering, repairing, restoring, maintaining, extending, dismantling, demolishing or removing any thing referred to above or any fittings that form part of that thing
- any work that is preparatory to, necessary for, an integral part of, or for the completion of, any work referred to above, including:
 - site or earth works, excavating, earthmoving, tunnelling or boring
 - laying foundations
 - erecting, maintaining or dismantling temporary works, a temporary building, or a temporary structure including a crane or other lifting equipment, and scaffolding
 - cleaning, painting, decorating or treating any surface
 - site restoration and landscaping
- any work that is prescribed by regulations to be construction work for the purposes of this Act.

Civil works includes:

- a road, railway, tramway, aircraft runway, canal, waterway, harbour, port or marina
- a line or cable for electricity or telecommunications
- a pipeline for water, gas, oil, sewage or other material
- a path, pavement, ramp, tunnel, slipway, dam, well, aqueduct, drain, levee, seawall or retaining wall
- any works, apparatus, fittings, machinery or plant associated with any works referred to above.

Section 4(3)

Construction work does not include any of the following work on a site in Western Australia, whether on land or off-shore:

- drilling for the purposes of discovering or extracting oil or natural gas, whether on land or not
- constructing a shaft, pit or quarry, or drilling, for the purposes of discovering or extracting any mineral bearing or other substance
- constructing any plant for the purposes of extracting or processing oil, natural gas or any derivative of natural gas, or any mineral bearing or other substance
- constructing, installing, altering, repairing, restoring, maintaining, extending, dismantling, demolishing, or removing, wholly artistic works, including sculptures, installations and murals
- work prescribed by the regulations not to be construction work for the purposes of this Act.



Section 5

Goods and services are related to the construction work if they are:

- materials or components (whether pre-fabricated or not) that will form part of any thing referred to in sections 4(2)(b) or 4(2)(c) or of any fittings referred to in section 4(2)(d)
- any fittings referred to in s4(2)(d) (whether pre-fabricated or not)
- plant or materials (whether supplied by sale, hire or otherwise) for use in connection with the carrying out of the construction work at the site of the construction work
- services that are provided by a profession and that relate directly to construction work or to assessing its feasibility (whether or not it proceeds):
 - including surveying, planning, costing, testing, architectural, design, plan drafting, engineering, quantity surveying, and project management, services
 - not including accounting, financial, or legal, services.

WA SOP Act (New Act)

Section 6

Construction work means any of the following work on a site in Western Australia, whether on land or off-shore:

- the construction of buildings, structures or civil works (whether permanent or not) that form, or are to form, part of land (including the seabed)
- the installation in or on any building, structure or civil work of fittings that form, or are to form, part of the building, structure or civil work, including for:
 - the supply of electricity, gas or water
 - air-conditioning, heating, ventilation, lighting, fire protection, irrigation, sanitation, cleaning, security or communication systems
 - lifts or escalators
- the alteration, repair, restoration, maintenance, extension, demolition, dismantling or removal of any building, structure or civil work referred to in paragraph (a) or fitting referred to in paragraph (b)
- the reclamation, dredging or prevention of subsidence or erosion of land
- any work that is preparatory to, necessary for or an integral part of anything referred to in paragraphs (a) to (d), including:
 - site clearing, excavating, earth-moving, tunnelling or boring
 - laying foundations
 - erecting, maintaining or dismantling cranes, scaffolding or other temporary buildings or structures
 - cleaning, painting, decorating or treating surfaces
 - site restoration and landscaping
- work prescribed by the regulations to be construction work for the purposes of this Act.

Civil works includes:

- roads
- railways (including light rail)
- bridges or underpasses
- airport runways
- waterways, harbours, ports or marinas
- electricity or telecommunication lines
- water, gas, oil, sewage or other pipelines



Scope of application to 'construction contracts'

- dams, levees, aqueducts, drains, seawalls or retaining walls
- pavements, ramps, slipways or tunnels
- works, apparatus or structures associated with the works referred to in paragraphs (a) to (i).

Construction work does not include:

- drilling for the purposes of discovering or extracting oil or natural gas, whether on land or not
- constructing a shaft, pit or quarry, or drilling, for the purposes of discovering or extracting any mineral or other substance
- constructing or fitting out the whole or any part of a watercraft
- work prescribed by the regulations not to be construction work for the purposes of this Act.

Section 7

Goods and services are related to the construction work if they are:

- materials or components (whether pre-fabricated or not) that are to form part of any building, structure, civil work or other thing resulting from construction work
- plant or materials (whether supplied by sale, hire or otherwise) for use in connection with the carrying out of construction work
- services of the following kinds:
 - the provision of labour to carry out construction work
 - professional services that relate directly to construction work or the assessment of its feasibility, including surveying, planning, costing, testing, architectural, design, plan drafting, engineering, quantity surveying, and project management services, but not including accounting, financial or legal services
- goods or services prescribed by the regulations to be related goods and services for the purposes of this Act.

NT

Section 6

Identical drafting to WA Act.





General

21 Key issues for defects

Investing in Energy Transition Projects
March 2023



Introduction

A **Defect** is an aspect of the construction works that does not comply with the Contract.

In design and construct contracts, Defects can relate to design as well as construction.

The non-compliance can be in relation to the specific requirements of the drawings or specification or the more general requirements of the general conditions.

The complexity of the design and construction process are such that few projects are ever Defect free.

This paper deals with:

- design Defects
- latent defects
- systemic/fleetwide Defects
- the obligation to rectify Defects
- the interaction between Defects and Completion
- the Defects Liability Period
- remedies in relation to Defects
- long term Defect issues.

Design Defects

While Defects are usually thought of in the context of construction, Defects can also relate to design in circumstances where the Contract contains relevant design obligations.

Therefore the Contractor will be required to continuously rectify design errors, including as part of the design review process.

It is critical to ensure that the design review clauses reflect the fact that an error in design is a Defect before the relevant Works are constructed. Contractors should also be mindful of such provisions when considering the flow down consultancy agreements.

Latent defects

Latent defects are Defects which are not reasonably capable of being detected at the time that a release is given in connection with the Works, such that, in the absence of a provision to the contrary, the Contractor would be relieved of liability in relation to them.

The issue of latent defects is somewhat unusual because, subject to statutory time limitations, the Principal remains able to sue the Contractor in relation to defective Works after the expiration of the Defects Liability Period and the release of the relevant security.

The issue usually arises where either:

- there is a release of liability prior to the expiration of the statutory period, or

- as between Contractors, where one Contractor takes responsibility for the work of the other as part of a hand over process.

In such situations the release should exclude latent defects.

Of course, whether the Defect is latent will be an issue of both factual and expert evidence, however, the Contract should set up the exclusion.

Systemic/fleetwide Defects

Some projects involve the use of the products, such as turbines, that are used throughout the relevant industry and tend not to be bespoke.

In such cases, if the product contains an inherent flaw in design or manufacture, so that it is defective across projects, the manifestation of the Defect in one project should give rise to an obligation on the manufacturer to advise all purchasers of the issue irrespective of whether it has yet manifested itself on all of the projects.

The obligation should extend to:

- notification of the Defect
- advice as to the root cause of the Defect
- progressive reports as to rectification measures
- safety and operating instructions to mitigate the effects of the Defect.

The obligation to rectify

The fundamental obligation accepted by the Contractor is to design (where appropriate) and construct the Works in accordance with the Contract.

The obligation to rectify Defects should be set out in the Contract in the following ways:

- as a general obligation to design and construct the Works in a manner that is Defect free
- to continuously rectify Defects, irrespective of whether the Contractor is instructed by the Principal to do so
- to rectify Defects that are residual after the achievement of Completion as noted in the punch list of Defects issued at Completion and as instructed by the Principal during the Defects Liability Period.

All such obligations should:

- be expressed to be without prejudice to the Principal's other rights, especially the right to claim damages
- up to the expiration of the Defects Liability Period, permit the Principal to rectify the Defect if:
 - it is urgent
 - the Contractor fails to do so within a reasonable time after being notified of the existence of the Defect.

Defects and Completion

Most construction contracts reach a stage of Completion that has important contractual consequences prior to the Works being fully complete. This is usually known as Practical Completion in building contracts and Mechanical Completion in other contexts.

The contractual consequences include:

- the delay liquidated damages trigger
- the partial return of security
- the possession of the site reverts to the Principal
- insurance obligations are largely switched to the Principal.

Usually, the key requirement for the achievement of this stage of Completion is that the Works are complete with the exception of minor Defects that do not prevent the Works from being conveniently used for their intended purpose.

That determination is vested in the superintendent or similar person.

The extent to which Defects are permitted depends on the nature of the Works. For example, a prestige apartment building will have different requirements to a hospital, a process facility or a solar farm.

It is important to carefully consider this issue rather than rely on generic definitions.

The residual Defects will be the subject of a punch list or be listed in the certificate of Completion and the Contractor will be obliged to rectify them as soon as possible or within such time as instructed by the Principal.

Defects Liability Period

The Defects Liability Period is a period of time measured from the initial Completion of the Works during which the Principal must allow the Contractor the opportunity to rectify Defects. Correspondingly, the Contractor must rectify such Defects.

Accordingly, the Defects Liability Period is intended to be for the benefit of both parties: the Principal can have Defects rectified by the Contractor and its subcontractors; and the Contractor has the opportunity to rectify the Defects itself, rather than being sued by the Principal.

Only when all such Defects have been rectified by the Contractor will Final Completion be achieved.

The duration of the Defects Liability Period will be a matter of negotiation. Usually, the period is one to two years. The longer the period, the higher the Contract Sum will be. Those parts of the Works that are rectified might also be the subject of a separate extended period for Defect rectification, although the total period will usually be capped.

In most Contracts, the Principal will retain either a proportion of the Contract Sum (cash) or a reduced performance bond as surety for performance of the Contractor's obligations during the Defects Liability Period.

Remedies

The remedies available to the Principal where the Contractor fails to rectify Defects are a combination of self-help and damages.

The self-help remedy is comprised of the right to have the Defect rectified by another Contractor and thereafter to sue for the cost and, possibly, deduct the cost from the security. This remedy is usually set out in the Contract.

It is important to note that the remedy is not subject to reasonableness: the Principal is entitled to have the Works that it has contracted for and it is no defence to assert that the Defect is minor.

Where there are no express Defects provisions, which is rare, the remedy is damages.

As a starting point, the Principal is entitled to be put in the position it would have been had the Contract been fulfilled. In the case of a construction contract, the Principal is entitled to have the Works it contracted to receive. The measure of damages will be the cost to do what is required to achieve that outcome. The only exception to this rule is where such an outcome would be unreasonable, in which case the remedy will be the difference in value between what has been built and what was contracted to be built. However, such an outcome is rare.



Defects clauses should not be exclusive remedies

Common law rights

Unless express words are used, a Defects liability clause will generally not affect the parties' remedies under common law. For example, a Principal can sue the Contractor for damages for Defects which appear during or after the Defects Liability Period, though its damages may be limited – if the Principal has acted unreasonably – to the cost of the Contractor performing the remedial Works.

It should be noted however, that the courts require strict compliance with the procedural steps and notice provisions in the Contract relating to Defects before and Principal can claim damages for Defects. The court held that a 'wider common law right' to engage others and then to claim the costs incurred as damages for breach of Contract should not fly in the face of those obligations.¹

In particular, the Principal should ensure that the issue of a final certificate does not release the Contractor from any liability or exclude the Principal's common law rights. Nonetheless, the Principal should make this position clear by adopting the following wording:

The rights of the Principal under this clause [] are in addition to and do not limit any other rights which the Principal has under this contract or under any law.

Some elements of contracting are subject to limitations imposed by legislation. For example:

- where there is an O&M contract, the parties must expressly deal with responsibility for construction defects, especially where the Contractors are related entities
- Defects that are manifested after a considerable period, such as design life warranties, might become time barred by the applicable statute of limitations.

Long term issues

The Contract should consider and the parties should be mindful of a number of long term issues in relation to Defects, including:

- not excluding common law remedies
- limiting legislation
- the interaction with operation and maintenance
- statute of limitation issues.

Conclusion

This paper is intended to provide a brief overview of the Defects Liability Period and examples of typical clauses. Subsequent updates will deal more closely with specific issues or problems which may arise, particularly where Defects liability clauses are poorly drafted.



¹ *Turner Corporation Ltd (Receiver and Manager Appointed) v Austotel Pty Ltd (1994) 13 BCL 378.*



General

22 Key issues for dispute resolution

Investing in Energy Transition Projects
March 2023



Introduction

The complexity of major projects with their propensity for errors and misunderstandings makes them susceptible to disputes. Disputes are costly, disruptive and traumatic and their occurrence has the potential to undermine project success.

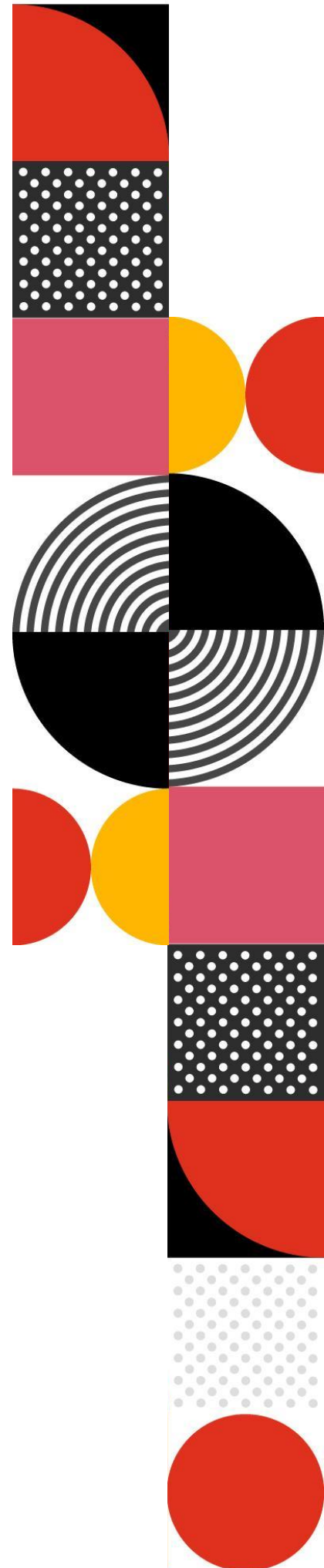
Disputes can also be an indication that there are serious problems with the project.

Purpose

The purpose of a well drafted dispute resolution clause should be to establish a system that enables the parties to identify the underlying issues and deal with them. An effective system is much more than guideposts to litigation.

More specifically, a dispute resolution system should:

- maximise the possibility of resolution without recourse to a formal dispute process
- minimise costs
- minimise disruption
- minimise damage to relationships
- identify and resolve underlying issues
- minimise reputational damage
- be consistent with bankability requirements
- lead to genuine, sustainable resolution.



Key issues

The following issues should be considered in devising a dispute resolution system for a major project.

- **What are the purposes of the system? Usually the purposes will include:**
 - the identification of the existence of a dispute
 - the identification of the nature and scale of the dispute
 - the identification of the legal basis of the dispute
 - giving the parties the opportunity to discuss and resolve the underlying issues
 - resolution of the engineering and/or commercial issues that are involved
 - stipulating the manner in which the dispute will be finally determined by a third party in a binding manner in the event that all of the preceding steps do not resolve the dispute
 - accordingly, a key element of the dispute resolution process is establishing an effective communication process.
- **What is the project context? For example:**
 - Is more than a single jurisdiction involved?
 - Are there binding legislative processes, such as SOPA, that are relevant?
 - Are there special Statute of Limitations issues?
 - If the parties are international, what is the position relating to the enforcement of judgements and awards?
 - What are the reputational issues associated with the project and a dispute?
 - What are the applicable liability caps?
 - What is the role of insurance?
- **Disputes and mechanisms. Should all disputes be the subject of the same process?**
 - What are the categories of potential disputes?
 - What are the best mechanisms for resolving each category?
 - What is the distinction between urgent/non-urgent and complex/simple disputes?

As a general rule, the project will be most susceptible to disputes in those areas where scope certainty is at its lowest. Special focus should be placed on those areas.

Dispute categories

All disputes are not the same. In fact, their nature, extent and urgency are extremely varied. It should be clear then that a single dispute resolution process is unlikely to be suitable for all disputes, especially in a major, multi-party project.

While all disputes will ultimately have a financial impact, the sources of disputes will vary and will include:

- the valuation of financial claims, such as variations, delay costs and provisional sums
- design gate achievement
- the existence of Defects
- the extent of extensions of time
- the achievement of Completion
- the existence of latent conditions
- the quality, timing and extent of Principal inputs
- the performance of third parties.

Within each identified category, the dispute might be urgent or non-urgent, substantial or minor or complex or simple.



Dispute resolution mechanisms

Two fundamental questions must be answered in relation to each category of disputes:

- What is the best way to expose and resolve the underlying issues
- If they are not resolved, at what point is a binding third party determination to be made?

The exposure, understanding and resolution of disputes is critical.

The processes will include discussions between groups on a technical level, a project level and an executive level that is beyond the project. The purpose of each level should be to create a greater understanding of the issues and to narrow the areas of dispute.

For example, the process might include:

- the project nominated representatives
- the project control group
- specialised groups, such as those involved with a particular scope of work or technology
- varying levels of company management.

At some level, an external party will be involved, such as the independent certifier or the project dispute avoidance board.

Even if the dispute has not been resolved after those processes have been exhausted, the parties should have a clear understanding of the issues that are contentious.

Consideration of the process must include the role of external parties and the pit at which their intervention is:

- to assist
- to provide an advisory opinion
- to make a final and binding determination.

Those distinctions might be made by reference to the nature or size of the dispute or by whether it is a matter that needs to be resolved quickly in order for the project to proceed.

Such intervention should also consider legal obligations that arise at common law or under statute. For example, many projects, such as transport projects, are governed by regulatory authorities or requirements that impose statutory obligations that cannot be overridden by the contractual dispute resolution mechanisms.

The critical issue is the point at which a binding determination is made. At one end of the spectrum that can be the determination of the Principal's representative or the project engineer, while at the other end it might be court or arbitral proceedings.

The range of possible resolution mechanisms will usually include:

- Principal's representative
- project engineer
- independent certifier
- dispute avoidance board
- expert determination
- domestic/international arbitration
- court of a nominated jurisdiction.

Notice requirements

Every step in the process will require the delivery of notices. The content and timing requirements for those notices might vary between levels and dispute types. It is important however to ensure that all requirements are feasible, sensible and informative. Requirements that provide for unrealistic time bars or unnecessary information will not fulfil the purposes of a good dispute resolution system; and can result in the Principal being subjected to administrative burdens as it is deluged with notices. Notices should be part of the dispute's resolution, not an additional source of disagreement.

The following matters should be addressed when considering notices:

- What information should the notices contain?
- When will that information be available?
- When should the notice be given/to whom should it be given?
- What happens if it isn't given in time or does not contain the required information?





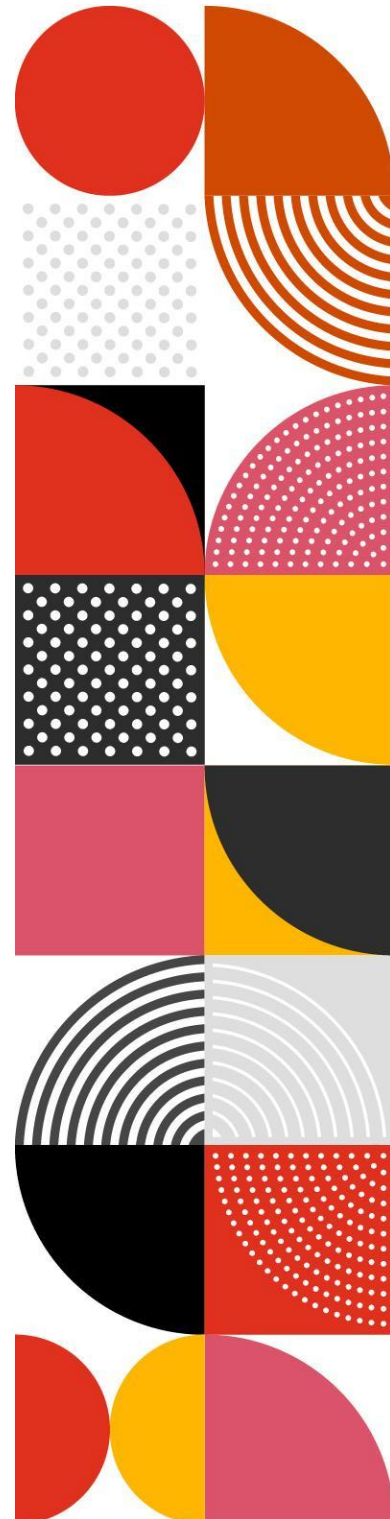
Broader considerations

There are number of general considerations to consider when developing a dispute resolution system.

- **Cost and time:** How much will the full process cost and how long will it take?
- **Experience:** Contractors are usually more experienced when it comes to disputes because they are in the business of construction. Is the Principal truly prepared for a dispute that might take years and tens of millions of dollars to resolve?
- **Sustainability:** Will the process result in an outcome that is accepted, albeit reluctantly, or will it be a source of ongoing discontent and mistrust?
- **Changing attitudes:** At the point at which the contract is signed the parties often think that there won't be any disputes or that they can be resolved amicably. All of that can change very quickly: when money goes out the door, love usually goes out the window.
- **Arbitration:** Arbitration is confidential but expensive.
- **Caps:** What level of dispute resolution do they justify?

Sample matrix

The optimal way to take instructions and develop a comprehensive dispute resolution system is by working through an options matrix, such as the sample matrix provided in Appendix 1 of this paper.



Appendix 1

Sample dispute resolution matrix

Dispute Category	Contractual mechanisms				External mechanisms				Comments
	Principal's representative	Representatives of the parties	Senior executives of the parties	Dispute board**	Mediation	Expert determination	Arbitration	Court	
Satisfaction of CPs		1	2					3	Decision will have to be made as to whether primary method of dispute resolution is by way of litigation or arbitration. This is a threshold question that applies to all Dispute Categories that escalate through external mechanisms. Minimal contractual mechanisms prior to litigation due to nature of dispute – if CPs are not satisfied, contract is not effective.
Variation claim (up to \$AU10M) – merits + value	1	2				3			Threshold is proposed to illustrate how different values may necessitate different resolution strategies. Further consideration is required to specify this threshold (for example, monetary limits, DOA, technical, other strategic/interface indicators). Threshold may also be dictated by Financiers.
Variation claim (\$AU10M to \$AU25M) – merits + value	1	2		3		4			As above.
Variation claim (greater than \$AU25M) – merits + value	1	2		3		4	5		As above.
Payment Claim – merits + value*	1	2		3		4	5		*Security of payment legislation will operate alongside the Works Contract and will be available to a Works Contractor where any amount claimed in a payment claim is less than the amount proposed to be paid by the Principal. Payment disputes are resolved by way of adjudication under this legislation, which is subject to a separate process and is binding. Accordingly, these steps may be displaced, in whole or in part, in circumstances where a Works Contractor elects to enforce the legislation. See: <i>Security of Payment Briefing Paper</i>
Injunction (call on security, actions by regulators, breach of IP, breach of confidentiality)								1	Injunctions will be determined by a court.



Dispute Category	Contractual mechanisms				External mechanisms				Comments
	Principal's representative	Representatives of the parties	Senior executives of the parties	Dispute board**	Mediation	Expert determination	Arbitration	Court	
Principal proposed call on security	1	2	3					4	
Breach of IP obligations	1	2		3		4			Resolution depends on nature of the breach (for example, whether there is a technical element requiring expert determination)
Breach of confidentiality obligations	1	2		3		4			Resolution depends on nature of the breach (for example, whether there is a technical element requiring expert determination)
Breach of obligations re key personnel	1	2		3		4			
Breach of subcontracting obligations	1	2		3		4			
Breach of testing/commissioning obligations, determination of performance guarantees and performance LDs	1	2		3		4			Resolution depends on nature of the breach (for example, whether there is a technical element requiring expert determination)
Breach of warranty	1	2		3		4	5		
Provisional sums*	1	2		3		4	5		As above Dispute Category 'Payment Claim – merits + value'
EOT claim (up to 30 days) – merits + length of time and amount of delay costs	1	2		3		4			Threshold is proposed to illustrate how different values may necessitate different resolution strategies. Further consideration is required to specify this threshold (for example, length of EOT claimed as compared against overarching Programme, DOA, technical, other strategic/interface indicators). Threshold may also be dictated by Financiers.
EOT claim (30 to 60 days) – merits + length of time and amount of delay costs	1	2		3		4	5		As above.
EOT claim (up to 60 days) – merits + length of time and amount of delay costs	1	2		3		4	5		As above.
Delay to the Works and Delay LDs liability	1	2		3		4			Likely overlap with EOT claims and Interface Claims
Force Majeure Event claimed by Contractor or Principal	1	2		3		4			
Suspension by Contractor or Principal	1	2		3		4			
Liability		1		2	3		4	4	
Liability to Indemnify	1	2		3		4			
Insurance	1	2		3		4			
KPIs	1	2	3			4			



Dispute Category	Contractual mechanisms				External mechanisms				Comments
	Principal's representative	Representatives of the parties	Senior executives of the parties	Dispute board**	Mediation	Expert determination	Arbitration	Court	
Site conditions – whether there are latent conditions entitling relief	1	2		3		4			Likely only arises as a dispute as an EOT or variation claim.
Design gates – entitlement to progress	1	2		3		4			As above
Defects – technical existence	1	2		3		4	5		As above
Interface disputes	1	2		3		4			
Whether Completion/ Acceptance has been achieved	1	2		3		4			
Other breach of contract		1		2	3	4	5	5	
Equitable remedies (injunctions, restitution)					1		2	2	
Termination					1		2	2	





General

23 Key issues for operating and maintenance agreements

Investing in Energy Transition Projects
March 2023



Introduction

The Operating and Maintenance Agreement (**O&M Agreement**) supporting an infrastructure project has a significant impact on the project's long-term success. Accordingly, it is a key document from both the point of view of the Principal and the Lenders in reviewing the bankability of a project-financed project.

The purpose of this paper is to highlight the key issues in a draft O&M Agreement that must be addressed. Not all of these issues will be applicable to all projects. However, this checklist will be useful in identifying areas of the O&M Agreement that may require further attention.

This paper assumes the Operator is not one of the project Sponsors and has a true arms-length relationship with the construction Contractor. If that is not the case there will be a range of additional issues to consider, especially for the Lenders in a project-financed project. Some of these issues are considered briefly at the end of this paper.

Pre-operational phase

Key issues to consider in relation to the pre-operational phase are:

- Does the Operator have a contractual role on the project before the handover of the facility by the Principal? In particular, does the Principal require the Operator to advise, prior to acceptance testing of the facility, on matters such as the necessary staffing levels, work Programmes, organisational matters and other administrative functions that must be put in place upon acceptance and handover of the facility to the Operator?
- Does the O&M Agreement set out the testing, commissioning and handover procedures, particularly having regard to the transfer of responsibility for the care of the facility from the construction Contractor to the Principal and/or Operator? Are these procedures back-to-back with the construction contract? Is there more than one construction contract or a number of different work packages with varying completion and handover dates?

An issue likely to arise in the negotiations will be the degree to which the Operator will be responsible during the period when the Operator's staff are in control of the facility but under the supervision of the construction Contractor – for example, during the acceptance testing phase but prior to handover. Usually, as a matter of contract, the construction Contractor remains responsible for the facility until handover. However, acceptance, commissioning and performance testing will normally be carried out by operations personnel. In these circumstances, the Operator is unlikely to agree to be liable. Therefore, there must be a clear statement in the construction contract that the construction Contractor remains liable until handover, regardless of whose personnel are physically conducting the testing.

Where there are a number of construction contracts for different components of the project with varying completion dates (for example, mining or hospital projects delivered under an Engineering, Procurement and Construction Management (**EPCM**) or construction management model with a number of separate work packages), the Principal needs to consider the extent to which the construction Contractors, the Principal and/or Operator will be responsible for care of the works during the period from when the first work package is completed and ready to be handed over, to the date of handover of the entire project to the Operator.

Ideally, from the Principal's and Lenders' perspective, the individual construction Contractors will remain liable for their scope of works until handover of the entire project. However, this may not be feasible depending on the nature of the project and the stage in the construction Programme, particularly as the Contractors will want to achieve handover as early as possible under fixed lump sum contracts to reduce their overheads and increase profit. In these circumstances the Contractor is unlikely to agree to be liable and to minimise gaps in liability, Lenders may require the Operator (rather than the Principal) to accept responsibility on completion of the individual work packages. Accordingly, there must be a clear statement in the O&M Agreement that the Operator is responsible during the interim period and must have the necessary resources available to perform those obligations from the time of handover of each work package.



Operation of the facility

The substantive contractual obligation of the Operator is to operate and maintain the facility for the period specified in the O&M Agreement. A key issue is whether the responsibilities of the Operator during this period are set out in sufficient detail.

The O&M Agreement will need to cover matters such as:

- operating procedures
- maintenance of the facility (including major overhauls and scheduled/unscheduled outages)
- responsibility for procurement and maintenance of a spare parts inventory
- performance levels and performance guarantees to be met by the Operator
- interface with the construction Contractor(s) prior to handover and during the defects liability period
- interface with Principal's operations team (for example, where the Principal elects to undertake certain site-related services in respect of the operation of the facility) and the potential impact on the Operator's performance guarantees
- Principal's option to extend the term
- reporting requirements to the Principal, Lenders and perhaps to the government authorities
- maintenance of the continuing contractual relationship with the government authorities (if relevant) and utility suppliers on behalf of the Principal
- compliance with operational requirements imposed under the regulatory regime (for example, compliance with environmental controls and local ownership and industry participation requirements imposed on the project) and other project documents.

The description of the Operator's obligations is often complex and requires significant project management and technical expertise relevant to the project type and technology. This can, to some extent, be simplified by attempting to describe the general requirements of the Operator and relating those obligations to the performance results required to be achieved out of the operation of the facility, including all matters necessary and incidental to that performance. However, there are arguments against this approach, particularly if it is relatively simple for the Operator to claim additional payments under the agreed compensation regime. Therefore, care should be taken in electing this simplified drafting approach and advice should first be sought from appropriately qualified and experienced technical advisors.

Finally, having regard to the long-term nature of O&M Agreements, the parties should be aware that there is a real likelihood of a substantial change of circumstances during the period of the O&M Agreement (for example, where political change occurs, legislative regimes are expanded/altered or the original contract regime is otherwise altered). Accordingly, the Operator's entitlement to relief and additional compensation in such circumstances must be clearly stated in the O&M Agreement. Ideally, from the perspective of the Principal and Lenders, those entitlements will be back-to-back with the Principal's entitlement under any offtake agreements or other project documents.

Fully wrapped agreement vs side agreements

By 'fully wrapped' O&M Agreement, we mean that all obligations and responsibility in relation to operations and maintenance of the facility are allocated to a single party (the Operator) and both the Principal and the Lenders have a clear line of recourse to that party.

If, for example, key aspects of the operation and maintenance of the facility (particularly those that may impact on the performance of the facility) will be performed by a third party under a different agreement, then the Lenders will require a clear allocation and delineation of all obligations and responsibilities for the operation and maintenance of the facility between the parties so there are no 'gaps' where residual risk or obligations are left with the Principal.

If, in respect of a project-financed project, the Principal retains significant risk or responsibility for operating and maintaining the facility, the Lenders will usually require some form of Sponsor support.

Principal's obligations

The main obligation on the Principal during the period of the O&M Agreement should be to pay the Operator. Payment will, as a practical matter, be made out of the proceeds of the offtake agreement and should, if possible, be quarantined to these amounts.

However, there will probably be other major continuing obligations, for example, the supply of utilities, fuel, water and other consumables. In addition, the O&M Agreement should provide for other specific obligations on the part of the Principal. For example, there may be an obligation on the Principal to provide an initial spare parts inventory (which should be back-to-back with the spare parts inventory to be provided by the Contractor under the construction contract). Further, there may well be an obligation on the Principal under the offtake agreement to maintain records in relation to the Operator's compliance with particular matters (for example, use of fuel and waste disposal), which may affect the Principal's payment obligations under the O&M Agreement. The O&M Agreement should also provide for payment mechanisms (for example, mechanisms to cater for payment of Principal-supplied spare parts, major overhaul expenses, costs arising for work performed by the Operator beyond the scope of services described in the O&M Agreement, changes in law and other potential factors that give rise to necessary adjustments to the payment provisions).

Performance obligations

The O&M Agreement must specify the performance obligations of the Operator during the period of the O&M Agreement. The performance criteria should typically include matters such as availability, outages, production levels and other technical, quality, safety and environmental protection performance criteria, depending on the nature of the project. The O&M Agreement should also specify the performance levels that might give rise to rights to damages and/or termination under the O&M Agreement where performance falls below certain levels. This is discussed in more detail later in this paper. In some cases, there may also be a gain share mechanism providing for bonuses where the Operator's performance exceeds particular levels. Reference should also be made to the performance levels achieved by the construction Contractor at handover. These levels, with appropriate adjustments (for example, degradation curves), should form a baseline of the Operator's performance obligations. In addition, on a power project for example, it is imperative that the technical and legal advisors ensure that the performance testing and performance guarantee and liquidated damages schedules to the O&M Agreement are back-to-back with the corresponding schedules to the construction contract.

Force majeure

An important issue is: does the O&M Agreement adequately provide for the consequences of a force majeure event?

In the negotiation of the project documents (where the Principal's obligations are largely limited to payment, as is the case with O&M Agreements), the force majeure provisions should be common to all of the documents. To the extent such provisions are not aligned and there are significant gaps in liability retained by the Principal, the Lenders will usually require some form of Sponsor support.

The parties should be aware that the consequences of a force majeure event during the construction period are severe but probably manageable in that the force majeure event, even if prolonged, will simply increase the cost of construction and delay completion. This risk can be allocated between the parties to the project prior to commencement of the project and taken into consideration in determining the economics of the project and contingencies.

The consequences of a prolonged force majeure event during the operation period, however, may lead to an insoluble difficulty. In this event, the Operator may not be able (even if it was prepared to increase its financial commitment which, typically, it is not) to perform its obligations to the performance standard set out in the O&M Agreement. This will have a direct effect on the offtake agreement and the project revenue stream, affecting (possibly beyond repair) the ability of the project to repay the Lenders.

The O&M Agreement should, therefore, impose an obligation on the party affected by the force majeure event to take all possible steps to overcome the event, including reasonable expenditure of funds. The failure to perform contractual obligations because of the event, however, will typically prevent such a party from being in default.



Underperformance

The O&M Agreement must include detailed provisions for the consequences of default by the Operator in its performance obligations.

In particular cases (for example on a power project) the O&M Agreement should specify the performance levels below which the Operator is in default under the O&M Agreement and the options for remedy available to the Principal in the various circumstances arising out of the different levels of that default.

Typically (again, for example on a power project) such performance requirements should specify matters such as output, availability, outages and other specific performance-related events.

The O&M Agreement may also specify a liquidated damages regime to be imposed where the Operator fails to perform to the specified levels. The inclusion of a liquidated damages mechanism under the Agreement is necessarily linked to a limitation of liability clause, which effectively caps the Operator's potential losses in respect of any underperformance by the Operator. Typically, liability for consequential losses (which are losses caused to one of the parties because of the particular economic situation of that party) is expressly excluded. Such exclusion will usually expressly include loss of revenue, profit and/or other economic consequences of underperformance by the Operator (other than in respect of any pre-agreed liquidated damages).

Changes/variations during the term of the agreement

Another key issue is whether the O&M Agreement makes provision for adjustments to the payment to be made to the Operator where, within limits, the obligations of the Operator under that O&M Agreement are extended or reduced during the period of that O&M Agreement.

For example, where amounts paid to the Operator are based on the operational efficiency of the facility, the O&M Agreement should make allowance for an adjustment in the payment to the Operator where the quality of fuel or other consumables falls below the technical criteria specified in the O&M Agreement.

Similarly, the O&M Agreement should typically provide for an adjustment in the payment entitlements of the Operator where there is a material adverse event (such as change in law), which results in the Operator being required to perform obligations beyond those obligations described in the O&M Agreement at the time of execution (for example, increased environmental regulations leading to a more detailed treatment of wastes being required).

To the extent that particular changes can be and are anticipated in the O&M Agreement at the time of execution (for example, inadequate quantities of or low-grade fuels), the payment adjustment provisions should be specified in the O&M Agreement at the time of execution. To the extent that such changes cannot be anticipated (for example, changes in law) or, where the parties elect not to specify at the time of execution of the O&M Agreement (for example the effects of inclement weather), the O&M Agreement will need to provide a mechanism to determine the resulting price adjustment.

In the absence of any such contractual mechanism, the Operator will probably be able to resist the imposition by the Principal of the obligation to perform the Operator's changed duties. As a result, it is imperative that the Principal includes a suitable contractual mechanism in the O&M Agreement to cater for such changed circumstances.

Termination/step-in

If, during the period of the O&M Agreement, the Principal or the Operator defaults to the point where the other party seeks to terminate the O&M Agreement, the Lenders will insist on creating a suitable regime to ensure the continued operation of the facility to repay the Lenders from the proceeds of the offtake agreement.

For this reason, the provisions of the O&M Agreement should, in addition to the normal contractual terms setting out the grounds for and procedures to be employed in relation to termination of the O&M Agreement, contain additional provisions requirement the Operator to enter into an agreement with the Principal and the Lenders to give, first, temporary step-in rights and, if necessary, assignment rights to the Lenders.

Operator is also a project Sponsor

If the Operator is also a project Sponsor, it will be critical for the Lenders in a project-financed project, to ensure that the Operator cannot use its position as a project Sponsor to avoid obligations or obtain concessions under the O&M Agreement. This issue should be dealt with in the joint venture or shareholders' agreement between the project Sponsors.

In addition, in such circumstances consideration should be given to the most appropriate way to remunerate the Operator. For example, should the Operator be earning a profit, or should all profits be earned by the project?

Operator and construction Contractor are the same or related entities

In circumstances where the Operator and the construction Contractors are the same or related entities ultimately controlled by the same parent company, rather than a true 'arms-length' relation, the Principal should include a mechanism that prevents the Operator and construction Contractor from (i) relying on the delay or underperformance by the other to obtain relief from the Principal under their respective contracts and (ii) seeking to rely on the actions of the other as a defence to a claim by the Principal for delay or non-performance ('no relief and horizontal defences provisions').

These provisions can be included in the O&M Agreement itself (in which case back-to-back clauses should be included in the construction contract) or otherwise in a separate coordination or wrap agreement that sets out the coordination and interface obligations of the parties in relation to the project.



General

24 Key issues for offtake and construction interfaces

Investing in Energy Transition Projects
March 2023



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Introduction

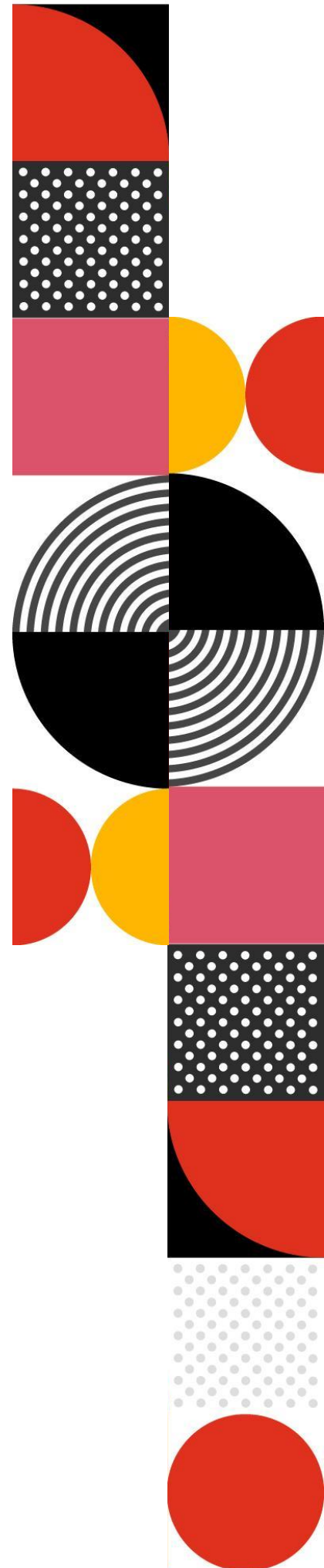
The offtake agreement is the agreement under which the Project Company generates revenue in order to meet its repayment obligations under the financing arrangements and produce profit for the equity investors.

The suite of construction-related documents, and primarily the Engineering, Procurement and Construction (**EPC**) contract for the design, supply, construction and commissioning of the facility for the project (referred to in this paper as the EPC Contract), have a significant ability to impact on the viability and long-term success of a project and are a key area of focus for the Lenders and investors in terms of bankability and project feasibility. If a single EPC Contract structure is not used, it is likely that the issues dealt with below will be more difficult to manage given the increased number of parties and the dilution of each party's responsibility.

This paper focuses on a number of hidden issues that must be considered in a review of the offtake agreement and the EPC Contract, namely:

- the access of the EPC Contractor to the grid or system to allow timely completion of construction, commissioning and testing (**Grid Access**)
- interfacing of testing regimes
- fuel specification requirements
- interface issues between the relevant government agencies and system operator and the EPC Contractor.

Not all these issues will be applicable to all projects. Therefore, they will be discussed in the context of a particular project type, e.g. power, liquefied natural gas (**LNG**), petrochemical, etc. Importantly, these issues are of equal, if not more, concern to Principals/Sponsors than they are to Lenders.



Obligation to provide Grid Access

This issue is of particular relevance to power projects; however, it may also apply, albeit in a different context, to oil and gas, LNG and desalination projects and other projects that require access to distribution infrastructure in order to generate revenue.

EPC Contracts provide for the handover of the facility to the Project Company and the offtake agreement (normally a power purchase agreement (**PPA**) or tolling agreement in a power context) will become effective once all testing has been successfully completed and certified. This raises the important issue of the EPC Contractor's Grid Access and the need for the EPC Contract to clearly define the obligations of the Project Company in providing Grid Access.

Lenders and investors must be able to avoid the situation where the Project Company's obligation to ensure Grid Access is uncertain. Uncertainty may result in protracted disputes with the EPC Contractor concerning the EPC Contractor's ability to place load onto the grid system (i.e., as necessary to undertake the commissioning and performance testing required to achieve practical completion) and to obtain extensions of time in situations where the EPC Contractor is delayed as a result of the failure or inability of the Project Company to provide that access.

Grid Access issues primarily arise at two levels:

- the obligation to ensure the grid connection infrastructure is in place
- the obligation to ensure the EPC Contractor is permitted to export power.

Typically, the Project Company bears the risk of the obligation to ensure the grid connection infrastructure is in place, since it is usually responsible for procuring the construction of that infrastructure. Issues that need to be considered include:

- What physical grid connection infrastructure is to be designed and constructed and how will that infrastructure interface with the EPC Contractor's works? Are the limits and points of connection clearly defined? Do any of those works have to be designed and constructed by specialist consultants and Contractors accredited by the offtaker or other system operator? Is the construction of these facilities covered by the PPA, concession agreement or any other contract? If so, are the rights and obligations of the Project Company dealt with in a consistent manner (i.e., to avoid a situation where the EPC Contractor causes the Project Company to be in breach of the PPA or to avoid a situation where the EPC Contractor is entitled to relief such as an extension of time or delays costs where the Project Company does not get corresponding relief under the PPA)?
- What is the timing for completion of the grid connection infrastructure – will it fit in with the project Programme and the timing under the EPC Contract? Is there a sufficient buffer between the date for completion of the grid connection infrastructure and the target date by which the Project Company must provide the EPC Contractor with access to those facilities?

With respect to the EPC Contractor's ability to export power, the EPC Contract needs to adequately deal with this risk and the parties respective obligations, including:

- What is the extent of the Grid Access obligation? Is it merely an obligation to ensure the infrastructure necessary for the export of power is in place or does it involve a guarantee that the grid will take all power the EPC Contractor wishes to produce? Are there restrictions under the PPA in terms of the Project Company's ability to export power to the grid that need to be reflected in the EPC Contract?
- What is the timing for the commencement of this obligation (i.e., the date for first synchronisation set out in the EPC Contract)? Does the obligation cease at the relevant target date of completion? If not, does its nature change after the date has passed?

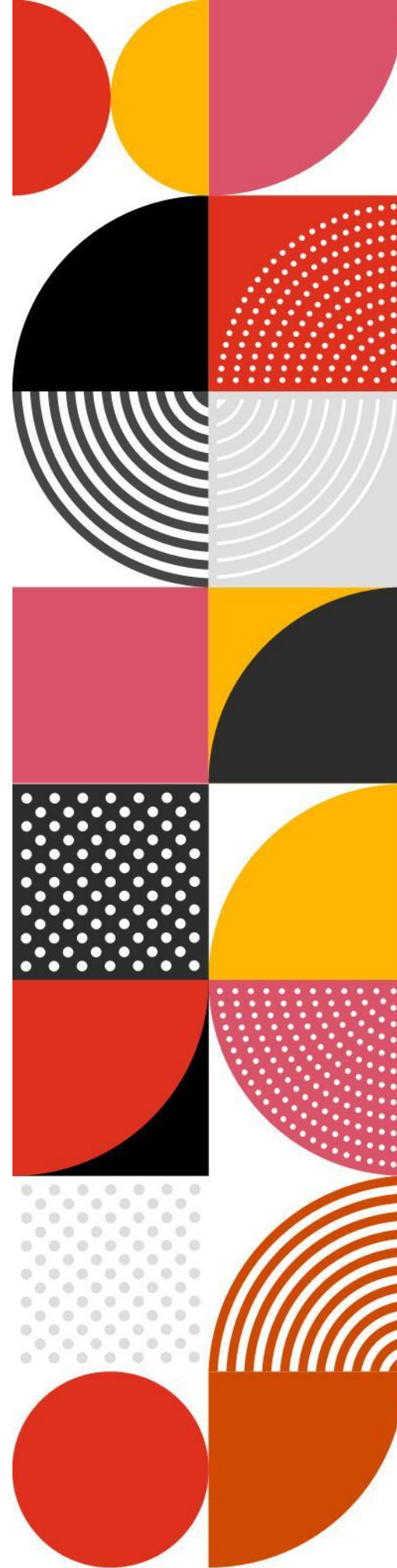




- What is the obligation of the Project Company to provide Grid Access in cases where the Contractor's works are late or the plant is unreliable – Is it merely a reasonableness obligation? Is the Project Company obliged to accelerate the completion of the grid connection infrastructure where the EPC Contractor anticipates early completion of its works?
- Is the grid (including both the existing infrastructure and the new grid connection infrastructure) robust enough to allow for full testing by the EPC Contractor – for example, the performance of full-load rejection testing?
- What is the impact of relevant national grid codes or legislation and their interaction with both the EPC Contract and the PPA?

Many EPC Contracts are silent on these matters or pose more questions than they actually answer. However, experience has taught us that Grid Access is a matter which must be resolved at the contract-formation stage and requires input from project management, technical and legal advisors, with experience in the relevant sector and regulatory framework.

In addition, given the Project Company's failure to provide Grid Access will often stem from restrictions imposed on it under the PPA, where it is feasible to do so, it would be prudent for the Project Company to back its obligations under the EPC Contract (usually to provide an extension of time and/or costs) with the PPA. This approach will not eliminate the risk associated with Grid Access issues but will make it more manageable and reduce the contingency/Sponsor support required by Lenders.



Interfacing of the testing regimes

This issue is relevant to most types of infrastructure projects, especially power and process plant projects.

The testing regime in EPC Contracts must mirror the requirements for testing and commencement under the offtake agreement. Mismatches can result in delays, lost revenue and liability for damages under the offtake agreement, all of which have the potential to reduce returns and cause disputes.

Testing requirements under both contracts need to satisfy the Project Company's requirements under the EPC Contract and the system operator/offtaker requirements under the offtake agreement. Relevant testing issues which need to be considered include:

- Are different tests required under the EPC Contract and the offtake agreement? If so, are the differences manageable for the Project Company or likely to cause significant disruption? Can the testing regimes be further streamlined?
- Is there consistency between the commissioning, testing and obtaining handover under the EPC Contract and commencement under the offtake agreement? Does the testing regime under the EPC Contract address the requirements of relevant national grid codes? It is imperative to ensure back-to-back testing under the offtake agreement and the EPC Contract, including notice periods and reporting obligations. This will result in smoother progress of the testing and better facilitate all necessary supervision and certification by the Project Company, the independent engineer under the PPA, the offtaker/system operator and/or the relevant authorities. Various certifications will also be required at the Lender level. Lenders do not want the process to be delayed by their own requirements for certification, however, the process may be held up if the Lenders are not satisfied that the facility meets the requirements of all of the various project documents. To avoid delay and disruption, it is important that the Lenders' engineer is acquainted with the details of the project and, in particular, any potential difficulties with the testing regime and any unique requirements under the relevant national grid codes or legislation. Therefore, potential problems must be identified early and resolved without impacting on testing, handover and operation. Consideration should also be given to streamlining the certification process by engaging a single independent certifier to perform the certifications required under the EPC Contract, the PPA and by the Lenders.

- Is the basis of the testing mirrored under both the EPC Contract and the offtake agreement? For example, on what basis are various environmental tests to be undertaken? Are they to be undertaken on a 'per train' basis or a 'plant output' basis?
- What measurement methodology is being used? Is the method for certifying plant capacity and the achievement of other performance guarantees specified in the EPC Contract consistent with the PPA? Are uniform testing conditions, correction factors and degradation assumptions applied under the relevant documents? Are references to local and international technical standards or guidelines to a particular edition or version?
- Are all tests necessary for the EPC Contractor to complete able to be practically performed given limitations imposed on the facility by third parties, including any restrictions imposed under environmental or other project approvals?
- Are the relevant specifications linked to current guidelines such as the World Bank environmental guidelines? Has consideration been given to changes that may occur to these guidelines? The EPC Contract represents a snapshot of the standards existing at the date that contract was signed. The actual construction of the facility may occur months or years from that date. Possible mismatches may occur if the guidelines have changed. Accordingly, it is important there is certainty as to which standard applies for both the offtake agreement and the EPC Contract – is it the standard at the time of entering the EPC Contract or is it the standard that applies at the time of testing? Is this issue dealt with uniformly throughout the project documentation?

The above issues raise the significant importance of the testing and performance guarantee schedules in the EPC Contract and the offtake agreement. The complexity, size and importance of various projects, and the impact that the testing and performance guarantee regimes can have on the bankability of a project and the Sponsors' return of equity, means the days where the technical schedules and specifications were prepared in isolation from the balance of the EPC Contract and other project documentation, and then attached at the last minute without being subject to a combined technical/legal/commercial review, are gone.

Fuel specification issues

This issue is particularly relevant to power projects, some oil and gas projects, LNG projects and certain process plant projects. It is discussed below in the context of a power project.

The nature of the fuel to be supplied to the EPC Contractor is another important issue. Where there is a tolling agreement, as opposed to a PPA, it is vitally important that an adequate review is undertaken at the EPC Contract level to ensure the fuel provided under the tolling agreement meets the requirements of the EPC Contract. In a gas plant or LNG project, if the project relies on gas from a new source, great care should be taken in making any representations under the EPC Contract as to the gas specification, which should be back-to-back with the specification in the tolling agreement or other fuel supply agreement.

Differing fuel specification requirements will result in cost claims and extension of time claims at the EPC Contract level. They can also impact on the EPC Contractor's ability to achieve the plant output performance guarantees and enable the EPC contractor to avoid paying corresponding performance liquidated damages that underpin the bankability of the EPC Contract. Fuel specification issues may be hidden away in the technical schedules and specifications. Accordingly, the technical schedules and specifications must be reviewed before being incorporated into the EPC Contract to ensure the fuel specification issues are dealt with appropriately.

In addition, where certain tests require specific types or quality of fuel, the review should confirm that arrangements are in place for that type of quality of fuel to be provided at the agreed times set out in the EPC Contract, e.g. high sulphur coal may be required to properly test flue gas desulphurisation equipment.

Day-to-day interface between the offtaker and the EPC Contractor

At a fundamental level, it is imperative the appropriate party corresponds with the relevant offtaker/system operator during construction on issues such as the provision of transmission facilities/fuel requirements/testing requirements and timing.

Whilst the EPC Contractor must be obliged to coordinate and interface its works with the offtaker/system Operator, the Project Company will need to ensure that the EPC Contract provides sufficient certainty that it, rather than the EPC Contractor, is the appropriate party to correspond with the offtaker/system operator. Otherwise the EPC Contractor may deal directly with the offtaker/system operator. The Project Company will always want to develop and nurture an ongoing and long-term relationship with the offtaker and ensure the EPC Contractor does not cause the Project Company to be in breach of the PPA. On the other hand, it is the EPC Contractor's prime objective to complete the project on time or earlier to maximise its profit. In many cases, the clash of these conflicting objectives does not allow for a smooth process. Again, the resolution of these issues and clear articulation of the parties' corresponding rights and obligations at the EPC Contract formation stage is imperative.

Conclusion

The above review provides a snapshot of various issues we have dealt with on a variety of infrastructure projects in the region. The failure of the Project Company and EPC Contractor to deal with these issues with certainty at the contract formation stage will only, in our experience, result in delay, cost, lost revenue and disputes. Accordingly, these issues must be recognised and dealt with appropriately in the project documentation.





General

25 Key issues for assignment and withholding consent

Investing in Energy Transition Projects
March 2023



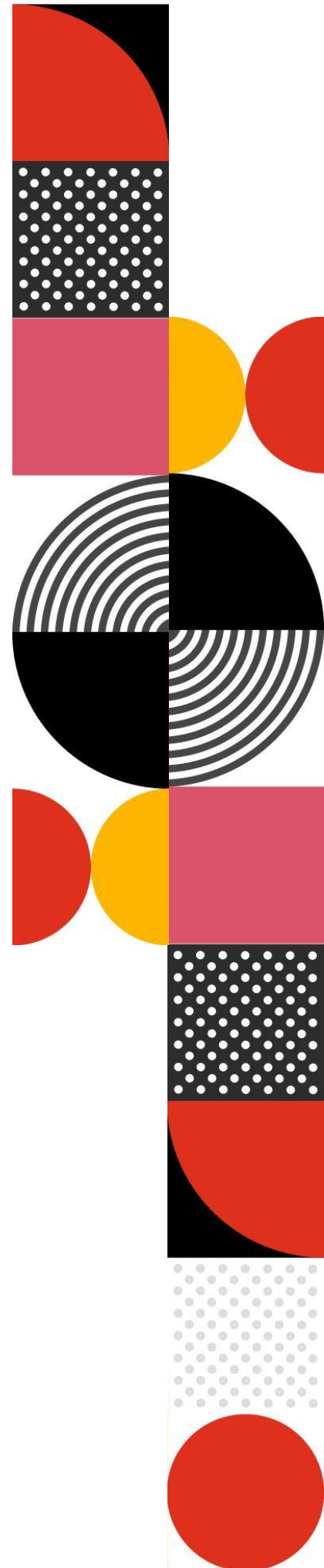
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Introduction and purpose

The right to assign contracts is a key legal and commercial issue.

The purpose of this paper is to provide an overview of:

- the legal principles relevant to determining '*reasonableness*' in the context of withholding consent to an assignment of contractual rights (for example, where such consent '*may not be unreasonably withheld*')
- the effect of purported assignments when consent is withheld or not obtained.



2

The short answer and key considerations

2.1 Key considerations for determining 'reasonableness'

'Reasonableness', in this context, is assessed by an objective standard and is given a broad and common sense meaning.¹ Simply put, the withholding must be 'objectively reasonable' in the particular circumstances, but the terms and proper construction of the relevant contract are paramount.²

Decisions to withhold consent should be based on factors 'relevant' to the contract. Acting in this manner facilitates a party's ability to demonstrate that their decision would equally have been reached by an objective and reasonable person.

Factors 'relevant' to the contract will differ in each case and heavily depend on the particular circumstances including the nature and object of the specific contract and the purpose of the clause prohibiting the 'unreasonable' withholding. Relevant factors may include any defaults in obligations under the contract,³ or the solvency or identity of a party (particularly in continuing contractual relations).⁴

While there is no obligation to explain or give reasons to support a decision to withhold consent, a court may interpret 'unreasonableness' from a lack of explanation (especially if reasons are requested by other contracting parties).⁵

A party's actions in withholding consent will generally be considered 'unreasonable' if the grounds relied upon to support the withholding are:

- extraneous or disassociated from the subject matter of the contract⁶
- materially inconsistent with any provision(s) of the contract⁷
- based on collateral or improper considerations.⁸

Facts not known to a party refusing consent, but existing at the time of refusal, may be used at a later time to support the 'reasonableness' of their decision to withhold.⁹ Equally, facts existing at the time consent was refused, but not actually or constructively known to the party refusing consent, may also be relied on to establish that a reason for the refusal was 'unreasonable'.¹⁰

The party alleging 'unreasonableness' has the onus of proof and must demonstrate that the withholding was objectively unreasonable.¹¹

2.2 Effect of purported assignments where consent is withheld or not obtained

A party may attempt to assign the benefits of a contract where consent has not been provided (for example,, where consent is sought and withheld or where it has not been sought at all). These purported assignments (for example, those in breach of express provisions of the contract) are generally ineffective.

There is little by way of authority directly on point, but the starting point will always be a question of construction as to what was objectively the intention of the parties in the given situation.

¹ *Re Idoport Pty Ltd (In Liq) (Receivers Appointed)* [2012] NSWSC 524 (**Idoport**), [50].

² *Cathedral Place Pty Ltd v Hyatt of Australia Ltd* [2003] VSC 385, [25]; *Idoport*, [52]; *St Barbara v Hockley No 2* [2013] WASC 358, [39].

³ *Idoport*, [85].

⁴ *Fulham Partners LLC v National Australia Bank Ltd* [2013] NSWCA 296 (**Fulham**), [90].

⁵ *Idoport*, [57].

⁶ *Fulham*, [44].

⁷ *EDWF Holdings 1 Pty Ltd v EDWF Holdings 2 Pty Ltd* (2010) 41 WAR 23; [2010] WASCA 78 (**EDWF**), [115].

⁸ *Ibid* [89], [242].

⁹ *Secured Income Real Estate (Australia) Ltd v St Martins Investments Pty Ltd* [1979] HCA 51; (1979) 144 CLR 596; 26 ALR 567 (**Secured Income**), 581-2.

¹⁰ *St Barbara Ltd v Hockley [No 2]* [2013] WASC 358, [158]-[182].

¹¹ *Fulham*, [59].

3

‘Reasonableness’ and withholding consent

The ‘*reasonableness*’ of withholding consent (relating to an assignment of contractual rights, or otherwise) is most often disputed in leasing contracts and other real property transactions. There has been some judicial support for extending those authorities to a wider commercial context. However, recent appellate authorities emphasise that the meaning of the phrase ‘*not to be unreasonably withheld*’, and those like it, will depend in each case on the particular contract and circumstance in question.

3.1 Consent and the common law right of assignment

Assignment is a process which brings about the change in ownership of contractual rights (contractual benefits), but not contractual obligations (contractual burdens).

At common law, a contracting party (the **assignor**) has the right to transfer contractual rights to a third party (the **assignee**), *without* the consent of other parties to the contract (the **obligor/s**) (except in rare situations where the rights are non-assignable, for example where they are personal). Restrictions on assignment are frequently included in contracts to exclude or limit this common law right. For instance, contracts often include a provision that parties may only assign their rights under the contract with the consent of other parties and regularly provide that such consent ‘*must not be unreasonably withheld*’.¹²

Where a party attempts to assign without consent, or without seeking consent, purported assignments are likely to be ineffective (see item 4 below).

3.2 Leading High Court authority on ‘reasonableness’ and withholding consent

The leading High Court authority considering ‘*reasonableness*’ and withholding of consent (albeit, not used here as a mechanism to limit common law assignment) is *Secured Income Real Estate (Australia) Ltd v St Martins Investments Pty Ltd*¹³ (**Secured Income**).

In *Secured Income*, a contract for the sale of land provided that all leases of the premises after the contract’s execution (prior to settlement) should be approved by the purchaser, but that approval was not to be ‘*capriciously or arbitrarily withheld*’. Mason J (with whom Gibbs, Stephen and Aickin JJ agreed):

- held that ‘*arbitrarily*’ connotes ‘*unreasonably*’ in the sense that what was done was done ‘*without reasonable cause*,’ and doubted whether ‘*capriciously*’ added anything further¹⁴
- on the issue of what constituted ‘*unreasonableness*’, adopted an earlier statement of Walsh J that ‘*the reason for refusal must be something affecting the subject matter of the contract which forms the relationship between the landlord and the tenant, and not something extraneous and dissociated from the subject matter of the contract.*’¹⁵

3.3 Secured Income principles extended to commercial contexts

In *Cathedral Place Pty Ltd v Hyatt of Australia Ltd*,¹⁶ Nettle J held that ‘*logic dictates*’ that the approach taken to consents to assignments of leases in cases such as *Secured Income* should be extended to a hotel manager’s consent to the assignment of the hotel Principal under a hotel management agreement.¹⁷ However, his Honour emphasised that the considerations that may be relevantly taken into account when reasonably withholding consent under a provision will *always* depend on the particular contract.¹⁸

This approach was endorsed in *EDWF Holdings 1 Pty Ltd v EDWF Holdings 2 Pty Ltd*¹⁹ (**EDWF**), which concerned a clause in a joint venture agreement and whether a joint venture participant had unreasonably withheld its consent to a change of control of another participant. Buss JA contrasted the nature of a joint venture transaction with that of a grantor/grantee of a right under a contract or a lessor/lessee relationship, which do not involve the common pursuit of a venture, and in which the fundamental rights and interests of the parties in respect of the subject matter of the transaction will usually be opposed.²⁰

¹² It is also possible for a court to imply a restriction on the exercise of the discretion to provide consent, provided it is not inconsistent with the remainder of the contract. Including a reference to ‘*absolute discretion*’ provides a basis for a party to claim that an implied term would be inconsistent.

¹³ [1979] HCA 51; (1979) 144 CLR 596; 26 ALR 567.

¹⁴ *Ibid* 578.

¹⁵ *Secured Income*, citing *Colvin v Bowen* (1958) 75 WN (NSW) 262, [264].

¹⁶ [2003] VSC 385.

¹⁷ *Ibid* [18].

¹⁸ *Ibid* [25].

¹⁹ [2010] WASCA 78.

²⁰ *EDWF*, [113]. The distinction in this context is discussed at some length by Bryson J in *Noranda Australia Ltd v Lachlan Resources NL* (1988) 14 NSWLR 1, [21].

His Honour (with whom Owen and Newnes JJA agreed) held that:

- it was 'essential to exercise caution in reviewing authorities decided in different contractual settings'²¹
- each case turns on its own contractual provisions and individual facts and circumstances (for example, 'the terms of the contract are paramount')²² and
- the proper construction of a particular contract will determine the permissible grounds on which consent may be refused.

His Honour further concluded, after considering the relevant clauses of the joint venture agreement that, in general, a party would be acting *unreasonably* in withholding its consent if the grounds for withholding:

- are not honestly held
- are extraneous or unrelated to the objects of the contract, or to rights, benefits or obligations of the affected party or other participants under the contract
- are not permissible under the contract, or are materially inconsistent with its provisions, properly construed
- on the basis of the facts and circumstances, objectively ascertained, as at the date on which consent was refused, are unreasonable.²³

*Re Idoport Pty Ltd (In Liquidation) (Receivers Appointed)*²⁴ (**Re Idoport**) concerned a clause in a consulting agreement which restricted Idoport Pty Ltd (**Idoport**) from encumbering its rights under the agreement without its lending bank's consent, whose consent should not be unreasonably withheld. Idoport sought to create charges over its contractual rights in favour of a third party and requested the bank's consent, which was refused. The charges then instituted proceedings against the bank. The New South Wales Supreme Court determined that the bank had acted reasonably in the circumstances, because its decision to withhold consent had been made on factors directly relevant to the contract.²⁵ On appeal, Basten JA (with whom Bergin CJ in Eq and Barrett JA agreed)²⁶ confirmed the first instance decision and determined that the bank's reasons for refusing consent were all concerned with the status, both legally and financially, of the proposed assignor and assignee. His Honour held that these reasons were legitimate grounds on which to reasonably withhold consent because they did not relate to matters extraneous to the agreement and were not collateral, extraneous or improper considerations.²⁷

While the court emphasised that the question of '*reasonableness*' must be determined by reference to the particular contract, the following principles were also useful in determining the '*reasonableness*' of the withholding. Namely, that:

- it is a question of fact whether the withholding is '*reasonable*' and the expression should be given a broad and common sense meaning²⁸
- the '*unreasonableness*' of the withholding is determined objectively having regard to all the circumstances of the case, including the reasons given (or not given) to support the withholding²⁹
- it is objectively unreasonable to withhold consent for the purpose of achieving an objective that is '*a collateral advantage outside the terms of the contract*'.³⁰

In *St Barbara v Hockley (No 2)*³¹ (**St Barbara**) (discussed at item 4.1 below), Beech J applied the approach outlined in *EDWF* above, but emphasised that the proper construction of the relevant contract was of '*central significance*' in determining whether the grounds for withholding consent relate to the pursuit of the objects of the contract (for example, and are reasonable), or whether they are extraneous (for example, and are unreasonable).³²

3.4 Prescribed instances of '*unreasonableness*'

In *Lockrey v Historic Houses Trust of New South Wales*³³ the NSW Court of Appeal gave effect to a consent provision that set out express examples in which consent could be deemed unreasonable.³⁴ In that case, the lessor refused to grant consent for an assignment of a lease and, because the situation was covered by the contract it was unnecessary for the Court to determine the '*reasonableness*' of the refusal.

This demonstrates that one way to effectively rule out any ambiguity surrounding '*reasonableness*' is to expressly prescribe circumstances or provide examples in the contract where conduct would be deemed '*unreasonable*'.

²¹ EDWF, [113].

²² Ibid.

²³ EDWF, [115].

²⁴ [2012] NSWSC 524.

²⁵ Ibid [85].

²⁶ See generally *Fulham Partners LLC v National Australia Bank Ltd* [2013] NSWCA 296.

²⁷ Ibid [89], [96]-[97].

²⁸ Idoport, [50].

²⁹ Idoport, [51].

³⁰ Idoport, [53].

³¹ [2013] WASC 358.

³² Ibid [39].

³³ (2012) 84 NSWLR 114.

³⁴ See also *Esso Australia Resources Pty Ltd v Southern Pacific Petroleum NL (Receivers and Managers Appointed)* [2004] VSC 477.



4

Effect of assignment where consent is withheld or not obtained

A party may attempt to assign the benefits of a contract where consent has not been provided, either because consent is sought and withheld, or where it has not been sought at all.

In this context, the validity of the purported assignments may be challenged by the obligor (for example, the party burdened by the benefit purportedly assigned). The better view is that these purported assignments are invalid and of no effect as between the obligor and the purported assignee, because until consent has been obtained the right remains incapable of assignment. The consent operates as a condition precedent to any assignment. In these instances, the assignee may have a claim for breach of contract against the purported assignor for failing to deliver what was promised. The assignor may also potentially sue the obligor for breach of an express obligation to not unreasonably withhold consent, if that is the circumstance.

It is conceivable that in a particular case consent was intended to operate as a condition subsequent such that the assignment was effective, but liable to be discharged if consent is not forthcoming. However, there would need to be sound commercial reasons for the assignment to operate in such a manner and for a court to accept this construction.

There is little by way of authority directly on point. As such, the starting point will always be a question of construction as to what was objectively the intention of the parties.

4.1 Purported assignments where consent is ‘unreasonably’ withheld

Beech J’s decision in *St Barbara* demonstrates that a party who has ‘unreasonably’ withheld consent to an assignment of contractual rights may, if the court sees fit, be compelled to do all things necessary for the transfer to proceed.³⁶ However, without court intervention, the purported assignment is ineffective (see item 4.3 below).

Background

St Barbara announced that it would be selling certain assets to Hanking Gold Mining Pty Ltd (**Hanking Gold**). Those assets included a mining lease (**Tenement**) held by St Barbara, which was the subject of a Sale of Mining Lease Agreement (**Agreement**) between St Barbara and Desmond Hockley. The Agreement provided that 25% of the gold mined by St Barbara from Clough Lode (the area where the Tenement was located), was to be delivered to Mr Hockley with the balance belonging to St Barbara. Mr Hockley’s share of gold was also subject to the deduction of 25% of the mining costs in mining the Clough Lode. Clause 14 of the Agreement provided that:

‘Either Party may assign his entire interest in the mining lease and his rights under this deed to a third party, PROVIDED THAT such third party shall agree in a deed with the other Party to be bound by the terms of this deed in all respects and the assigning Party first gets the written consent of the other Party (which shall not be unreasonably withheld).’

St Barbara and Mr Hockley were also parties to an agreement entitled Supplemental Agreement to Sale Agreement (**Supplemental Agreement**), which imposed mining and reporting obligations on St Barbara. By letter of 10 January 2013, St Barbara sought Mr Hockley’s consent to the proposed assignment of the Tenement and rights under the Agreement to Hanking Gold. Mr Hockley declined to provide his consent to the assignment and provided some of his reasons in a letter to St Barbara dated 20 January 2013. On 5 February 2013, Mr Hockley wrote again to St Barbara and set out reasons for his refusal to consent. On 30 April 2013, St Barbara commenced proceedings against Mr Hockley seeking, among other things, a declaration that Mr Hockley had unreasonably withheld consent to the assignment to Hanking Gold.

Decision and principles

As mentioned above, Justice Beech applied the approach outlined in *EDWF* (discussed above), but emphasised that the proper construction of the relevant contract was of ‘central significance’ in determining whether the grounds for withholding consent relate to the pursuit of the objects of the contract or whether they are extraneous.³⁷

³⁵ *St Barbara v Hockley No 2* [2013] WASC 358 (**St Barbara**).

³⁶ *Ibid* [270].

³⁷ *Ibid* [39].

Justice Beech also considered the question of whether facts existing at the time consent was refused, but not actually or constructively known to the party refusing consent, could be relied on to establish that a reason for the refusal was *'unreasonable'*. This question had not been dealt with directly by any of the cases to date. The converse proposition that facts not known to the party refusing consent, but existing at the time of refusal, could be used to support the *'reasonableness'* of the decision was established in *Secured Income*. Justice Beech noted that the exercise of the contractual power to withhold consent was tested by an objective criteria of unreasonableness which does not differentiate between whether the facts can be used to support or weaken the *'reasonableness'* of the decision. This meant that St Barbara could rely on facts not actually or constructively known to Mr Hockley to support the unreasonableness of the decision.³⁸

Mr Hockley, in effect, relied on five pleaded reasons for the refusal which related to aspects of Hanking Gold (including its capacity to perform obligations under the agreements to be assigned), mining costs, any mining Hanking Gold might do of the Clough Lode and existing disputes between St Barbara and Mr Hockley. Beech J approached the question of the *'reasonableness'* of withholding consent by first construing the Agreement and Supplemental Agreement so that legitimate or extraneous considerations could be identified.³⁹ Each of Mr Hockley's pleaded reasons for refusal were then considered by reference to the facts available at the time consent was refused.

Justice Beech ultimately found that none of Mr Hockley's pleaded reasons for refusal to consent to the assignment supported a reasonable withholding of consent. His Honour:

- made a declaration that Mr Hockley had *unreasonably* withheld his consent to the assignment to Hanking Gold
- ordered Mr Hockley to do all things necessary for the transfer of the Tenement to Hanking Gold.

4.2 Failure to seek consent is lack of consent and an invalid assignment

As a matter of logic, if consent has not been sought, then there is no operational consent. It follows that any purported assignment should be treated the same way as if consent had been (reasonably) refused.

This approach appears to have been accepted by Fryberg J in *Ace Property Holdings P/L v Australian Postal Corp*,⁴⁰ where his Honour stated (citing *Hendry v Chartsearch*) that: '...consent cannot be said to have been withheld unless and until it has been asked for. It is no answer that no reasonable objection could have been made if consent had been sought.'⁴¹

4.3 Legal effect of prohibition on assignment more generally

Prohibitions on assignment can either be drafted as promises (for example, *'agreement not to assign'*) or as restrictions (for example, *'no entitlement to assign'*). There is a doctrinal difference between these in the sense that a mere promise not to assign should result in the assignment being effective, but giving rise to a right to damages. However, it would need to be clear that this was the intention of the parties.

Generally, even where the language of promise is used courts construe the clause as a true prohibition on the basis that the parties intended such an operation when incorporating the provision. More importantly, and as discussion of the *Chester* decision (discussed below) suggests, even where a court considers that parties did intend to include a mere promise not to assign, this will not result in the court upholding the assignment because to do so would involve them enforcing one contract (to assign) that is in breach of another contract (not to assign).

Generally speaking, a purported assignment of a contractual right in breach of a provision of the contract prohibiting assignment is ineffective. In *Linden Gardens Trust Ltd v Lenesta Sludge Disposals Ltd*⁴² (**Linden Gardens**), Lord Browne-Wilkinson (with whom the other Law Lords agreed) said:

*'[A] prohibition on assignment normally only invalidates the assignment as against the other party to the contract so as to prevent the transfer of the chose in action: in the absence of the clearest words it cannot operate to invalidate the contract as between the assignor and the assignee and even then it may be ineffective on the grounds of public policy...[T]he existing authorities establish that an attempted assignment of contractual rights in breach of a contractual prohibition is ineffective to transfer such contractual rights...If the law were otherwise, it would defeat the legitimate commercial reason for inserting the contractual prohibition, viz to ensure that the original parties to the contract are not brought into direct contractual relations with third parties.'*⁴³

There is a view that in this case Lord Browne-Wilkinson only intended to say that the prohibition merely prevented the obligor having to account to the assignee. That is, the prohibition characterised the obligation to perform rather than the right to assign. It would follow that the right to assign remains assignable in equity. Despite this, the weight of authority has treated the judgment as recognising that the parties can, by incorporating a prohibition of assignment, rob the contractual rights in question of their characteristic of assignability.

³⁸ Ibid [39]-[44].

³⁹ Ibid [44]-[46].

⁴⁰ *Ace Property Holdings P/L v Australian Postal Corp* [2010] QCA 55, at [188].

⁴¹ See also *Owners of Strata Plan 5290 v CGS & Co Pty Ltd* [2011] NSWCA 168, (2011) 281 ALR 575.

⁴² *Linden Gardens Trust Ltd v Lenesta Sludge Disposals Ltd* [1994] 1 AC 85.

⁴³ Ibid [108].

For example *Hendry v Chartsearch Ltd*⁴⁴ (**Hendry**) concerned a clause that stated that the relevant party was not 'entitled' to assign (for example, a prohibition). Millett LJ said that a clause must take effect according to its tenor. He thought the assignment was effective as between the assignor and assignee, but that it was ineffective to create a breach of contract between the assignor and obligor (that is, its language did not incorporate a promise not to assign that would have been breached upon the attempted assignment). As between the assignor and the obligor it was simply without effect.⁴⁵

Earlier in *R v Chester and North Wales Legal Aid Area Office (No 12)*,⁴⁶ a case involving a prohibition in the form that the relevant party 'shall not assign' (for example, a promise not to assign), Millett LJ concluded that the prohibition prevented equitable assignments, and said that 'equity will not enforce the performance of an obligation [that is, a promise to assign] which constitutes a breach of a prior contract with a third party [that is, the obligor]'.⁴⁷ Millett LJ recognised the distinction between a promise not to assign and a clause that negated any power to assign. In *Hendry*, he noted that a prohibition need not take the form of a covenant not to assign or reserve a power to treat an assignment without consent as a repudiatory breach of contract. It was sufficient, he thought, if the clause was in a form that disentitled a party from assigning. It appears his view was that any form of language would render any assignment ineffective.⁴⁸

Australian authority appears to follow the English approach.

In *Re Idoport*⁴⁹ (discussed above), Ball J held that generally, a purported assignment of a contractual right in breach of a provision of the contract prohibiting assignment is ineffective. His Honour cited Lord Browne-Wilkinson in *Linden Gardens* holding that it is necessary

that such assignments be rendered ineffective because otherwise 'it would defeat the legitimate commercial reason for inserting the contractual prohibition...[being] to ensure that the original parties to the contract are not brought into direct contractual relations with third parties.'

Even if the prohibition is subject to consent, which in turn is expressed to not be unreasonably withheld, the result appears to be the same at present. If the obligor is found to have 'unreasonably' withheld consent, the purported assignment is still not effective (although, the withholding party may be compelled, should the court see fit, to do all that is necessary for the transfer to proceed).⁵⁰

In *Fulham Partners LLC v National Australia Bank Ltd* (the *Re Idoport* appeal),⁵¹ Basten JA observed that the appellant's pleadings presumed that an unreasonable withholding of consent was equivalent to a grant of consent, although this argument was not pursued at trial or on appeal. Despite this, his Honour rejected this argument and instead approved *Linden Gardens*. Practically, however, it would appear to be open to a party to seek specific performance of the contract and require the obligor to provide consent to the assignment.⁵²

For the reasons specified above, clients need to be aware of the uncertainty that can arise in relation to prohibitions on assignment and consider expressly providing for the consequences of an attempt to assign in the face of a clause restricting or prohibiting such right. For example, parties can expressly agree that any attempt to assign in breach of the clause has no effect or amounts to a repudiatory breach of the agreement.

5 Final notes

A party faced with the task of obtaining consent from another party in similar circumstances now has the benefit of guidance and an awareness of common issues they could encounter from the decisions outlined above.

EDWF, Re Idoport and *St Barbara v Hockley [No 2]* all emphasise that a proper construction of the relevant contract is necessary to identify whether the grounds for withholding consent are legitimate and not extraneous to the contract's objects. The question of reasonableness is an objective one based on all of the facts and circumstances existing at the time of the decision, whether known to the party refusing consent or not, and can be relied on to support the reasonableness or unreasonableness of the decision.

⁴⁴ [1998] C.L.C. 1382; EWCA Civ 1276, *The Times*, 16 September 1998; cited in *Chitty on Contract*, [19-044].

⁴⁵ See also *Freakley v Centre Reinsurance International Co* [2005] 2 BCLC 530, [540].

⁴⁶ [1998] 1 WLR 1496.

⁴⁷ *Ibid* [1501]. See also *Australian Olympic Committee Inc v The Big Fights Inc* [1999] FCA 1042, [119–20]; *Australian Rugby Union Ltd v Hospitality Group Pty Ltd* (2000) 173 ALR 702, 735 (affirmed (2001) FCR 157). See further *New Zealand Payroll Software Systems Ltd v Advanced Management System Ltd* [2003] 3 NZLR 1, [7], suggesting that a purported assignment in the face of a prohibition was a breach of contract and the only question was whether it should be compensated in damages or whether it should simply be held that the assignment never occurred. General principle dictates if it constitutes a breach of contract it must give rise to a right to damages.

⁴⁸ Tolhurst, G.J., 2006. *The Assignment of Contractual Rights*. London: Hart Publishing, pp 249-261.

⁴⁹ [2012] NSWSC 524.

⁵⁰ *St Barbara*, [270].

⁵¹ [2013] NSWCA 296.

⁵² If there was no basis upon which the obligor could have 'reasonably' withheld consent, there is weak authority that the assignment may be effective: *Hendry v Chartsearch Ltd* [1998] C.L.C. 1382; EWCA Civ 1276, *The Times*, 16 September 1998, per Evans LJ (in the minority). However, the issue has not been determined by Australian courts. See generally discussion in GJ Tolhurst, *The Assignment of Contractual Rights*, Hart Publishing 2006, p 249-261.



General

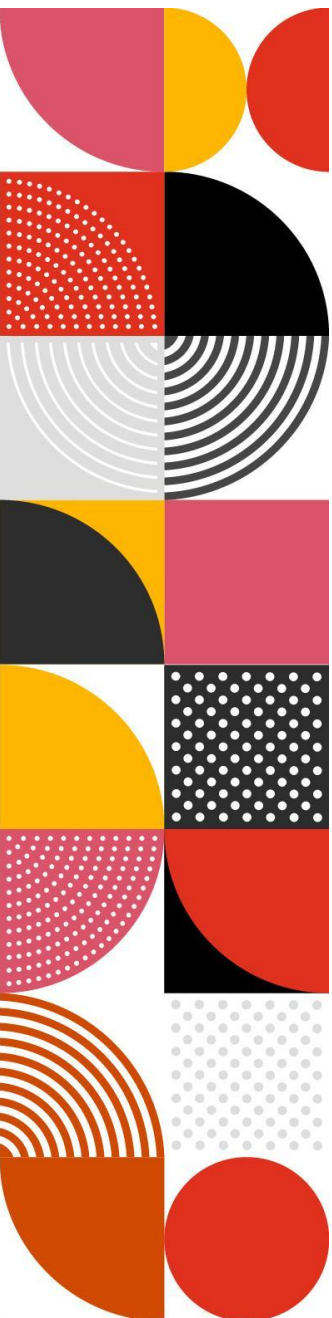
26 Key issues for exercising discretions

Investing in Energy Transition Projects
March 2023



Introduction

Infrastructure contracts sometimes give Principals and their representatives unilateral discretions. The way in which these discretions are exercised may have unintended consequences. Set out below are some of the issues you need to be aware of when drafting such discretions, together with suggested ways of avoiding unintended consequences.



Contractual discretions generally

Many infrastructure contracts give one party (usually the Principal) discretions to make decisions or exercise certain contractual rights. Such discretions are often linked to circumstances such as the approval of work, personnel or subcontractors, and the granting of extensions of time (in circumstances where the Contractor has not claimed an extension of time).

It is important to understand whether there are any limitations on the exercise of such discretions.

Principal

From a Principal's perspective, it is important to know whether you are limited in how you exercise a discretion, in order to avoid any challenge by the Contractor about the way in which you exercise a particular discretion.

Contractors

From a Contractor's perspective, it is important to know whether agreeing to give the Principal a contractual discretion may lead to the unrestricted exercise of that discretion, to your detriment.

Implied ‘fetters’ on the exercise of contractual discretions

Courts in Australia have shown an increasing willingness to imply terms of good faith and reasonableness into commercial contracts. However it is uncertain whether obligations of good faith and reasonableness are to be implied into commercial contracts generally. Despite this uncertainty, it seems that, in the absence of clear words to the contrary in the contract, courts will often be keen to impose some fetter or restriction on the way in which discretions are exercised (particularly where the discretion is wider than is necessary to protect a party’s legitimate interests).

Cases in both Australia and the UK have held that contractual discretions must not be exercised unreasonably, arbitrarily, capriciously, dishonestly or for an improper purpose.

The potential uncertainty that this creates (particularly for Principals, since it is Principals who primarily have the benefit of such discretions) often prompts Principals to try to avoid any restriction being imposed on the way in which a unilateral discretion is exercised.

Case law

NSW courts have generally held that an obligation for parties to act in good faith can be implied in all commercial contracts. On the other hand, Victorian courts have rejected the notion that good faith should be indiscriminately implied to override any express provisions of power. However, Victorian courts have not completely overruled the need for good faith in certain commercial situations, especially where balance of power heavily favours one party.

Overall, good faith will remain an important consideration for all Australian courts when determining commercial dealings. Principals should not underestimate the courts’ ability to fetter an express discretionary power if Principals choose to exercise that power ‘dishonestly’ or ‘unconscionably’. As set out below, the defining factor for finding good faith will likely ride on ‘vulnerability’ and the ‘presumed intentions’ of the parties in that situation.

NSW

The NSW Court of Appeal has held in a series of decisions that as a matter of law it is appropriate for good faith to be implied into commercial contracts.

In the case of *Macquarie International Health Committee Pty Ltd v Sydney Local Health District* [2010] NSWCA 268, the contract gave the respondent an ‘absolute and unfettered discretion’ to set a new timetable.

Notwithstanding these clear words, the NSW Court of Appeal held that this discretion was still subject to an express, contractual obligation of good faith (even though the obligation of good faith was stated to be ‘without limiting the generality of any other provision of this deed’).

A subsequent decision of the New South Wales Court of Appeal *Bundanoon Sandstone Pty Ltd v Cenric Group Pty Ltd* [2019] NSWCA 87 held that a Principal under a construction contract who issues a ‘show cause’ notice in accordance with a termination regime must act in good faith in considering the Contractor’s response. In circumstances where a Principal had a closed mind and was not interested in the content of the response, the Principal’s subsequent termination of the contract constituted a wrongful repudiation. The NSW Court of Appeal noted that the Principal’s real motive in initiating the show cause process was to deprive the Contractor of a specific economic benefit and take that benefit for itself.

Victoria

On the other hand, Victorian courts have been reluctant in finding any implied good faith that can substitute for express provisions of discretionary powers in commercial contracts.

The Supreme Court of Victoria Court of Appeal in *Esso Australia Resources Pty Ltd v Southern Pacific Petroleum* [2005] VSCA 228 rejected the proposition that an overarching duty of good faith should indiscriminately be applied to commercial contracts. Chief Justice Warren cited notions of ‘judicial reticence’ and ‘vulnerability’ in determining whether good faith should be implied in individual contracts:

‘The interests of certainty in contractual activity should be interfered with only when the relationship between the parties is unbalanced and one party is at a substantial disadvantage or is particularly vulnerable in the prevailing context. Where commercial leviathans are contractually engaged, it is difficult to see that a duty of good faith will arise, leaving aside duties that might arise in a fiduciary relationship.’

Justice Buchanan echoed the sentiment of ‘vulnerability’:

‘I am reluctant to conclude that commercial contracts are a class of contracts carrying an implied term of good faith as a legal incident, so that an obligation of good faith applies indiscriminately to all the rights and power conferred by a commercial contract. It may, however, be appropriate in a particular case to import such an obligation to protect a vulnerable party from exploitative conduct which subverts the original purpose for which the contract was made.’

In the case of *David A Harris Pty Ltd v Amp Financial Planning Pty Ltd* [2019] VSC 24, the Supreme Court of Victoria considered the question of whether a contract containing an express right to terminate would be fettered by an implied term of good faith in exercising that right. The Court found that there was no implied term of good faith for three reasons:

1. there is no generally accepted term implied in law that parties must act in good faith in the performance of their contract, leaving the financial planner to argue that such a term was implied in fact
2. the implied term argued for by the financial planner could not be implied, in that it was not so obvious that it goes without saying, necessary to give business efficacy to the contract, and capable of clear expression
3. the implied term argued for was inconsistent with the comprehensive and carefully articulated regime established by the parties to regulate their termination rights.

Federal Court

The Full Federal Court in *Virk Pty Ltd (in liq) v YUM! Restaurants Australia Pty Ltd* [2017] FCAFC 190 identified good faith in terms of conduct that can be deemed to be in bad faith. It specified that conduct that is:

- capricious
- dishonest
- unconscionable
- arbitrary
- the product of a motive which was antithetical to the object of the contractual power

will be in bad faith.



When will the unrestricted exercise of a discretion be permitted?

Courts will assess the purpose for which a party is given a discretion under a contract according to the particular context, and the language of the contract. In addition, courts are generally unwilling to ‘re-write’ the agreement of parties where the parties have been dealing at arm’s length, and have willingly entered into the agreement.

Therefore, any implied restriction on the exercise of a contractual discretion can be avoided if it is clear from the language and nature of the contract that the parties intended that the discretion was to be exercised without restriction. The type of language required to preclude any such restriction need only be relatively simple.

How can Principals avoid a restriction on the exercise of contractual discretions?

Unfortunately, the party exercising a discretion is unlikely to know whether exercising the discretion in a particular manner, or in particular circumstances, is unreasonable or not for a proper purpose until the other party to the contract challenges it. In addition, the party having the benefit of a discretion may not want to have to turn its attention to issues of reasonableness or proper purpose 'in the heat of the moment'. A court will never condone dishonesty or 'capricious or arbitrary' exercise of a power.

Principals should normally seek to avoid these potential uncertainties by including clear language in the contract precluding the imposition of any restriction on the exercise of a discretion. An example of such language is to use the words: 'absolute and unfettered discretion'.

Principals may also want to include a general clause in the contract seeking to exclude the implication of obligations of reasonableness and good faith generally. An example of such a provision is as follows:

Except where it is expressly stated that a party or another person must act in good faith or reasonably, in exercising a right, power or function under this Contract, the party or person may decide whether and in what manner it does so in its own discretion and is under no obligation to consider the interests of any other person or party. To the full extent permitted by law the parties exclude any implied terms of good faith or reasonableness.

How can Contractors ensure that discretions must be exercised reasonably?

Obviously, the existence of absolute and unrestricted discretions in a contract may have a significant impact on the position of the other party to the contract. Contractors should therefore try to include in the contract provisions requiring the Principal to exercise all discretions reasonably and in good faith. This can be achieved using a provision such as:

The Principal and the Principal's representative must act reasonably and in good faith in determining any matter, or exercising any discretion or contractual right or power, under or in connection with the Contract.

Conclusion

All parties to a contract need to consider the implications of unilateral discretions within their contracts and be mindful of the wording of such discretions. For more information on the subject of discretions and the restriction of these discretions within contracts, contact PwC Legal.



General

27 Key issues for modern slavery and anti-corruption

Investing in Energy Transition Projects
March 2023



Modern slavery

'Modern slavery' is a term used to describe serious exploitation. It describes situations where offenders use coercion, threats, or deception to exploit victims and undermine their freedom. Practices that constitute modern slavery can include:

- human trafficking
- slavery
- servitude
- forced labour
- debt bondage
- forced marriage
- serious and exploitative forms of child labour.

It does not include practices like substandard working conditions or underpayment of workers.

Modern slavery reporting requirements in Australia

Entities have a responsibility to respect human rights in their operations and supply chains, as outlined in the *United Nations Guiding Principles on Business and Human Rights*. This includes taking steps to assess and address modern slavery risks.

On 1 January 2019, the *Modern Slavery Act 2018* (Cth) (**Commonwealth Act**) commenced. Entities need to report under the Commonwealth Act if they are an Australian entity or carry on business in Australia and have a minimum annual consolidated revenue of AUD\$100 million. Reporting entities (which includes the Commonwealth Government) must prepare annual modern slavery statements.

In 2018, the *Modern Slavery Act 2018* (NSW) (**NSW Act**) was passed by the NSW Parliament and parts of the NSW Act commenced on 1 January 2022. On 14 October 2021, the NSW Government introduced the *Modern Slavery Amendment Bill 2021* (NSW) (**MSA Bill**) before Parliament. The MSA Bill repeals the duplicative reporting requirements from the NSW Act. This means that NSW entities with a consolidated revenue of between AUD\$50-AUD\$100 million per annum will no longer be required to prepare a modern slavery statement.

What does reporting entail?

Reporting obligations require entities to assess the risk of modern slavery in their operations and supply chains (as well as those of its owned and controlled entities) and to report on the steps it has taken to respond to the risks identified.

Unlike other jurisdictions, the reporting criteria in Australia are mandatory. Reporting entities must have a reasonable basis for any opinions expressed in their modern slavery statement, so it is important that reporting entities take the time to assess their risk. The reporting criteria are as follows:

1. the identity of the reporting entity
2. the structure, operations and supply chains of the reporting entity
3. the risks of modern slavery practices in the operations and supply chains of the reporting entity, and any entities that the reporting entity owns or controls
4. the actions taken by the reporting entity and any entity that the reporting entity owns or controls, to assess and address those risks
5. how the reporting entity assesses the effectiveness of such actions
6. the process of consultation with any entities the reporting entity owns or controls or is issuing a joint modern slavery statement with
7. any other information that the reporting entity, or the entity giving the statement, considers relevant.

Businesses must describe the risk of modern slavery and the actions taken in the reporting year (not in previous years). Joint statements are permitted for corporate groups, but all reporting entities need to be consulted to prepare the statement.

How and when do entities report?

An entity must submit its modern slavery statement within six months of the end of the financial year of that entity.

Reporting entities must provide their approved modern slavery statement to the Australian Border Force (**ABF**) for publication on an online public register.

Enforcement

Currently, the Commonwealth Act does not contain any offence or civil penalties for non-compliance. If an entity fails to submit a statement, or submits a non-compliant statement, the Minister can issue requests for explanation or remedial action and can 'name and shame' entities which do not comply with these requests.

COVID-19 and modern slavery reporting

The ABF encourages entities to consider how the impacts of COVID-19 may increase the vulnerability of workers in their global operations and supply chains to modern slavery, including in Australia. ABF has highlighted that COVID-19 could have the following impacts on businesses, thereby increasing the risk of modern slavery:¹

- factory shutdowns and order cancellations
- workforce reductions
- sudden changes to supply chain structures.

It is important to note the following circumstances that may put workers at risk of modern slavery:²

- loss of income or fear of loss of income
- low awareness of workplace rights
- requirements to work excessive overtime to cover capacity gaps
- increased demand due to supply chain shortages
- inability to safely return to home countries.

Key steps entities can take to protect and support workers in their operations and supply chains may include:³

- maintaining supplier relationships and fostering open communication with suppliers about COVID-19 risks
- collaborating with suppliers, workers, business peers, investors, civil society and peak bodies to identify best-practice approaches to protect and support vulnerable workers in global operations and supply chains
- reviewing key international resources and implementing, where applicable, guidance to support decent work in supply chains.

Reporting entities should review their supply chains and operations to comply with the reporting obligations under the Commonwealth Act and consider specific actions that can be taken to manage risks identified.

If an entity is unable to provide detailed responses to some criteria in its statement due to the impact of COVID-19 (for example, due to an inability to undertake planned modern slavery assessment activities, having limited capacity to prepare statements due to staff shortages, or having experienced significant changes to their supply chains), then the entity should clearly articulate the relevant circumstances in its modern slavery statement to demonstrate how COVID-19 has impacted its ability to assess and mitigate modern slavery risks. Entities should still address the mandatory reporting criteria and use the opportunity to commit to goals for the following reporting period. Goals demonstrate commitment if the last year has proved challenging.

Three-year review of the Commonwealth Act

Section 24 of the Commonwealth Act requires that a review occur every three years to review, amongst other things, the operation of the Commonwealth Act and compliance with it. Accordingly, on 31 March 2022, the Australian Government formally commenced a statutory review covering the first three years since commencement, which will culminate with a report to be tabled in Parliament.

As part of this review, on 22 August 2022, the Australian Government released an Issues Paper. The Government is seeking submissions and comments from interested stakeholders in response to the Issues Paper and is particularly interested in the views of reporting entities. Once consultation closes, submissions will be published on the Australian Government website.

Reporting entities should be mindful of any amendments that may be implemented into the Commonwealth Act as a result of the review. This could include matters raised in the Issues Paper, such as changes to reporting obligations or the introduction of enforcement mechanisms like civil penalties.



¹ Australian Government Department of Home Affairs, 'Modern Slavery Act: Information for reporting entities about the impacts of coronavirus', Criminal justice (web page) <<https://www.homeaffairs.gov.au/about-us/our-portfolios/criminal-justice/people-smuggling-human-trafficking/modern-slavery-act-coronavirus>>.

² Ibid.

³ Ibid.

Anti-bribery and corruption

It is important for businesses, government organisations and other entities to be mindful of the requirements for compliance with anti-bribery and corruption laws. The effects of globalisation have led to increased regulatory co-operation across international borders and it is critical for entities operating globally to understand their obligations both domestically and internationally. Australian anti-bribery and corruption laws are similar to those in the UK and the US and it is possible to be held liable in multiple jurisdictions for the same conduct.

Australian anti-bribery legislation

Australia is a party to the international OECD Anti-Bribery Convention, which guides its member states on laws dealing with transnational bribery. As a party to this Convention, Australia must regularly submit progress reports. Australia has also implemented the *OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions* by enacting the relevant anti-bribery and corruption provisions in the *Criminal Code Act 1995* (Cth) (**Criminal Code**).

Each Australian State and Territory has legislation in place that criminalises bribery of both public officials and private individuals. Under the Criminal Code, it is a criminal offence to bribe Commonwealth public officials.

It is an offence to bribe a foreign official under the Criminal Code. The offence consists of providing or offering to someone (directly or indirectly) a benefit that is not legitimately due to that person with the intention of influencing a foreign public official in the exercise of their duties in order to obtain or retain business or a business advantage. The Criminal Code defines 'benefit' broadly as any advantage and it is not limited to money or property. For this offence to be committed, a relevant connection with Australia must be established.

State commissions against corruption

All Australian States have established statutory bodies or commissions tasked with investigating and reporting on corruption within government. As examples, the Victorian Independent Broad-based Anti-corruption Commission and the NSW Independent Commission against Corruption have conducted various high-profile investigations into corruption allegations in recent years. The anti-corruption commissions have strong coercive powers to investigate corruption. For some commissions, hearings and reports are generally public. Investigations may also lead to referrals for criminal prosecution.

Corporate liability

Companies may be held criminally liable for corrupt actions undertaken by their employees, officers and agents. For example, under the Criminal Code, a corporation will be held criminally liable for bribery of a foreign official where:

- the conduct has been committed by an employee, officer or agent of the corporation
- that person was acting within the actual or apparent scope of their authority
- the corporation expressly, tacitly or impliedly authorised or permitted the conduct.





General

28 Monetising utility solutions at master planned community projects

Investing in Energy Transition Projects
March 2023



pwc

1

Options for a Developer to participate and monetise

1.1 Executive summary

There are a number of options available to a Developer of master planned community projects in terms of the development and operation and 'corresponding monetisation of a district cooling utility and other utilities. These are set out in detail in this Section 1 and also in Sections 2, 3, 4 and 5 of this briefing paper. Note we have also benchmarked the corporate, financial and contractual structuring of district cooling on master planned community projects on an international basis. The options available include:

- a concession fee, which could be structured as a lease payment for use of the land or in other ways and factored into end-user payments
- a structure that allows a Developer to realise the spread between the cost of production and the market rate for various products and services
- Developer equity participation in the concession company itself, through which it could receive dividend payments and other forms of return on equity including subsequent divestments
- not having a concession at all and proceeding on a more traditional basis with a Design, Build and Operate (DBO) or a split Engineer, Procure and Construct (EPC) and operating arrangement.

In particular, the third option could be considered given the increasing appetite of international and domestic superannuation/pension and infrastructure funds to invest in infrastructure assets (on a greenfield or a brownfield basis) which meet their following investment criteria:

- monopoly asset
- guaranteed revenue stream
- low technology risk.

The above criteria also applies to the banks providing project financing if the district cooling utility is developed on a concession basis and requires off-balance sheet financing and has strong counterparties.

In addition, industry participants particularly in the operation phase (which includes billing and collection) actively seek opportunities to participate in Developer equity in the concession company.

Discussion point: The above depends on key commercial considerations including:

- level of control required over the construction and operation of the asset/willingness to transfer risk to another party (including ensuring quality control and avoiding reputational damage)
- use of capital and the applicability of off-balance sheet financing
- potential divestment or partial divestment of the asset or combined assets in the medium to long term
- impact on rates payable by end-users.

1.2 Introduction

There are a variety of ways in which a Developer can participate in, and monetise for its own benefit, the revenue of utilities that it is developing.

Any utility being developed by a Developer provides an opportunity for monetisation, including:

- district cooling
- wastewater and polished water from treated sewage effluent
- municipal solid waste disposal and conversion to electricity
- municipal solid waste collection
- potable water
- gas
- telephone, internet and other telecommunications
- electricity generation
- roads and other transport.

Albeit in Australia (and in other countries) the specific regulatory regime for each utility must be taken into account (refer to Section 5 'Regulatory Issues').

Developers usually choose to develop their utilities on a concession model in order better to shift risk to private utility companies and to utilise off balance sheet project financing to avoid its own capital expenditure, for example, on-balance sheet financing (refer to Section 3 'Benchmarking and International Best Practice'). However, a Developer may participate in the revenues of its utilities whether they are developed on a concession model or a more traditional DBO direct funding model, or in some other way (refer to Section 2 'Concession vs DBO vs EPC/O&M contracting models' for a more detailed discussion of these models).

The primary options available to a Developer include:

- a concession fee, which could be structured as a lease payment for use of the land or in other ways and factored into end-user payments
- a structure that allows a Developer to realise the spread between the cost of production and the market rate for various products and services
- Developer equity participation in the concession company itself, through which it could receive dividend payments and other forms of return on equity including subsequent divestments (note that the current forms of PwC Standard Concession Agreements allow for this)
- not having a concession at all and proceeding on a more traditional basis with a DBO or a split EPC and operating arrangement (note that this structure places more risk on the Developer and generally involves on-balance sheet financing).

Regardless of the specific means selected by a Developer to realise some of the value of its utilities projects, Developers usually set up a separate special purpose company (**SPV**) which can capture the benefit of its share of project revenue or other value.

The utilities SPV can then be utilised in a variety of additional structures to further enhance value. For example, in order to allow a Developer to realise the present value of the future earnings of the SPV, the Developer could sell shares of one or more of the utilities SPVs into an investment fund, or they could be offered publicly in an initial public offering.

Discussion point: Given potential stamp duty and other implications, consider the best time to formulate and complete the corporate structure and corresponding project structure.

Discussion point: There are a number of infrastructure asset sales coming to the market and there are a large number of domestic and international superannuation/pension and infrastructure funds actively seeking infrastructure assets which meet the following criteria:

- monopoly asset
- guaranteed revenue stream
- low technology risk.

Given the Queensland asset sales are currently off the agenda following the election result, the above funds will increasingly look at alternative or private asset sales.

Further discussion points on the identity of those domestic and international superannuation/pension and infrastructure funds and the likely participants from that group will depend on the size of the equity involvement for example IFM, QIC, Australian Super, Future Fund, REST and the Canadian Pension Funds such as CPP, PSPI and OTPP will generally require a minimum investment of upwards of US\$250 million and a controlling share. Others, such as ICG or Palisade, have a lower investment threshold. Accordingly, aggregating utilities and/or developments may provide the size the larger superannuation/pension funds require.

joint venture with a financial institution, an industry participant or other investor in order to reduce the amount of upfront capital provided by a Developer and to otherwise spread the risk of the projects. A variety of structures for doing this are available.

Discussion point: Comment on the identity of those domestic and international industry participants that bring complementary expertise and have international experience in the construction and operation phases of utilities, for example Veolia, GDF Suez (Cofley Ineo) and others.

These options are discussed in more detail below.

One point worth noting is that any monetisation by a Developer of value from its utilities (whether through revenue sharing or otherwise) will inevitably be reflected to some extent in end-user tariffs and charges and may thereby reduce the value and attractiveness of the Developer's properties to potential purchasers. However, in some cases, there could be an increase in value. The extent of this impact should be quantified through financial analysis and considered by the Developer. Similarly, the financial characteristics and profitability of individual concessions must also be considered in determining whether any of the following monetisation alternatives is viable in a specific context. Accordingly, until appropriate financial analysis is made, note that none of the following monetisation options constitutes a specific recommended course of action.

Discussion point: The impact on the end-user tariff may be positive or negative.

1.3 Sharing of utilities revenue

Revenue sharing arrangements in which the Developer participates in the revenues of utilities that are in a concession model, a DBO model or any similar or hybrid model could be structured in many ways. For example:

- **Regular payments:** One way is to require the concession company to make regular payments, either as a percentage of revenue earned or as a fixed fee, to the Developer over the term of the concession, commencing from commercial operations of the facilities. A variation of this option is to require the concession company to make 'regular lease' payments for use of the site or to require a 'rental charge' for use of the development networks by the concession company. A combination of the above options is also possible. Ultimately, any option chosen by the Developer will have some impact on the tariff charged to end-users.
- **Spread between production and market prices:** The Developer may also purchase the relevant output from the utilities plants based on minimum purchase requirements or a percentage of installed capacity of the plant and based on the price required by the concession company, and then sell the output at a higher price to the end-users.

Note that in the alternatives mentioned above, the Developer would be expected to take some demand risk which is a key issue in district cooling arrangements, especially when developments are scaled down, postponed or cancelled.

1.4 Equity interest in the utilities

An alternative option involves the Developer either:

- obtaining shares in the concession company at a zero cost (that is, fully carried) or a discounted price, in return for the grant of the concession rights
- setting up a subsidiary to own the utilities assets and develop them on a traditional DBO or split EPC Contract/operating contract model, or on a similar basis.

Shareholders agreement

The relationship between shareholders (such as equity contribution, profit and loss sharing) will be governed by a shareholders agreement between the Developer and the other shareholders of the company. The Developer's rights to transfer, assign or resell its equity interest will be governed by that agreement and the agreement should be drafted to give the Developer as much flexibility as possible to transfer its equity interest.

For example, the Developer should not be required to hold its interest for a minimum period of time, or to limit the transfer to another party of equivalent financial standing. If the Developer's involvement is purely as a passive investor, it is likely that the other shareholders would be open to a relaxation of the Developer's transfer rights.

Equity benefits and risk mitigation approaches

The advantage of taking an equity interest in the concession company or owning the utilities assets directly is that the Developer will be able to share in all the profits of the concession company, and to be involved in the construction and operation of the facilities, in a way that perhaps it otherwise would not have as a Developer. On the other hand, the disadvantage of this option is that it dilutes the risk transfer under the concession.

Since one of the objectives of the concession is to transfer certain risk from the Developer to the private sector, taking an equity interest in the company would mean that a portion of the risk transferred to the company will ultimately be retained by the Developer. One way to manage the risk transfer is to structure the 'buy in' into the company at a time when a portion of the risk has been eliminated, for example when construction is completed. With regard to total ownership by a Developer, the risk of construction and operations is only transferred to the private sector to the extent provided in the DBO or the split EPC Contract and the operating contract. The Developer is insulated financially from project risks only if the Contractor is creditworthy and the contracts are properly structured.

In order to further reduce immediate equity risk exposure, rather than taking a direct equity stake at the commencement of the project, the Developer may wish to obtain an option to purchase shares in the company at a later time for a discounted price. The option could be structured so it is available to be exercised anytime during the concession term (for example, from the commercial operation date) or some other time period. Once construction risks are eliminated, and commercial operation is achieved, it is likely there will be a significant increase in the value of the company. The Developer will have the right to buy shares at a price which may be significantly lower than its market value. At this point in time, the Developer may wish to exercise the option and either retain its interest in the company and receive dividends, or sell its shares and gain the increase in value. The Developer may also be able to sell the options, but this may not result in the same amount of gain.

1.5 Developer SPV

The Developer could establish an SPV as the vehicle to hold the shareholding interest it acquires in concession companies or its direct ownership interest in the utilities (in those cases where a more traditional DBO or split EPC/operating contract and the Developer direct funding approach is taken).

Special considerations where the SPV is a concession company shareholder

If the Developer seeks to acquire an interest in a concession company, the entitlement of the Developer (through the SPV) to acquire a shareholding interest (presumably, fully carried) in concession companies will not be dealt with in the concession agreement itself. Instead, it will be addressed in a separate share subscription and shareholders agreement between the Developer (or the SPV as its nominee), the concession company and each of the other shareholders of concession company. This agreement will set out the terms and conditions attaching to SPV's shareholding, anti-dilution rights and so on.

The SPV's ongoing interests in the utilities, whether taking the form of a shareholding interest in the concession companies themselves, direct ownership of the utilities assets, ongoing revenue sharing entitlements to income derived by concession companies from end consumers or state utilities, or a combination of the above, are assets of material value that would fit into an infrastructure fund or could be the subject of an initial public offering.

Allocation of utilities assets

The utilities assets could be held by an SPV on:

- an individual concession basis (such as a district cooling concession)
- a project or territory basis (such as all the concessions for a master development together)
- an asset type basis (such as all the wastewater treatment plant concession)
- some combination of the above.

The best asset combination will depend upon a cash flow and valuation analysis and the maximisation of value to the Developer. Depending on the analysis the Developer could have several separate SPVs or something that is more like an SPV holding company. A financial analysis should be conducted to determine the optimal asset combination. In addition the regulatory aspects of each utility will also need to be considered (again, refer to Section 5 'Regulatory Issues').

1.6 Developer SPV as a joint venture

A financial institution, an industry participant or other investor could also partner with the Developer in the establishment of the SPV which has been the case on a range of international district cooling projects (refer to Section 3 'Benchmarking and International Best Practice').

Discussion points: Refer to previous discussions on financial institutions including superannuation/pension and infrastructure funds. Also, note international industry participants operating in Australia (and internationally) such as Veolia, GDF Suez (Cofely Ineo) and others.

Some of the primary steps that would be involved in this are as follows:

- **Term sheet/MOU:** The parties agree and execute a detailed term sheet (heads of agreement, MOU or similar) setting out the terms of their commercial arrangement for the SPV. Careful consideration to be given to the obligations assumed by the investor in relation to financing of the SPV and the nature of the SPV's entitlements and obligations within the concession company. We expect that the arrangements within the concession company will vary from utilities project to utilities project. It will also be necessary to consider the specific nature of the SPV, for example whether a simple company, a unit trust or other structure that enables the investor must make an additional lump sum payment to the Developer each time the SPV is granted an interest in another concession holder or utilities project. Consideration must also be given to the jurisdiction of incorporation of the SPV along with the tax and other considerations that will also arise from the nature and jurisdiction of the concession companies.
- **Investor due diligence:** The investor will conduct due diligence in relation to each concession to be granted for evaluation and valuation purposes. The investor's financial modelling of the SPV's shareholding in each concession company will be of obvious interest to the Developer. That model will likely provide the basis for calculating each purchase price that the SPV must pay the Developer to gain the right to receive the allotment of shares in a concession company. At the time that shares in the additional concession company are allotted to the SPV, the investor will subscribe for new shares (or units) in the SPV (possibly with a different class being issued for each new concession company shareholding) at the predetermined price. The SPV will then pay total purchase price for the concession company shares by (a) a cash payment of the amount received from the investor, plus (b) an allotment of the new shares (or units) in the SPV to the Developer of the same class as allotted to the investor.



The proportionate interests of the Developer and the investor at the initial and ongoing stages will be as contained in the final transaction documentation between those parties.

- **Developer due diligence:** The Developer will conduct due diligence in relation to the investor's investment structure, including its fund. Relevant considerations will include the size and underlying ability of the investor fund to perform and ensuring that the Developer does not have any competitive or other concerns with any investors in the fund.
- **Preparation of documentation:** Concurrently with the above steps, formal transaction documentation will be prepared for review. The suite of documents is likely to include a master agreement that details the total transaction and annexes a subscription agreement, shareholder (or unit holder) agreement and, potentially, put and call option arrangements.
- **Other steps:** Additional issues and steps will need to be addressed as matters progress further with utilities projects and tenderers and with any the investor, such as:
 - whether the Developer prefers to contract with an the investor on an individual concession basis, a project or territory basis, or an asset type basis, as described above
 - whether the Developer expects to also share in any additional revenue streams that the investor identifies for itself in relation to the concessions and concession companies (for example, as a financial adviser or Financier to the concession company itself).

Discussion point: The banks providing the financing will have similar criteria to that of the superannuation/ pension and infrastructure funds, for example:

- monopoly asset
- guaranteed revenue stream
- low technology risk
- strong counterparties.

Further discussion point on the identity of those domestic and international banks and also the increasing involvement of ECAs (primarily from Asia; for example K-Exim, K-Sure, JBIC and China Exim) in infrastructure project financings in Australia.

2

Concession vs DBO vs EPC/O&M contracting models

2.1 Introduction

This Section 2 supplements Section 1 above. It examines in more detail whether the provision of utilities by the Developer at its master planned community project should be on a concession or a DBO basis.

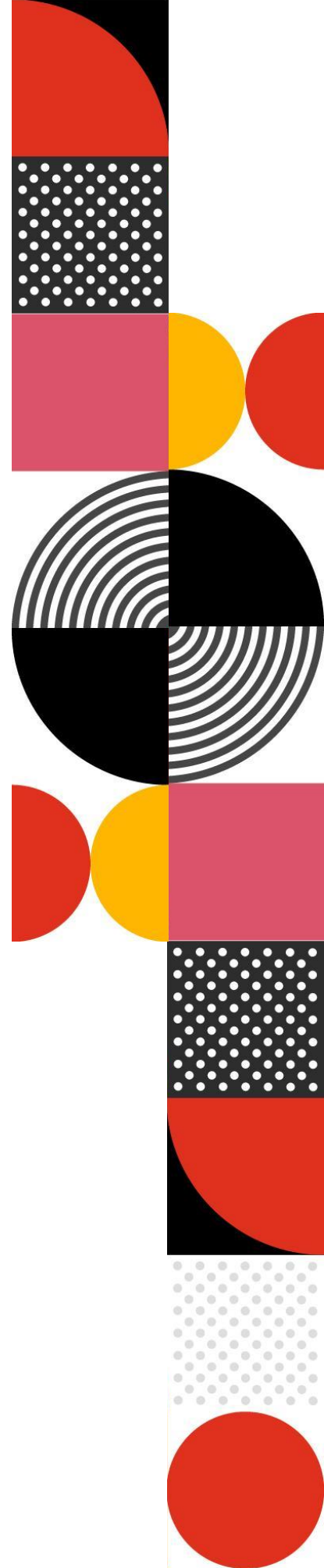
The options for provision of these utilities for a Developer are to provide them on either a:

- concession basis (where, in its traditional form, a third party designs, build, operates, owns and finances the utility) (see Diagram 1)
- DBO basis (where, in its traditional form, a third party designs, builds and operates the utility, but does not finance the utility or own it) (see Diagram 2)
- engineering, procurement and construction (EPC) and operation and maintenance (O&M) basis again where, in its traditional form, a third party designs and builds the utility and the same or a separate third party operates the facility, but does not finance the utility or own it (see Diagram 3).

A further option is to combine both approaches. The Developer would incorporate a SPV, and grant a simple form of concession to this SPV; the SPV would then contract for the provision of the utilities on a DBO basis. This option is useful in that it shields the Developer from a direct contractual relationship with the DBO Contractor (although a DBO Contractor may require guarantees from the Developer) (see Diagram 3). Other variations of the DBO and concession approaches may also be implemented based upon the result of negotiations on various contract issues.

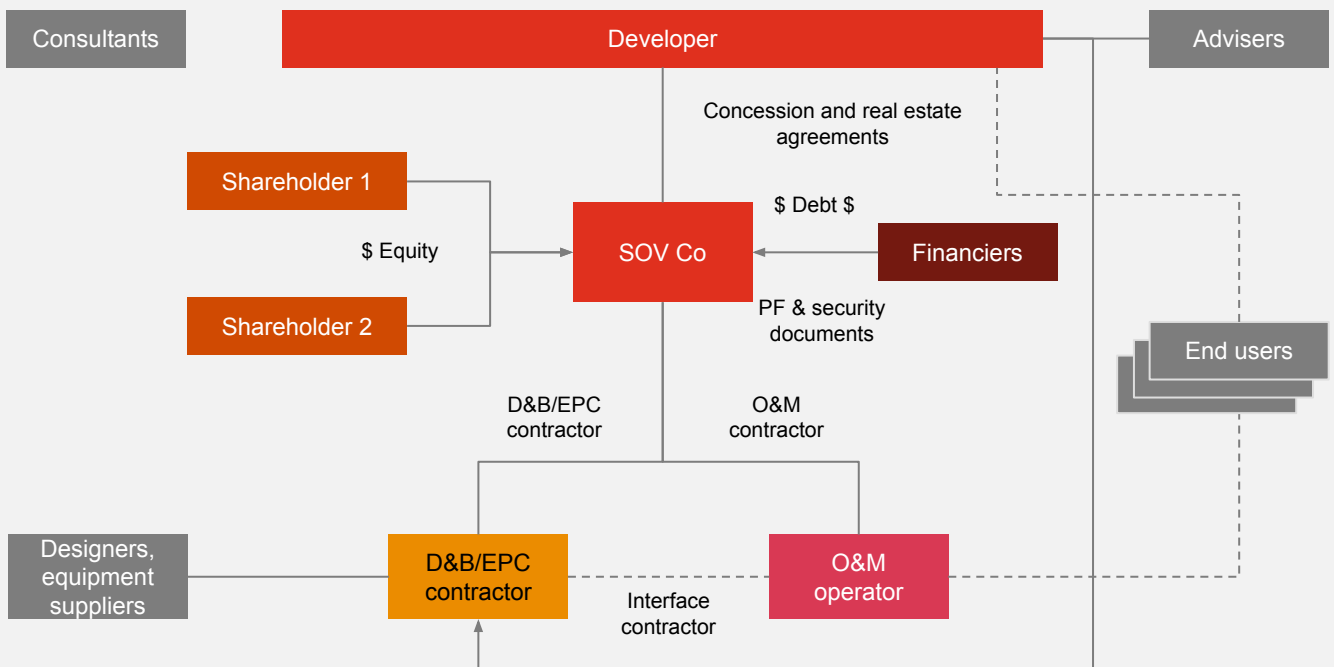
The significant differences between these options are:

- the source of finance for delivery of the utilities
- the equity interest in the utilities
- the ability of the Principal to influence and control end-user rates
- the flexibility and expenses of the Principal in terminating the arrangement.

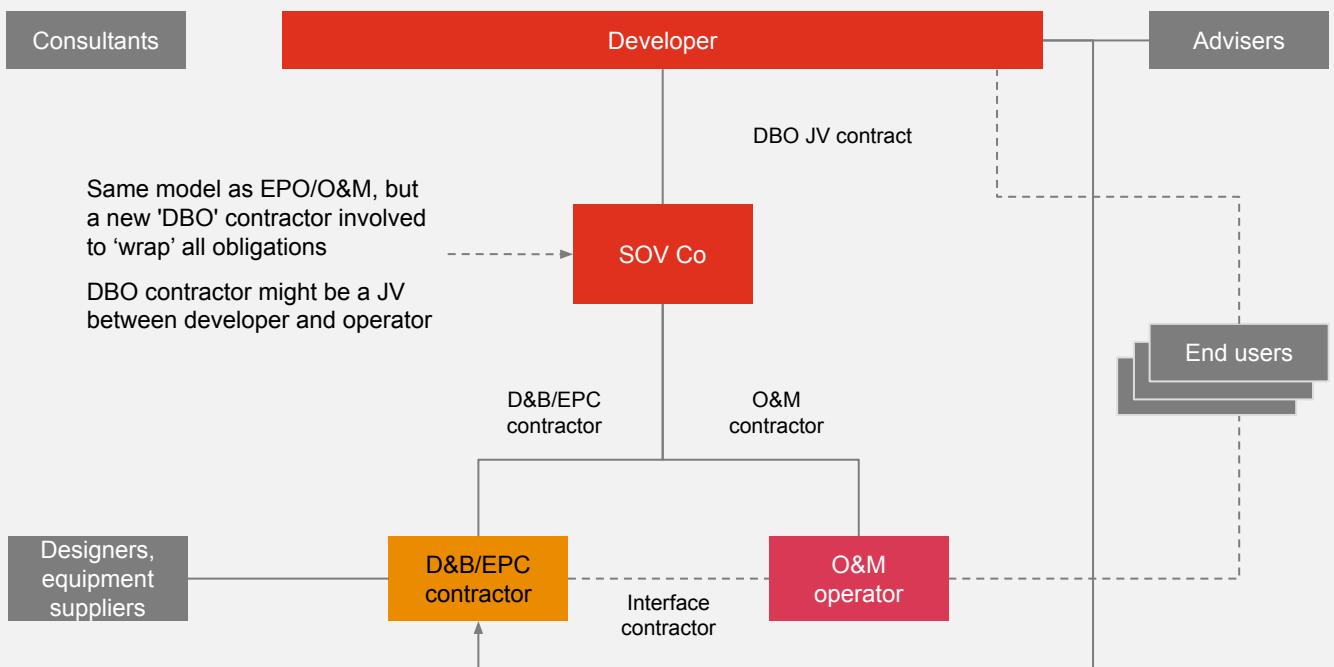




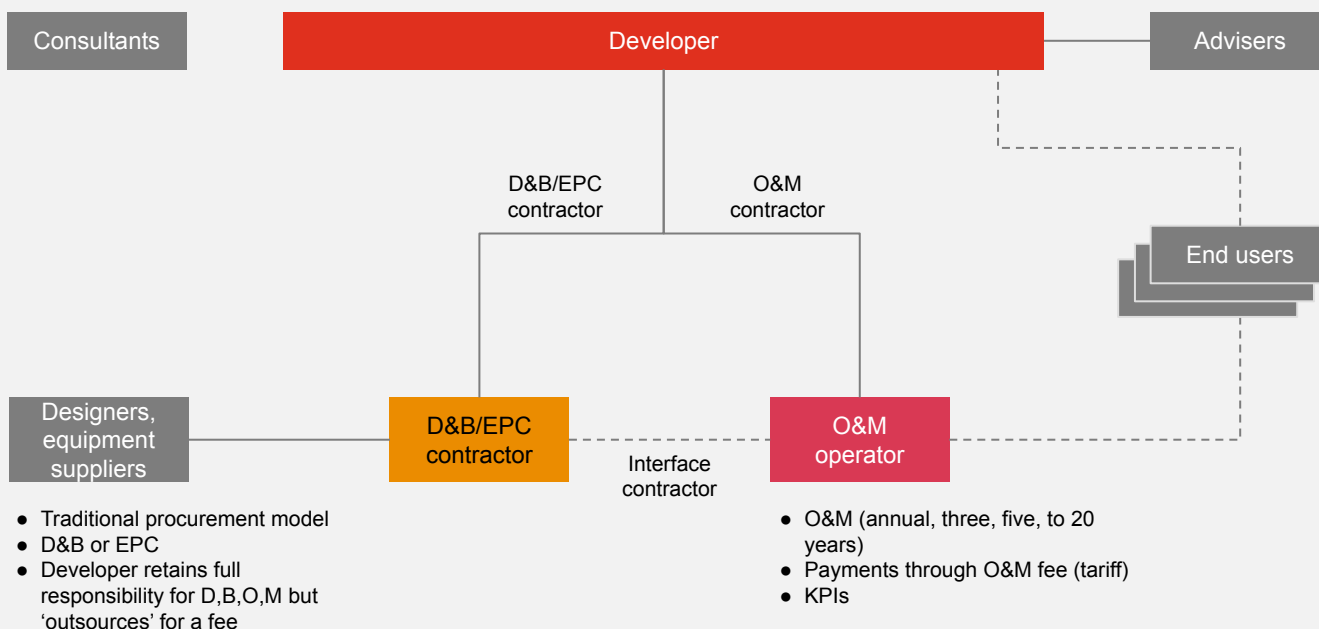
BOT/Concession/PPP (with private finance)



DBO/JV: Turnkey solution (no private finance)



EPC and O&M: Build, Separate Operator



A further option is to combine the concession and DBO approaches, by granting a simple form of concession to a SPV, which would then contract for the provision of the utilities on a DBO basis.

2.2 Differences in approach

Concession agreements and DBO agreements have very similar risk profiles. In both cases, a SPV is formed by the party delivering the project, and that SPV is given the overall responsibility for designing, constructing and operating the utility. Both approaches give incentive for innovation and good design as the party building the facility is the party operating the facility.

The fundamental difference in approach is that when a DBO is used, no private sector funding is necessary, as the DBO Contractor is paid for the asset on completion, or as progress payments through construction, and is then paid an indexed service charge for the operation of the facility.

When utilities are financed at the SPV level through the use of a concession, Financiers will not finance 100% of the required capital. Therefore, the SPV must provide the shortfall in the form of equity typically in the region of 20–30%. This shortfall gives the SPV an equity stake in the utility, on which a concessionaire will expect a return. The presence of SPV equity and finance leads to a difference in how an SPV recovers its costs, and how an SPV makes a profit.

In the case of a concession, the SPV is given the right to charge a tariff, and the tariff is the only compensation the SPV receives. The tariff is calculated by reference to a financial model. The inputs into the financial model are the costs associated with constructing the utility, operating and maintaining the utility, and the required return on investment on the invested equity in the project. Use of a tariff therefore spreads the cost of the initial capital expenditure across the entire concession period, for example, 20 years, meaning that the SPV needs to recover not only the capital costs, but also the finance charges associated with being indebted for a long period of time.

In the case of a DBO, the SPV is paid for its capital expenditure on completion of the asset, or as progress payments throughout construction, and then paid a service charge to operate and maintain the facility. As there is no debt involved, these amounts can be on a fixed fee or a cost plus basis. This results in a lower cost (however, in comparing costs between the two, the source of, and costs associated with, the finance used at the grantor level in the DBO scenario must be taken into account).

In the case of a combined approach, the Developer maintains an equity stake in the utilities through its ownership of the SPV. The SPV then passes on its obligations to the DBO Contractor (with the financing in place). This results in a situation where the profile is very similar to that of the DBO scenario outlined above.

2.3 Advantages of a DBO approach

If minimising end-user utility rates is an objective, and the Principal that is letting the DBO contract has access to cheaper finance than would be available through project financing (such as sovereign rates of finance) or financial reserves to pay on-balance sheet for the capital cost of the utility, then an on-balance sheet DBO approach is preferable. This is due to the fact that the lower finance cost means that the Principal can pass through its lower financing costs to end-users in the form of lower rates and can also discount the rate of return on its equity contribution to further reduce end-user rates. Financiers would incorporate a risk premium into the interest payable by an SPV in a concession model. Also, the SPV in a concession would charge a higher rate of return on contributed equity.

Having no Financiers (other than on-balance sheet Lenders) involved means that project negotiation is relatively quicker.

In a DBO approach the Principal is also in a better position to achieve lower end-user rates by avoiding the monetisation of the particular utility service (refer to Section 1 'Options for a Developer to Participate and Monetise'). Since it is generally taking more risk than a DBO Contractor, a concession company will want to monetise any opportunities to achieve a higher rate of return on its contributed equity. Monetising utilities opportunities often results in higher end-user rates since some (but not all) monetisation techniques involve setting higher end-user rates. In a DBO approach, the DBO Contractor generally has less risk and is not contributing equity, and so has less leverage to implement such monetisation. As a result, in a DBO contract situation, whether to monetise or not should be entirely decision of the Developer.

A DBO contract should offer the Principal more flexibility in connection with contract termination. For example, since the DBO Contractor is not contributing equity, termination by the Principal (perhaps to implement a cheaper utility approach) should be less expensive and simpler.

2.4 Advantages of a concession approach

Concessions have an almost identical risk profile to DBOs, with all of the risk passed down to the SPV level. Concessions are preferable when the party granting the concession does not have access to cheap finance, or prefers to allocate the capital required to build the utility to another use.

A concession approach generally involves a more complete transfer of risk than a DBO approach (in which there is no equity at risk and the limits of liability may be lower to reflect what is frequently a fixed fee payment structure).

2.5 Advantages of a combined approach

A combined approach has the same advantages as using a DBO; however, due to the use of the SPV, it has the following further advantages:

- access to non-recourse project finance at the SPV level
- insulating the Developer from a direct contractual relationship with the DBO Contractor.

2.6 Integrated solution

There are often synergies between different utilities that can result in lower costs and greater efficiencies if the utilities are combined. An example of this would be an integrated solution between sewerage treatment, potable water and district cooling. The utilities deal primarily with water, and the sewerage treatment facility can be used to produce polished water for use by the district cooling facilities.

When utilities are combined, staffing costs, and other operating costs, can be shared between the utilities resulting in lower overall costs. Integration of utilities also serves to lower the interface risk between the utilities.

2.7 Expansion

One of the critical risks in developing utilities (including district cooling) for master planned communities is managing the take up and potential expansion of the project facilities and related distribution networks. This is particularly the case where a community is being developed in phases and/or the rate of take up of certain building lots is uncertain.

To ensure that capital expenditure is limited to building to a capacity that meets the actual needs of the master planned community at a point in time, the Developer will look to defer the construction of any permanent additional capacity to the project facilities, and capital costs associated with such permanent additional capacity. Typically, a demand curve will be created at the beginning of the project to estimate the initial (or base) capacity and the timing for the need for any additional capacity based on the expected rate of development and population growth. Depending on the size and rate of growth of the development, this demand curve is usually on an annual basis taking into account growth and sales trends. This may result in adjustments to the timing and capacity requirements for each phase (including resulting changes to the tariff).

If possible, one of the first options is to require the utility provider to utilise temporary facilities to the extent possible. This limits unnecessary capital expenditure but the parties must ensure that the services are capable of being provided efficiently and safely. Where the Developer determines that projected demand is expected to result in consistent utilisation of such additional capacity, it has the option of requiring the utility provider to provide details for any required expansion including capital expenditure, contracting arrangements (such as the preferred D&C and O&M Contractors who would typically be the same as those for the base project facilities, subject to benchmarking or otherwise a competitive tender process) and related financing arrangements. If the parties agree on the new arrangements, the Developer may instruct the utility provider to proceed with the design and construction of the additional project facilities (including the network) to meet the agreed additional capacity.

Depending on the tariff structure, the Developer may bear capacity risk in relation to base and additional capacity (for example, in the form of an availability payment). However, hybrid models may be adopted where the risk is shared, or otherwise wholly borne by the utility provider. This will depend on the nature of the market, the reputation of the Developer and the related capacity of the utility provider to obtain finance at reasonable rates.

The project expansion works are usually provided under the key terms of the existing concession agreement, in the form of a concession agreement supplement (including any additional direct agreements with Financiers and Contractors in the same form as those executed for the base project facilities).

The Developer may always elect not to proceed with the expansion of a project facility, however this may result in relief from certain KPIs to the extent demand exceeds the design capacity. The obligation of the utility provider to provide services from existing or temporary facilities under these circumstances is limited to its ability to provide the services in accordance with laws (for example, environmental requirements etc.) and good utility practice.

An example of a phased expansion clause for a district cooling project under a concession agreement (with an underlying DBO Contractor) is attached at Appendix 2.

2.8 Conclusion

If the Developer has access to the capital required to pay for the utilities itself, or alternatively, has access to cheaper finance than available in the project finance market generally, and has made the business decision to allocate its capital to constructing the utilities, then the Developer should consider applying a DBO approach to the utilities solution. This may:

- offer a cheaper cost, resulting in either a lower price to end-users, or a profit to the Developer, or a combination of the two, however, this should be examined on a case by case basis
- result in a shorter negotiation time in tendering the utilities as the input of the Financiers is removed, however, this benefit is lessened once one or two projects have been banked. For example, received credit committee approval and reached financial close
- provide the Developer with more flexibility to terminate the arrangement at a future time for a lower cost and to control alternatives such as monetisation, which if implemented, could increase end-user rates.

By comparison, a concession approach would likely shift more project risk and cost (including financing cost) off balance of the Developer and onto the concession company.

The chosen approach for the development of utilities should be examined on a company-wide basis and not just a project-wide basis.

3

Benchmarking and international best practice

We have benchmarked district cooling projects internationally and, in summary, international best practice can predominantly be seen in the Middle East, with ~3.4 million Refrigeration Tons (RT) of existing district cooling capacity and hundreds of individual cooling plant facilities (predominantly managed by dedicated utilities). There is a strong tendency to use concession BOO/BOOT contracting models.

Note: We have also examined district cooling projects in Asia (particularly Malaysia, with ~200,000 RT of installed capacity), and to a lesser extent Europe (which primarily operates publically-owned district heating utilities). The results are set out below.

3.1 Middle East

(a) District cooling market landscape

The extreme climate conditions in the Middle East necessitate a significant level of air conditioning, accounting for ~50.0% of annual electricity consumption in 2012, and ~70.0% of peak demand. Furthermore, peak cooling demand in the GCC is expected to nearly triple from 2010 to 2030, rising to ~100.0 million RTs.

The UAE, in particular, has successfully developed a substantial volume of district cooling (~2.4 million RT) (see below). According to Strategy&, the potential market for district cooling through to 2030 in the Middle East is ~32.5 million RT.

The predominant form of contracting model for district cooling facilities is through commission/BOO/BOOT agreements, with specialised district cooling utilities assuming operational responsibility for upwards of 20 years. Examples include:

- **Empower:** Emirates Central Cooling Systems Corporation (**Empower**) was established in 2003 as a joint venture between the Dubai Electricity and Water Authority and TECOM Investments (a member of Dubai Holdings and a Government Backed Entity). Following the acquisition of Palm Utilities and Palm District Cooling (the Owner and Operator of district cooling systems/concessions such as Palm Jumeirah, Ibn Battuta Mall) in January 2014 at a cost of US\$500 million, Empower holds approximately 70.0% of the UAE's district cooling market, with over 45,000 customers. Empower is the largest district cooling utility in the world, with upwards of 1.0 million RT of cooling capacity.
- **Emicool:** Emirates District Cooling (**Emicool**) was formed as a joint venture between Dubai Investments and Union Properties, and currently operates upwards of eight plants through a predominantly BOO business model.
- **Tabreed:** The National Central Cooling Company PSJC (**Tabreed**) was established in 1998 as a publically listed entity. Tabreed has interests in a total of 67 district cooling plants in the UAE, 52 of which are wholly owned and operated, and eight of which are operated through affiliates established as joint ventures. An additional six plants are owned and operated through regional affiliates (in particular Qatar Cool and Saudi Tabreed).

(b) Examples of district cooling contracting models

Location	Development	Contracting model
Dubai	BOO: Numerous projects including Investments Park; Dubai Design District; Palazzo Versace Dubai Hotel, Condominiums, and D1 Tower; Dubai Sports City; Dubai Motor City, Zayed Military City	
	BOOT/Concession: Numerous projects including Dubai Metro; Dubai International Finance Centre; Discovery Gardens; Jumeriah Group Properties, Al Maryah Island, Saadiyat Island	
	Dubai Parks and Resorts, Jebel Ali ¹	Concession: Tabreed signed a long term concession agreement with Meeras Leisure and Entertainment to provide 45,600 RT of cooling. The contract for design, procurement, construction and commissioning services for facility was awarded to SNC-Lavalin Gulf Contractors, at a value of C\$37.0 million.
	Dubai Design District	BOO: Empower, a subsidiary of the Developer (TECOM Investments) secured a contract to provide up to 120,000 RT of capacity to the project, boosting the company's portfolio by ~12.0%. The facility is to be funded from Empower's own balance sheet.
Qatar	Lusail city Marina District DCP	EPC (Turnkey) contract: Marafeq Qatar, a subsidiary of Qatari Diar, designed, managed and supervised the project. The BUTEC/ADC Joint Venture was selected for the design, procurement, construction and plant commissioning of the project. Drake & Scull Engineering won an \$29.9 million contract for the design and build of the plant.
Kingdom of Saudi Arabia	Jabal Omar development (Holy City of Mecca) ²	BOOT: Central District Cooling Company (CDCC), a special purpose vehicle owned by Saudi Tabreed (60%) and the Jabal Omar Development Company (40%), entered into a 20 year BOOT agreement for the construction of a 55,000 RT project in 2011. The expected cost of the project was SAR500 million. SNC-Lavalin was contracted by CDCC for the design, procurement, construction and commissioning of the facility. ³
	Saudi Aramco office complex development, Dhahran	BOOT/Concession: Saudi Tabreed was contracted to design, construct, finance, own, operate and maintain the District Cooling Network with 27,000 RT cooling capacity (expandable to 32,000 RT). The project was the first of its kind in Saudi Arabia, structured as a 25 year concession agreement on a limited recourse project-finance basis. Banque Saudi Fransi was the Financier.
Bahrain	Bahrain Bay, Manama	BOT: Bahrain Bay Development (a joint venture between Delkia Utilities and Arcapita) entered into a 50 year Build-Operate-Transfer agreement with Bahrain Bay Development for the delivery of a 45,000 RT seawater cooling facility.

¹ 'SNS-Lavalin awarded district cooling contract in Dubai', SNS Lavalin (Web Page, 20 October 2014) <<https://www.snclavalin.com/en/media/press-releases/2014/20-10-2014>>.

² Tabreed's Affiliate to Develop AED549 Million District Cooling Project in Saudi Arabia' (Press Release, 12 February 2013).

³ 'SNC-Lavalin wins Makkah district cooling contract' (Web Page, 8 August 2012) <<https://www.constructionweekonline.com/business/article-17973-snc-lavalin-wins-makkah-district-cooling-contract>>.

Case study 1 – District cooling developed on a concession basis: Saadiyat Island, United Arab Emirates

Saadiyat Island is a mixed-use development with a total built-up area of over 1.6 million m². The precinct is being developed as a cultural and touristic destination for the Abu Dhabi emirate, including a cultural district, numerous luxury hotels, and a large range of residential and hospitality centric developments. The overall capacity of the district cooling facility is 47,500 TR.

The master Developer of the project is the Tourism Development & Investment Company (TDIC), an entity of the Abu Dhabi Government. District cooling of the development is governed by a 29 year concession agreement between the TDIC and a Joint Venture led by Dalkia Utilities (a subsidiary of EDF and Veolia) as operating company and minority equity investor. Arcapita, an alternative asset manager, is the majority equity investor.

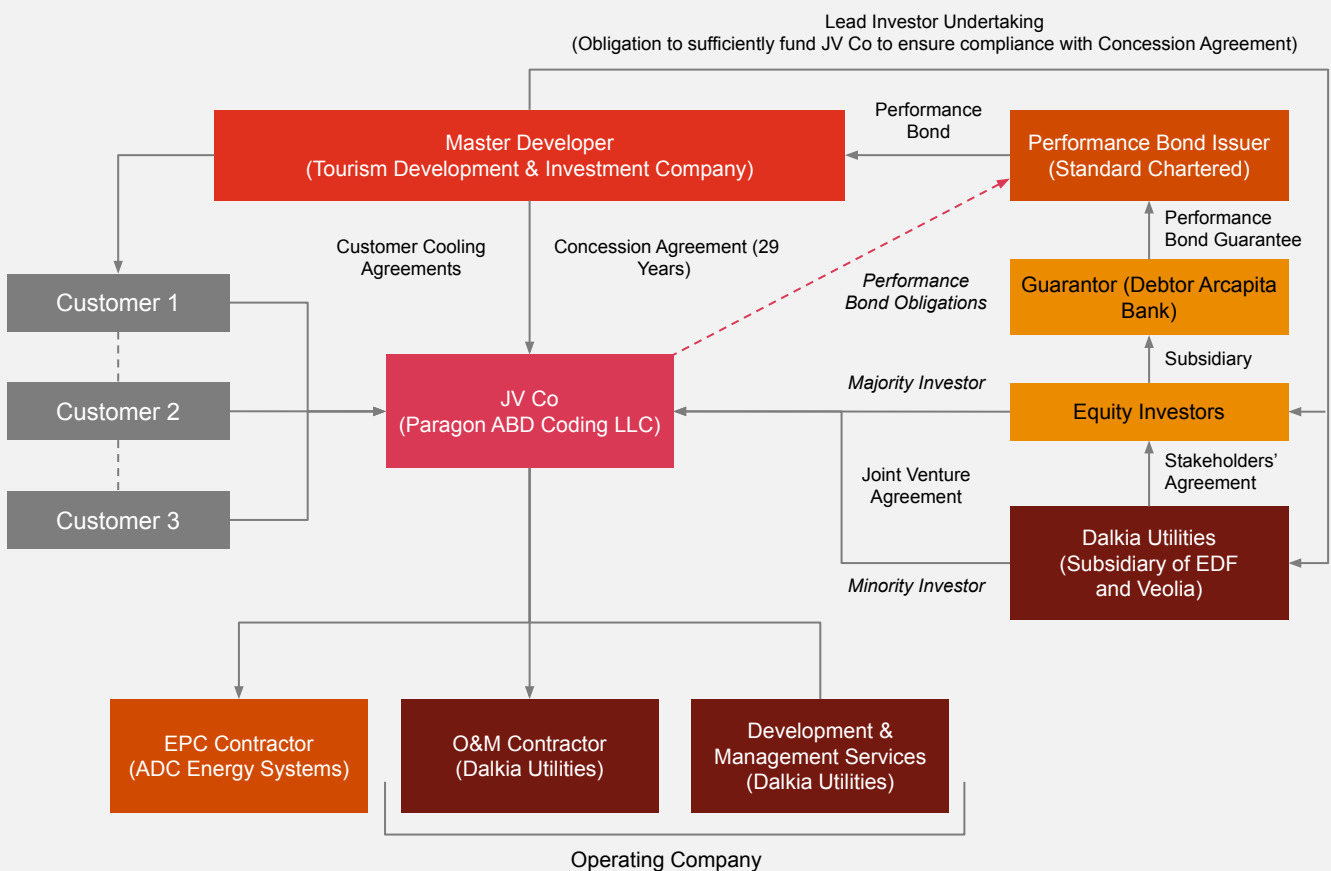
Additionally, TDIC required protection in the form of a US\$10.0 million performance bond, guaranteed by Arcapita and issued by Standard Chartered. This bond assured the performance of the obligations of the joint venture during the period of the concession agreement.

As the operating company, Dalkia directly assumed responsibility for the appointment of the EPC Contractor, ADC Energy Systems (ADC), following a competitive tender.

According to their external publications, the 'Use of the BOOT structure created key synergies through the project:

- *Project risk was effectively transferred downstream from TDIC to expert district cooling providers. This single point of contact substantially reduced the complexity from the master Developer's perspective. Furthermore, as customers directly contract for services with the joint venture, price risk was fully shifted (allowing for more precise budgeting by TDIC).*
- *Furthermore, appropriate mechanisms were put in place to correctly incentivise the district cooling provider through equity and long-term concessions, and properly protect the Developer against defaults in financing arrangements and performance.*
- *As an operating company with both a contractual and equity interest in the effective operation of the plant, Dalkia was encouraged to collaborate closely with ADC in the construction of the project. This was achieved by continuous and dynamic coordination, and allowed for a smoother transition from the construction phase to the operation phase.*

Contract Structure – Saadiyat Islands district cooling plants (BOOT Structure)



**Case study 2 – The acquisition of a district cooling concession by an infrastructure/state owned fund and an industry participant (in this case an Operator):
Tabreed and Mubadala Infrastructure Partners, United Arab Emirates**

A consortium comprising National Central Cooling Company PJSC ('Tabreed'), the leading Abu Dhabi-based district cooling utility company, and Mubadala Infrastructure Partners ('MIP'), an infrastructure focused fund investing in the Middle East, North Africa and Turkey, with institutional investors from the GCC region and Asia, announced in June 2014 that it has acquired a 30-year concession to be the exclusive provider of district cooling services to the developments on the southern part of Al Maryah Island, Abu Dhabi.

The transaction, which is valued at approximately US\$285 million, involves the acquisition of the existing district cooling provider to Al Maryah Island (Al Wajeez Development Company PJSC) and will be funded through a combination of equity and a 20-year long-term non-recourse senior loan provided by First Gulf Bank.

The 30-year concession represents an installed capacity of up to 80,000 RT for Abu Dhabi's new Central Business District and luxury lifestyle destination on Al Maryah Island. Al Maryah Island Phase I developments encompass 450,000 m² of office, retail and hotel developments designed to form the commercial and financial hub of the Emirate of Abu Dhabi. Key developments on the Island include Cleveland Clinic Abu Dhabi, Four Seasons Hotel, Rosewood Hotel, Sowwah Square Towers, Galleria Mall, Al Hilal Bank and Abu Dhabi Exchange Building. The acquisition of the Al Maryah Island plant brings the total number of district cooling plants owned and operated by Tabreed in the GCC to 67, and increases its connected capacity to over 900,000 RT.

Note also the above mentioned acquisition by Empower of Palm Utilities for US\$500 million.

3.2 Asia

(a) Capacity for more development

There has been an array of new end-users like airports, religious sites, sports complexes and religious facilities deploying district cooling technology. It is estimated that US\$11 billion of investment in end-use efficiency is needed by South-East Asian countries by 2020 to meet their national targets for energy efficiency and greenhouse gas emission reductions.

For example, according to a report by Asia Development Bank (2013) based on the technical structures, Malaysia has the potential to triple the scale of its district cooling industry to a built-up capacity of 575,000 tonnes of refrigerants from the current approximates of about 200,000-tonne capacity. The Asian Development Bank currently invests more than US\$2.3 billion (RM7.29bil) per year in clean energy projects across Asia. However, the awareness of district cooling technology is still low level in most of the urbanised Asian countries.

Examples of district cooling contracting models

Location	Development	Contracting model
Malaysia	Various options are used for procuring district cooling in Malaysia, but the predominant form is the conventional EPC and O&M model. However new approaches such as BOT and BOOT contracts are also used. ⁴ EPC/O&M: UKM Loop 1; Kompleks Kerajaan; UNITEN Putrajaya; Putrajaya Development; MMU Cyberjaya; Nuklear Malaysia Dengkil; S&T Complex UiTM; Mutiara Damansara; Hospital Serdang; MBSA Shah Alam BOT: KLIA Sepang; IJN BOO: Megajana DCS Cyberjaya; Pantai DCS Bangsar; KLCC Development; Putrajaya Development; KL Sentral	
Hong Kong	Kai Tak airport site redevelopment	DBO: Awarded by Hong Kong government to a joint venture comprising Dalkia Asia Pte Ltd, Hip Hing Engineering Co Ltd and Young's Engineering Co Ltd. Note: BOT was initially considered but rejected due to the global economic climate and uncertainty in DCP development – The development was the first of its kind in Hong Kong. The project was sponsored by the Hong Kong government.
Singapore	Marina Bay	Concession: Singapore Power and Dalkia conducted feasibility studies and advocated the implementation of a district cooling system for the new business district. They were granted the concession of a pilot district cooling system. Singapore District Cooling (SDC) was incorporated as a joint venture in 2000 to implement the pilot system. Funding: Commercial joint venture without public funding. Initial plant funded by shareholder equities. Subsequent expansion funded by bank loans secured through project financing scheme from a leading Singapore bank. Regulation: <i>District Cooling Act</i> mandates subscription for new commercial developments, in order to mitigate start-up demand risk. Framework administered by Energy Market Authority of Singapore. Over time the district cooling Operator is allowed to earn a baseline return based on its invested assets. When the Operator has recovered start-up losses, any efficiency gain above baseline returns is shared between Operator and customers.
Singapore	JTC Multi-Utility Hub at Mediapolis	DBOO: Keppel DHCS, an indirect wholly-owned subsidiary of Keppel Infrastructure Holdings Pte Ltd, was awarded the tender by JTC Corporation to design, build, own and operate a new DCS plant at JTC's Multi-Utility Hub at Mediapolis, and secured a contract to provide DCS services to MediaCorp's new campus at Mediapolis at one-north Park.

3.3 Europe

Developments in the district heating and cooling sector are driven to a large extent by European legislation.

Europe is less relevant, since it mainly uses district heating and most district cooling plants are public-owned.

Location	Development	Contracting model
France	Paris	Concession: CLIMESPACE is a concession company for the City of Paris since 1991, and produces and distributes district cooling.
UK (London)	Olympic Park	Concession: Elyo UK won a 40-year contract for the building, financing and operation of urban heating and air conditioning networks (€1,500 M).
UK	Bazainville	EPC/O&M: Tractebel Engineering was chosen as Principal's engineer on the turnkey contract for the new interconnection station in Bazainville.

⁴ Ammar Maarof Adnan and Mohamad Syazli Fathi, 'A Review of Value Creation from Procurement Contracts and Business Models for District Cooling Systems in Malaysia' (Conference Paper, 8th Asia-Pacific Structural Engineering and Construction Conference, 2 - 4 October 2012) <http://www.academia.edu/4167047/A_Review_Of_Value_Creation_From_Procurement_Contracts_And_Business_Models_For_District_Cooling_Systems_In_Malaysia>.

4

Billing and collection regime

4.1 Introduction

As discussed in Section 5 below, district cooling is currently not specifically regulated in Australia. This means that providers are free to determine their own billing and collections model through contracts with their suppliers and with building Owners/ end-users.

Discussion point: The billing and collections model for district cooling may be impacted by other regulatory frameworks (for example, water, gas and electricity) if a multiutility embedded network model is chosen. Refer to Section 5 'Regulatory Issues'.

Typically a billing and collections model will be made up of the following elements – metering and data services, pricing and billing/collection.

Despite the advent of modular plant and equipment, district cooling networks are particularly front loaded investments. Therefore, the success of any billing and collections regime requires coordinated development, accurate estimation of cost (both capital costs and operating costs) and accurate estimation of network load over the life of the development.

4.2 Metering and data services

Many early providers of district cooling (particularly in the Middle East) relied on bulk metering only. Providers would meter multi-dwelling usage at a building level only and then it would be up to the building Owner to develop its own allocation model across residential, retail and commercial tenancies. This has led to inequitable cost allocation and significant customer dissatisfaction.

More recent developments provide a combination of bulk metering, tenancy metering and more granular sub-metering which provide much richer information. This together with more sophisticated data collection systems which often include integration to back-end billing and customer management systems has improved allocation models significantly.

The EU, United Kingdom and Hong Kong are all in the process of introducing regulation which mandates tenancy level metering for district cooling at new developments and at substantial renovations (where technically possible and cost-effective in the long term).⁹

Providers commonly subcontract their metering and data services to one or more metering services provider. The scope of these arrangements involve meter supply, meter installation, meter operation and maintenance and data services.

⁹ The Heat Network (Metering and Billing) Regulations 2014 (UK) s 4; Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC Text with EEA relevance [2012] OJ L 315/1; District Cooling Services Bill 2014 (Hong Kong)

4.3 Pricing models

Although district cooling is rarely regulated, pricing models typically consist of the following elements:

- (a) **A connection charge:** For connection to the network (this typically covers meter supply, installation and connection services).
- (b) **A capacity charge:** For the estimated maximum cooling capacity of the building (this typically covers an allocation of the provider's capital costs of the district cooling network).
- (c) **Consumption charges:** For the actual consumption of district cooling services used by occupiers/tenants district.

There is also sometimes a specific capacity overrun charge if the actual consumption exceeds the estimated building capacity.

Given the length of district cooling concessions or DBO arrangements, it is critical that whatever pricing model is chosen, that pricing model is subject to clear periodic adjustment mechanisms which allow the provider to vary the charges to take account of changes to input costs such as water, power, labour, inflation and finance costs and the consequences of changes to law.

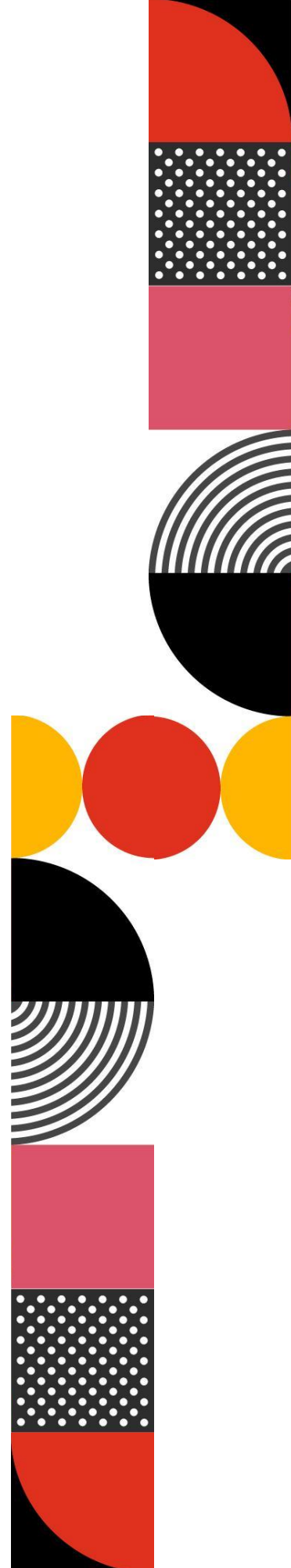
4.4 Billing and collection risk

Collection risk is a key issue in district cooling projects. Therefore even with the advent of tenancy level metering, typically district cooling providers will not wish to invoice end-users/tenants directly but will prefer to invoice the Developer or building Owner who will pass the costs through the end-users through a service charge or management fee.

In considering whether to accept payment by the Developer/building Owner, the district cooling provider will need to satisfy itself as to the ability of the Developer/building Owner to pay the district cooling charges and, if necessary, seek some form of security such as a parent company guarantee or letter of credit.

If the district cooling provider takes the risk of collecting charges from the end-users, it will need to build in safeguards to ensure that it is able to do so. This may involve appointing a facilities manager to assist with collection, in which case the latter may be incentivised to collect the payments by having all or a portion of its payment being dependent on the collection of the district cooling charges from end-users.

The district cooling provider will also want to ensure that the end-user agreements contain rigorous succession obligations so that subsequent purchasers are required to enter into an agreement with the district cooling provider for district cooling and/or to take an assignment of the original end-user agreement. The district cooling provider may also, if it is permitted by local laws, look to include rights to cut off the supply of district cooling for non-payment.



5

Regulatory issues



Unlike some other jurisdictions, where district energy comprises a sizeable portion of the total energy load, there is no direct regulation of district cooling/heating plant or commercial arrangements in Australia. At most, these arrangements are governed by local or state planning and environmental requirements and other relevant general legislation, such as the *Competition and Consumer Act 2010* (Cth) (particularly relevant if commercial structures involve vertical constraints on retail pricing) and Australian Consumer Law.

However, to the extent that any district cooling solution forms part of an integrated utility offering, there are a range of regulatory considerations and challenges that are both complex and differ by state. While a comprehensive overview is beyond the scope of this paper, some of the relevant Australian regulatory considerations across energy (electricity and gas), water (potable and waste) and telecommunications infrastructure/services are set out below.

5.1 Energy – Electricity and gas

Any integrated utility proposal needs to address energy regulatory requirements across each of the following:

Issue	Description
Metering and billing	<ul style="list-style-type: none"> • Metering is addressed in the National Electricity Market (in those jurisdictions with contestability) through a Metrology Procedure. Complex rules, but require gate meter to be registered as parent in the market settlement system by the retailer. • In those jurisdictions where contestability is available (Victoria, New South Wales and South Australia) – Where a network service provider exemption is in place, metering requirements will typically be covered by a condition to the relevant NSP exemption (see below). • Note – Pro rata or shadow pricing of DUOS and NUOS charges is permitted, but network charges for private infrastructure need to be recovered through lease or other payments (for example, fit out charges) – Not explicitly through energy pricing.
Retailing	<ul style="list-style-type: none"> • Retailing of energy in Australia is principally governed by the National Energy Retail Law and National Energy Retail Rules. The NER prohibits the retail sale of energy unless the seller is authorised, or has obtained a relevant exemption. Exemptions are granted on both an individual and class basis by the regulator, the Australian Energy Regulator. • Obligations apply both to selling and on-selling of energy. • Where contestability has been introduced individual tenants need to retain an ability to acquire supply directly from retailers.
Network infrastructure ownership/embedded networks	<ul style="list-style-type: none"> • Under this model, the Developer owns the embedded network after it becomes operational and takes supply from the relevant distribution network Operator through a gate meter and pays a cost reflective network tariff. • The Developer may be able to obtain an exemption from the obligation to be registered as a network service provider. Any exemption is subject to conditions, typically relating to pricing, metering and distribution loss factors. • Pricing and tariff structures for DNSPs vary (and can be subject to jurisdictional specific pricing obligations) and so while the overarching regulatory framework is common, the price structures and regulatory arrangements can differ markedly between states. • There are currently a number of DNSP tariff resets underway.

5.2 Water – Potable and wastewater

Australia currently suffers from a patchwork of State-based regimes for water regulation, and generally has an under-developed model for contestability in the supply of private water infrastructure. The draft report of the current Harper Review has flagged reform of the water sectors as an area of 'unfinished business' in terms of Australian competition policy reform.

As a consequence, the key regulatory issues vary substantially by State, for example:

- **New South Wales:** The most advanced of the jurisdictions, there is scope to obtain both a retailer and network services licence. (Note: Amendments are currently being considered to the legislative regime that will mean entities, rather than individual schemes, become subject to licensing).
- **Queensland:** There is some scope in Queensland for private entities to be licensed as water service providers—for both potable and sewerage services. However, to date, the provision of these services has been by government-owned entities. Pricing is set by the State competition authority (Queensland Competition Authority). Registration obligations are also less onerous in relation to recycled water suppliers.
- **Victoria:** Private involvement in the water sector has been limited by law to the supply of services to government-owned utilities (this is enshrined in the Victorian Constitution). There is some scope for involvement of the private sector through sub-contracting structures. Melbourne metropolitan services are supplied by three government-owned utilities.
- **South Australia:** A licensing regime was introduced (2013) for licensing of 'water retail services' (covering both water and sewerage), overseen by the State competition authority (ESCOSA).

Australia's approach to regulation of private participation in the water sector contrasts with a number of other jurisdictions, internationally, which have successfully privatised or otherwise facilitated private involvement, including France (which has a long history of private sector involvement) and the United Kingdom.

5.3 Telecommunications

The regulatory environment for the development of telecommunications infrastructure in new developments remains in a state of flux, caused by an overhaul of regulatory requirements as part of the Commonwealth National Broadband Network (NBN) deployment.

There are a number of private Operators that compete for the provision of (mostly fibre) infrastructure in new residential estates.

The Coalition Government has published for consultation a modified 'new developments policy' aimed at improving the contestability of fibre deployment to new developments – And ensuring competitive neutrality with NBN Co (based principally on a set of published connection and development charges). Minimum network standards will be imposed via licence condition, and will broadly match NBN Co's requirements. Where a carrier does not provide NBN-comparable services, there is a risk of overbuild by NBN Co. Currently, any new Operator of a 'superfast' network that supplies services predominantly to residential or small business customers, must do so on an open access and non-discriminatory basis.

As the above summary demonstrates, a single or 'boilerplate' approach to regulatory approvals across integrated utility projects is unlikely to be feasible, at this time, with regulatory issues needing to be differently addressed in each case. Each project regulatory strategy will need to take into account the features of the project and individual state differences and requirements – with the supply of water infrastructure services (in most states) and any proposed supply of bundled retail fibre-based telecommunications services to residential developments raising particular challenges.

Discussion point: To be considered on a case by case basis but also on a whole of project and business unit basis when considering an integrated utility solution.

Appendix

Glossary

1. **BOO/BOOT:** Build, Own, Operate or Build, Own, Operate and Transfer. These terms and concessions and DBOO can be used interchangeably.
2. **Concession:** An agreement whereby a concession to design, build, own and operate a facility is granted by a concessionaire to the concession company (commonly referred to as an SPV or a Project Company).
3. **DBO:** Design, Build, Operate. This model does not include ownership or the corresponding off-balance sheet project financing.
4. **DBOO:** Design, Build, Own and Operate. Note above comment on BOO/BOOT and concessions.
5. **ECA:** Export Credit Agency.
6. **EPC:** Engineering, Procurement and Construction. A construction contract which then links into the O&M Contract. If they were combined they would be a DBO contract.
7. **PwC:** PricewaterhouseCoopers.
8. **O&M:** Operation and Maintenance. An operating and maintenance contract which links into back to the EPC Contract. If they were combined they would be a DBO contract.
9. **SPV:** Special Purpose Vehicle. Alternatively known as the Project Company in a project financing.

Appendix 2

Example expansion/project phasing clause

Refer to Section 2.7 for an analysis of potential expansion of the district cooling facility through increased take-up. This clause is an extract from the PwC Standard Concession Agreement illustrating how a Developer could deal with this critical risk.

8 Project phasing

8.1 Implementation of Project Phases

The Concession Company acknowledges and agrees that:

- (a) the Development is being implemented by the Principal in stages
- (b) it is a primary objective of the Principal to defer the construction of permanent additional capacity to the Project Facilities, and capital costs associated with such permanent additional capacity, to the extent reasonably practicable consistent with Good Utility Practice. Accordingly, in connection with the consideration of the Demand Curve and expansion of the capacity of each of the Project Facilities, the Concession Company must, unless it is otherwise directed in writing by the Principal, utilise Temporary Facilities to the maximum extent reasonably practicable consistent with Good Utility Practice in order to defer the construction of additional permanent capacity and the capital costs associated with such permanent additional capacity until such time that projected demand is expected to result in consistent utilisation of such additional capacity
- (c) subject to Clause 7.7 and execution of the relevant Concession Agreement Supplement, the Concession Company must provide the Design and Construction Works for each Project Facility Phase in accordance with the requirements of this agreement and any Concession Agreement Supplement
- (d) with respect to each Project Facility Phase, the Principal shall have the same substantive and procedural rights it has with respect to the Design and Construction Works for the Base Project Facilities, as set out in Clause 9.

8.2 Adjustments to demand curve

- (a) On each anniversary of the Signing Date until the date that the ultimate Guaranteed Capacity of each Project Facility has been reached, and at such other times as may be agreed by the parties, the Principal must provide the Concession Company the Demand Curve as revised by the Principal based on information reasonably available to the Principal regarding population trends and other matters that affect the assumptions upon which the Demand Curve is calculated, including information provided by the Concession Company in Monthly Performance Reports regarding utilisation of the Project Facilities (the 'Demand Curve Notice').
- (b) The Principal and the Concession Company must meet promptly following the receipt by the Concession Company of the Demand Curve Notice to discuss the Demand Curve Notice. The Principal must provide the Concession Company such additional information regarding the Demand Curve Notice and the Demand Curve as the Concession Company reasonably requests.
- (c) As soon as reasonably practicable following receipt by the Concession Company of the Demand Curve Notice and any additional information referred to in Clause 1.2 (b), the Concession Company must notify the Principal regarding:
 - (i) the then current capacity of the Wastewater Treatment Plant and the Polishing Plant
 - (ii) the additional capacity which will reasonably be required by the Wastewater Treatment Plant and the Polishing Plant as a result of the Demand Curve
 - (iii) any required changes to Schedule [] to provide such additional capacity
 - (iv) any changes necessary to the Development Network as a result of the Demand Curve and such additional capacity
 - (v) the estimated Capital Requirements for providing such additional capacity, and any changes to the Prevailing Financial Model to reflect such requirement
 - (vi) whether the additional capacity provided by each Project Facility Phase, as the case may be, of each Project Facility should be increased or decreased as a result of the Demand Curve
 - (vii) whether the Scheduled Commercial Operations Date for each Project Facility Phase should be postponed or brought forward as a result of the Demand Curve, and, if so, by how much

- (viii) *the estimated increase in operating costs of the Project Facilities as a result of such additional capacity, and any changes to the Prevailing Financial Model to reflect such increase*
 - (ix) *the estimated effect on the Tariff calculated in accordance with Schedule [], and any changes to the Prevailing Financial Model to reflect such effect*
 - (x) *the estimated schedule for expanding the capacity of the Wastewater Treatment Plant and the Polishing Plant, as applicable, and any changes to the Prevailing Financial Model to reflect such expansion*
 - (xi) *the plan of the Concession Company for designing, constructing and financing such additional capacity, including the plan for issuing Concession Company Debt and contributing Equity*
 - (xii) *the estimated cost and schedule for providing a commitment from one or more financial institutions for financing the amount of the Capital Requirements for the applicable Project Facility Phase*
 - (xiii) *the information described in items (v), (viii), (ix) and (xi), assuming that the required additional capacity identified in such notice from the Concession Company is provided through Temporary Facilities.*
- (the Demand Curve Notice Response).**
- (d) *The Concession Company must provide to the Principal as soon as reasonably practicable such additional information regarding the Demand Curve Notice Response as the Principal reasonably requests and meet with the Principal at its request to discuss the Demand Curve Notice Response. Estimated and other information provided by the Concession Company in the Demand Curve Notice Response must be based on information reasonably available to the Concession Company, but the Concession Company is not obliged to undertake any formal solicitation of bids from potential Subcontractors or any similar process in order to obtain such information.*
 - (e) *Within the later of 60 Days of receipt of the Demand Curve Notice Response and 10 Days after provision of any additional information reasonably requested by the Principal pursuant to Clause 1.2(d), the Principal must notify the Concession Company that the Principal has made one of the following determinations, or a combination of them, as applicable:*
 - (i) *proceed with the Project Facility Phase and the additional capacity it requires for the Project Facility Phase*
 - (ii) *not proceed with the Project Facility Phase at such time and directs the Concession Company to use Temporary Facilities*
 - (iii) *not proceed with the Project Facility Phase at such time and directs the Concession Company to use existing capacity of the applicable Project Facility.*
- (f) *If the Principal elects not to proceed with the Project Facility Phase at such time:*
 - (i) *directs the Concession Company to use Temporary Facilities, then the Concession Company must subject to Clause 7.7(g)(iii) provide Temporary Facilities as set out in Clause 12.19, and the Concession Payment must be adjusted as provided in Schedule [] and Schedule []*
 - (ii) *directs the Concession Company to use the existing capacity of the applicable Project Facility, then the Concession Company must maximise the usage of the capacity of the applicable Project Facility to Treat Wastewater and Septage and to Polish TSE, as the case may be, in excess of the Guaranteed Capacity of the then-existing Project Facilities to the extent that such usage is consistent with applicable Law and Good Utility Practice, and the Concession Payment must be adjusted as provided in Schedule [] and Schedule []; provided, however, that at such time that the Concession Company reasonably determines that usage of the capacity of the applicable Project Facility in excess of the Guaranteed Capacity is not consistent with applicable Law or Good Utility Practice, the Concession Company must notify the Principal in writing as to the basis for such determination in reasonable detail, and provide the Principal with information it reasonably requests relating to such determination. If the parties are unable to resolve any dispute regarding such determination, either party may refer the matter to the Independent Expert pursuant to Clause 39. If the parties agree or it is determined by the Independent Expert that the usage of the capacity of the applicable Project Facility in excess of the Guaranteed Capacity is not consistent with applicable Law or Good Utility Practice, then the Principal must, subject to Clause 39, direct the Concession Company (A) to implement a Project Phase; or (B) subject to Clause 7.58(g)(iii), to install Temporary Facilities; or (C) to utilise such other methods consistent with Good Utility Practice and applicable Law as are approved by the Principal, including applicable methods described in Clause 7.8(g)(ii).*
 - (g) *If the Principal elects to proceed with the Project Facility Phase, then the Phase Contractor for the applicable Project Facility Phase will be selected, the Project Facility Phase will be implemented and the Concession Payment will be adjusted as provided in this Clause 8 and Schedule [].*



8.3 Selection of phase Contractor

- (a) If the Concession Company proposes to have the Initial DBO Contractor undertake the Design and Construction Works for the Project Facility Phase, then, within 60 Days of receipt of the notice from the Principal pursuant to Clause 1.2(e), the Concession Company must provide the Principal with a proposal which includes:
- (i) the notice provided in Clause 41(b) and (d), such notice to include current information with regard to the Initial DBO Contractor
 - (ii) the design specification, scheduling and other relevant information for the Design and Construction Works for the applicable Project Facility Phase
 - (iii) a binding guaranteed maximum price from the Initial DBO Contractor for the Design and Construction Works together with a certificate from the Independent Engineer certifying that such price is fair and reasonable and consistent with applicable market conditions (which shall be final and binding on the parties)
 - (iv) the DBO Contract for the Base Project Facilities marked to show any changes necessary for the Design and Construction Works for the applicable Project Facility Phase
 - (v) the terms of the Concession Company Debt or Equity to be issued or provided by the Concession Company to pay for the Capital Requirements of the Design and Construction Works for the applicable Project Facility Phase pursuant to the obligations of the Concession Company under Clause 7.8.
- (b) The Concession Company must provide the Principal such additional information regarding such proposal as the Principal reasonably requests and meet with the Principal at its request to discuss such proposal, including providing the Principal with the detailed breakdown on an 'open book' basis of the costs of the Initial DBO Contractor for undertaking the Design and Construction Works.
- (c) If the terms of such proposal for such Design and Construction Works are fair and reasonable and consistent with applicable market conditions for similar projects, the Project Facilities Phase utilises the technology described in Schedule [] and is otherwise consistent with Schedule [] or otherwise approved by the Principal, and does not impose obligations on the Principal that are different or greater than the obligations in this agreement (unless such obligations are approved by the Principal acting reasonably), then the Concession Company may have the Initial DBO Contractor undertake the Design and Construction Works for the applicable Project Facility Phase.
- (d) If the parties cannot agree regarding the matters identified in Clause 1.3(c) within 30 Days after receiving such proposal and the additional information referred to in Clause 1.3(b), then either party may refer the matter to the Independent Expert. The determination of the Independent Expert shall be final and binding on the parties.
- (e) If the Independent Expert determines that the terms of the Initial DBO Contractor's proposal for such Design and Construction Works is not fair and reasonable or is not consistent with applicable market conditions for similar projects, the Project Facilities Phase does not utilise the technology described in Schedule [] or is not otherwise consistent with Schedule [] or imposes obligations on the Principal that are different or greater than the obligations in this agreement, then the competitive tender process described below must be used to procure an EPC Contractor for the Design and Construction Works.
- (f) The parties acknowledge their preference for continuing the Initial O&M Contractor with respect to the provision of Operation and Maintenance Services for each Project Facilities Phase but that there may be circumstances in which retendering the provision of all Operation and Maintenance Services may be advantageous. Accordingly, and subject to Clause 1.3(h), the Concession Company may implement the competitive tender process described in the following provisions of this Clause 8.3 for the provision of both Design and Construction Works with respect to a Project Facilities Phase and all Operation and Maintenance Services for all Project Facilities where it is able to demonstrate to the Principal's satisfaction (acting reasonably) that the Principal will not be materially and adversely affected by the retendering of those services.
- (g) In no event may the procurement of a new DBO Contractor in connection with the implementation of a Project Facility Phase:
- (i) relieve, affect or diminish any obligation of the Concession Company under this agreement
 - (ii) adversely affect the provision of the Operation and Maintenance Services under this agreement
 - (iii) increase the Principal's payment obligations for the Operation and Maintenance Services beyond those provided at the time of the proposed procurement of a new DBO Contractor (as included in the Fixed Operating Costs Charge and the Variable Operating Costs Charge components of the Concession Payment in effect at such time) by an amount greater than the amount determined in accordance with Section (A)4 of the Adjustment Principles. For the avoidance of doubt, the Concession Company may not engage a new DBO Contractor in connection with the implementation of a Project Facility Phase if the Fixed Operating Costs Charge plus the Variable Operating Costs Charge will as a result be greater than the sum of the then-existing Fixed Operating Costs Charge and Variable Operation Costs Charge plus any increased operating costs relating to the applicable Project Facilities Phase as determined in accordance with Section (A)4 of the Adjustment Principles, without the prior written consent of the Principal.



- (h) *Except as otherwise agreed by the Principal in its sole discretion, the Initial O&M Contractor must be used by the Concession Company for the provision of the Operation and Maintenance Services for the Residual Waste Treatment Plant for a period of at least five Years from the Commercial Operation Date of the Residual Waste Treatment Plant.*
 - (i) *If a competitive tender process is used, the Concession Company must prepare bid documents for prospective Phase Contractors, including a Phase Contract and other necessary Project Agreements.*
 - (j) *If a competitive tender process is used, the Concession Company must obtain bids as follows:*
 - (i) *unless a lesser number is agreed by the Principal, the Concession Company must send to no fewer than three prospective Phase Contractors, a request for proposals from the prospective Phase Contractor for the Project Phase (the 'RFP'). Following approval by the Principal of the financial condition of such Phase Contractors to design and construct the Project Phase and if applicable (and subject to clauses 8.3(g) and 1.3(h)) operate the Project, and based on the criteria set out below and such other criteria as may be set out in such RFPs (the 'Selection Criteria'), the Concession Company will select one or more of such prospective Phase Contractors for negotiation of the price, and the other terms and conditions, for designing and constructing the Project Phase and if applicable (and subject to Clauses 8.3(g) and 1.3(h)) operating the Project*
 - (ii) *the criteria for selecting the Phase Contractor include:*
 - (A) *the Selection Criteria*
 - (B) *the price of designing and constructing the Project Phase and if applicable (and subject to Clauses 8.3(g) and 1.3(h)) operating the Project*
 - (C) *the terms and conditions of the Phase Contract for designing and constructing the Project Phase and if applicable (and subject to Clauses 8.3(g) and 1.3(h)) operating the Project.*
- (iii) *the Selection Criteria must include the following criteria and any other criteria set out in the RFPs:*
 - (A) *ability to perform the specified design, construction and operation services in accordance with a demonstrated high-level quality of service and performance*
 - (B) *ability to provide the specified design and construction services in connection with the timetable set out by the Concession Company and the Principal, and in accordance with the Design and Technical Specifications for the Project Facility Phase*
 - (C) *ability to perform the specified design, construction and operation services in accordance with a price competitive with other bidders*
 - (D) *experience in designing and constructing other similar projects*
 - (E) *experience in operating other similar projects*
 - (F) *financial condition and ability to provide required performance and payment bonds for the Project Phase*
 - (G) *take account of the matters referred to in Clause 1.3(a).*
 - (iv) *the Concession Company must provide the Principal with the RFPs no less than ten days before it is sent to prospective Phase Contractors for review and comment by the Principal. The RFPs must be reasonably acceptable to the Principal prior to issue. Following receipt of responses to the RFPs, the Concession Company must prepare a report which analyses and ranks such responses, and lists not less than two prospective Phase Contractors with which the Concession Company will negotiate a price, and other terms and conditions, for the Project Phase. The Concession Company must provide the Principal with a copy of that report for the Principal's review and comment before any of the prospective Phase Contractors is notified of a determination by the Concession Company. The report must be reasonably acceptable to the Principal; provided, however, that it is recognised and agreed by the Principal that, subject to Clause 8.3(g) selection of prospective Phase Contractors for negotiation of price will be made by the Concession Company*
 - (v) *the Concession Company must, at the request of the Principal, provide the Principal with a copy of all information received by the Concession Company from the prospective Phase Contractors submitting responses to the RFPs, including information regarding price proposals. The Concession Company must answer questions from the Principal relating to the process of selecting the Phase Contractor and its status and must, at the Principal's request, meet the Principal to brief the Principal on matters relating to such selection process, including negotiations regarding price and other terms and conditions for designing and constructing the Project Facility Phase and if applicable (and subject to Clauses 8.3(g) and 1.3(h)) operating the Project*

- (k) As soon as practicable after the Concession Company has received indicative offers for the Phase Contract for the Project Phase, it must provide the Principal with:
- (i) all relevant information in relation to those offers including copies of the draft documents on which those offers are based
 - (ii) a draft Concession Agreement Supplement setting out the proposed amendments to this agreement to address each of the following matters with respect to the facilities covered by the Concession Agreement Supplement
 - (A) Design and Construction Works
 - (B) Design and Technical Specifications
 - (C) Completion Tests
 - (D) Scheduled Commercial Operation Date
 - (E) Milestone Schedule and Milestones
 - (F) Guaranteed Availability and Guaranteed Capacity
 - (G) Operation and Maintenance Services (if applicable)
 - (iii) a Model Variation Event Report in accordance with Schedule 27, including a calculation of the Concession Payment showing the financing of the Capital Requirements for the Project Phase and the change of the operating costs of the Concession Company pursuant to sections (A) 5 and (A) 6 of the Adjustment Principles.
- (l) Unless the parties agree otherwise:
- (i) the draft Concession Agreement Supplement must not propose any amendments to this agreement other than those which are necessary in order to address each of the matters referred to in Clause 1.3(k)); and
 - (ii) the Design and Technical Specifications for the facilities covered by the draft Concession Agreement Supplement must be the same (other than with respect to capacity) as those for similar facilities making up the existing Project Facilities.
- (m) If the parties cannot agree on the terms and conditions on which to proceed with the Project Phase within 30 Days of the Principal receiving the information, documents and the draft Concession Agreement supplement referred to in Clause 8.3(k), then either party may refer the matter to the Independent Expert; provided, however, that the Independent Expert may not make any determination related to any matter set out in Clause 8.3(g), all of which matters are to be determined by the Principal in its reasonable discretion. The Independent Expert must take into account whether the draft Concession Agreement Supplement complies with Clause 8.3(k).
- (n) Notwithstanding anything in this agreement to the contrary, the Concession Company must not enter into a Phase Contract until and unless the Concession Company has provided the Principal for its review and comment a copy of each draft Phase Contract no less than 15 Days prior to delivery of the draft Phase Contract to the prospective Phase Contractor with which the Concession Company is negotiating, including a copy of the substantially final draft of the Phase Contract. The Phase Contract must be reasonably acceptable to the Principal and must provide, among other things, that the Phase Contractor must perform all the obligations of the Concession Company set out in this agreement relating to the design and construction of the Project Phase and if applicable (and subject to Clause 8.3(g) and 1.3(h)) operation of the Project. The Phase Contract submitted by the Concession Company to the Principal will be deemed approved by the Principal if the Principal has not provided notice to the contrary in writing to the Concession Company within 15 Days of submission by the Concession Company. The Concession Company is solely responsible for the obligations of the Phase Contractor set out in the Phase Contract and the Principal will have no responsibility or liability therefore. Each Phase Contract is deemed to constitute a Subcontract and must comply with all requirements for a Subcontract.

Concession agreement supplement

- (a) Simultaneously with the execution of the Phase Contract, the Concession Company and the Principal will execute the Concession Agreement Supplement agreed or determined in accordance with this Clause 8.3.
- (b) Without limiting the generality of the provisions of Clauses 7.4 and 7.5, the Concession Company must, on or before the date of execution of the Concession Agreement Supplement:
 - (i) enter into the relevant Project Agreements and any other agreements necessary to be entered into by the Concession Company to enable it to undertake the Project Phase and to otherwise exercise its rights and fulfil its obligations under this agreement, and provide the Principal with certified copies of these agreements as soon as practicable after their execution; and
 - (ii) obtain all Authorisations necessary for it to undertake the Project Phase and to otherwise exercise its rights and perform its obligations under this agreement and the other Project Agreements.

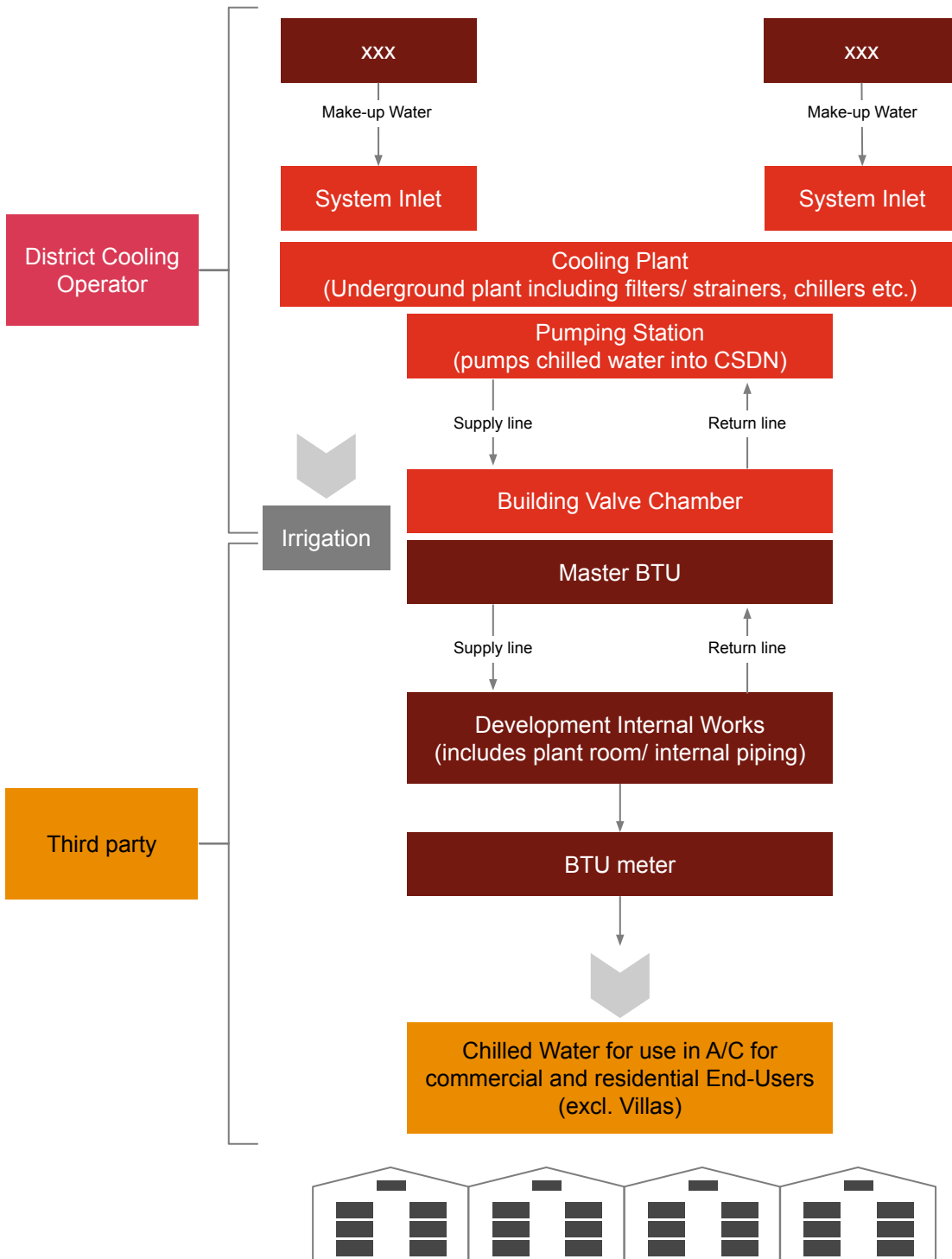
Direct agreements

If any Financing Documents are entered into after the Signing Date in accordance with this agreement, the Principal agrees, at the Concession Company's request, to enter into any direct agreements in substantially the same form as Schedule [].

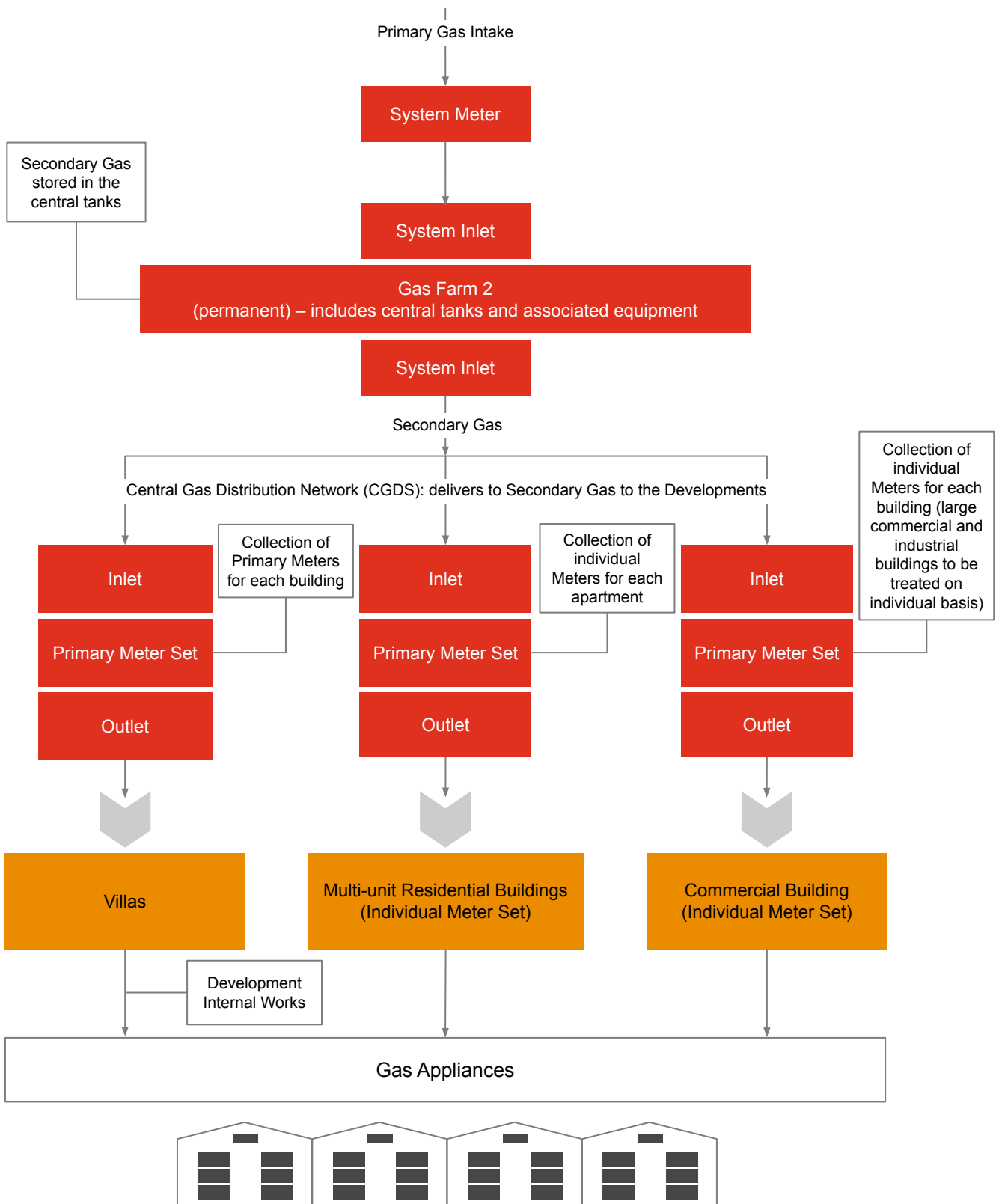
Appendix 3

Example stand alone and integrated utility solutions from international projects

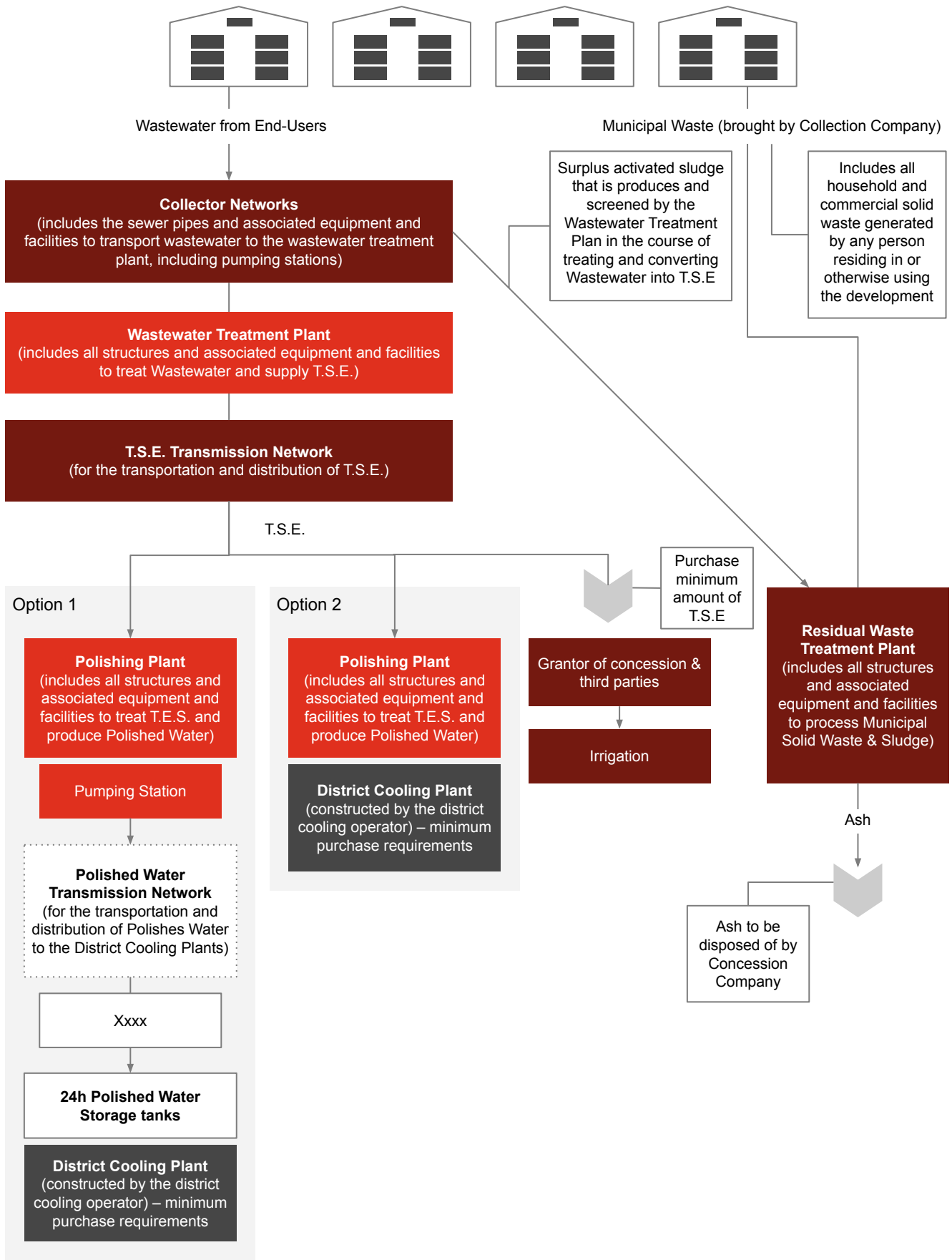
District Cooling Concession Agreement - Project Facilities



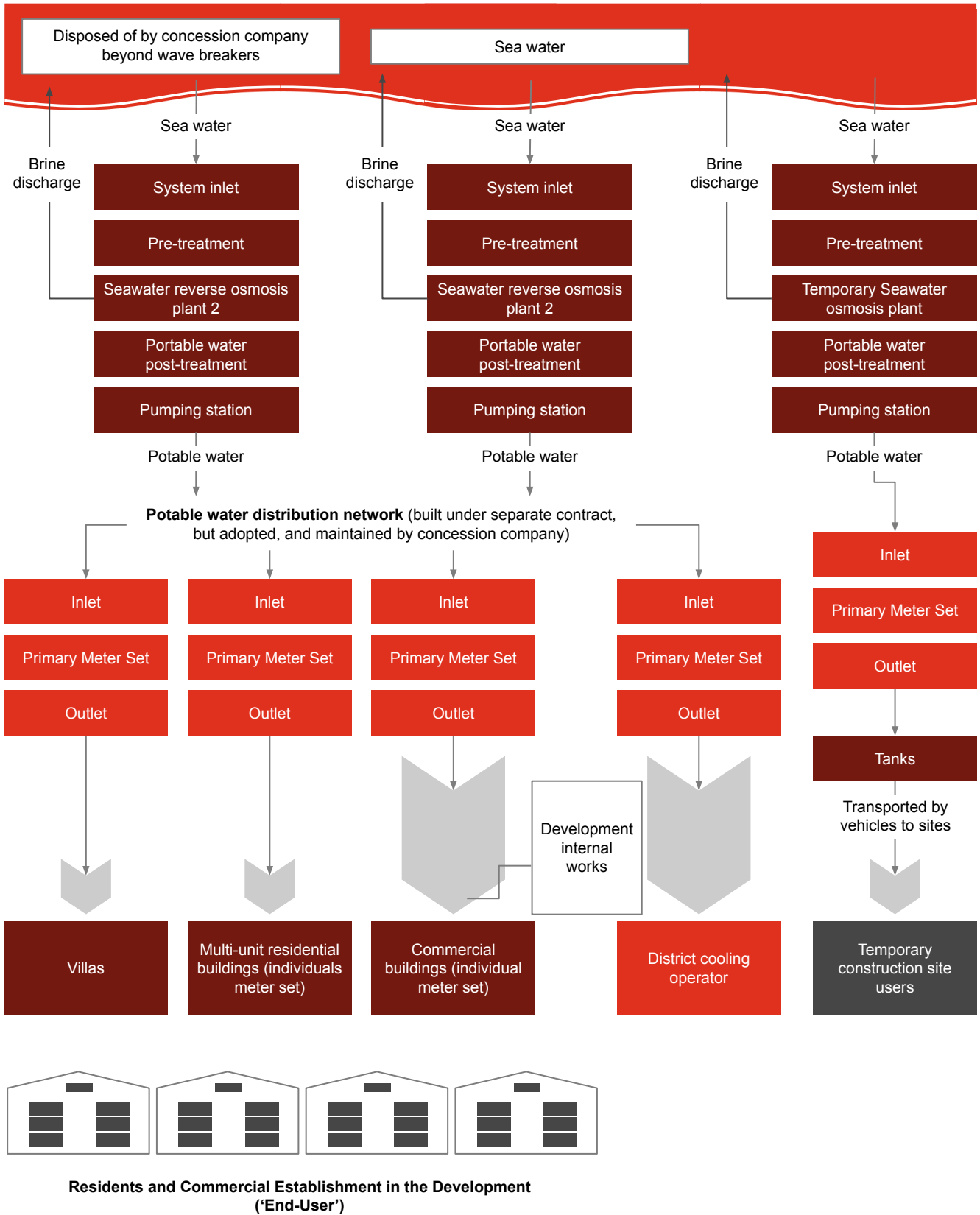
Gas System Concession Agreement – Project Facilities



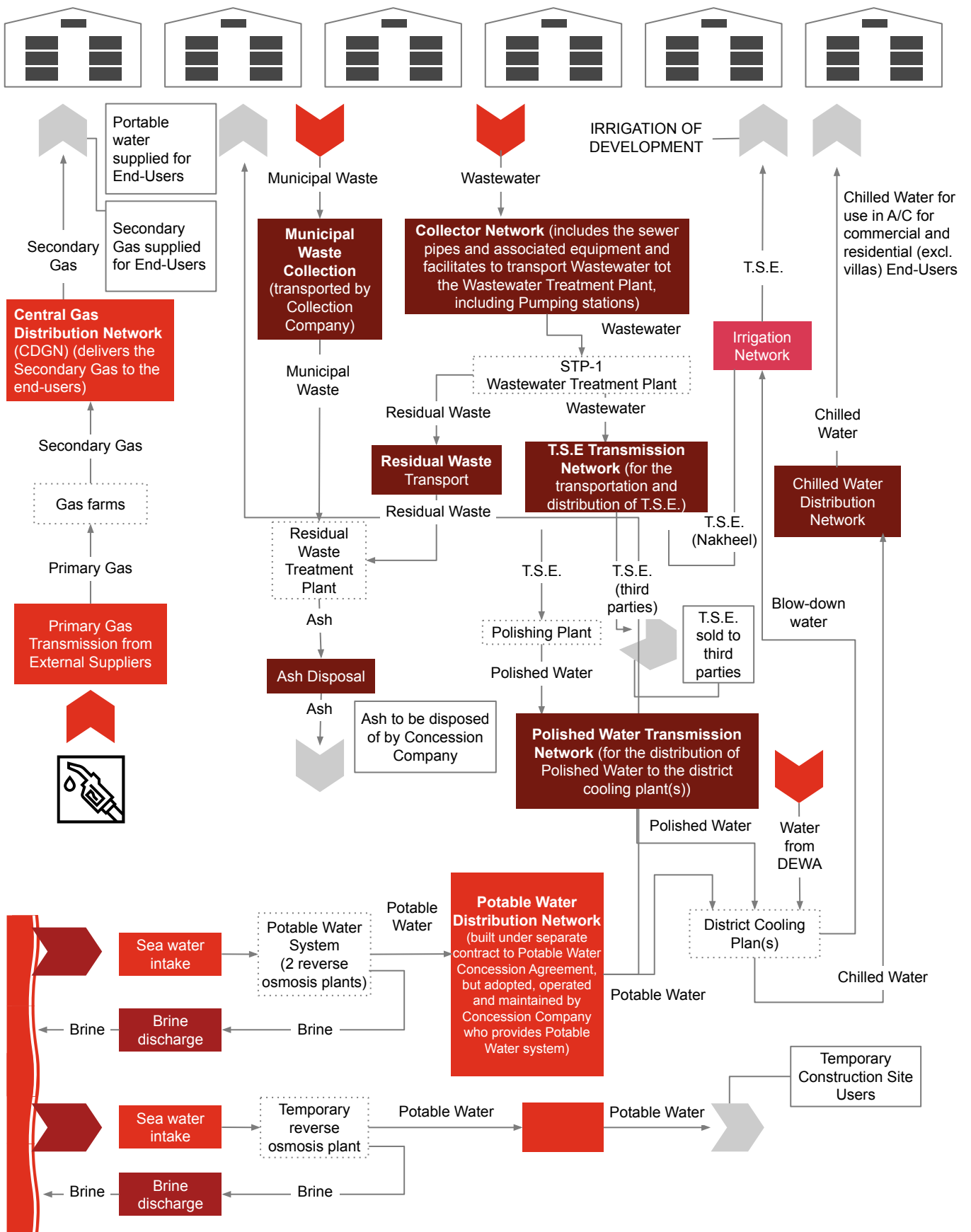
Wastewater Treatment Concession Agreement – Project Facilities



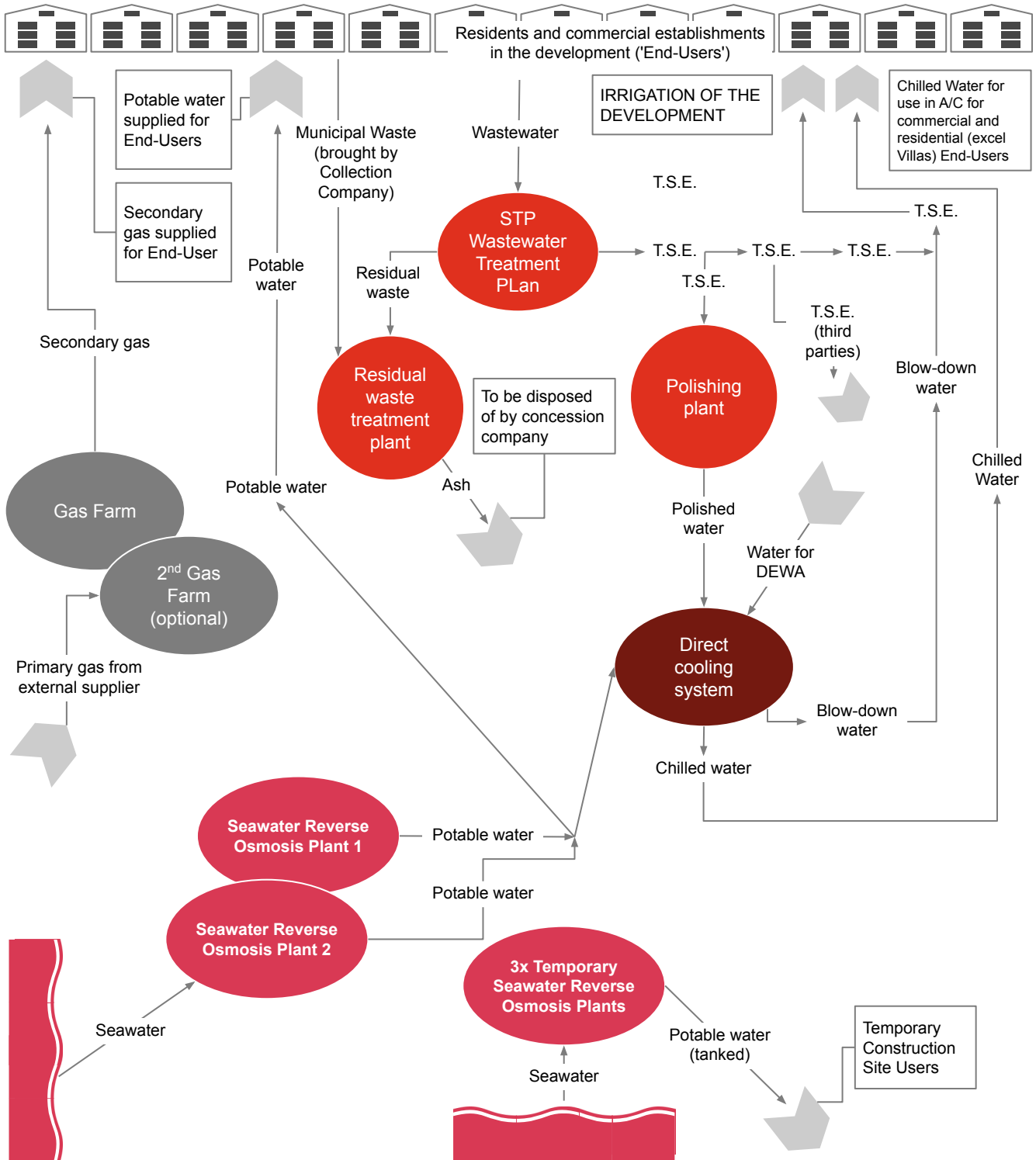
Potable Water Concession Agreement – Project Facilities

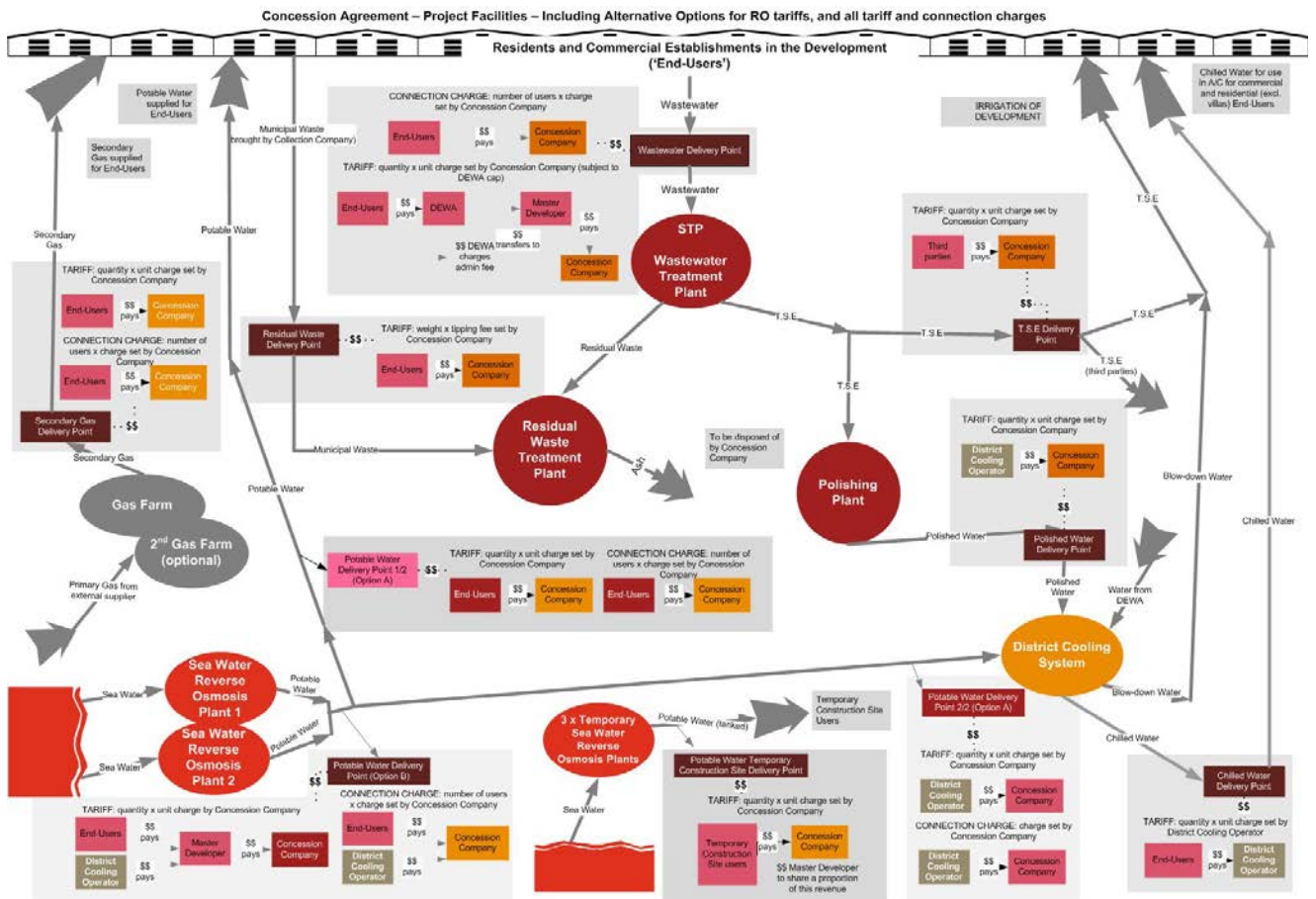


Potable Water Concession Agreement – Project Facilities



Concession Agreement – Project Facilities – Plan of combined concessions, with no tariff or connection changes







General

29 Briefing Paper: FEED contracts and the consequences for bankability

Investing in Energy Transition Projects
March 2023





1. Introduction and purpose

The focus of this Briefing Paper is the role of front-end engineering and design (**FEED**) packages in the development of large scale projects or works packages, in particular, the interfaces and interdependencies that such FEED packages will have within such projects.

This Briefing Paper considers FEED to be the development of designs and engineering for a project or works package to 30% before the tendering or award of that project or works package. The scope of such FEED activities will typically include a range of critical deliverables, including deliverables that may ultimately be provided to works package Contractors as Principal supplied information that may be used to determine final design, pricing or commercial terms or may be relied upon by the relevant Contractor.

In this context, the purpose of this Briefing Paper is to:

- explain the potentially detrimental consequences of errors in the FEED deliverables
- propose strategies that manage and/or mitigate against the risks posed by the potential for errors in FEED deliverables.

2. Nature of the FEED

2.1 The purposes and outcomes of FEED

FEED has three primary purposes:

- to provide a design framework within which detailed designs can be developed and equipment procured in a coordinated manner
- to permit the design process to start so that approvals, early works and land procurement can commence ahead of detailed design
- to firm up costing.

FEED deliverables generally fall into the following categories:

- those that are predominately objective data with no professional interpretation, such as a topographical study
- those that are a mixture of objective data and professional interpretation
- those that are predominately a professional interpretation or service, such as geotech, designs and specifications.

In some cases, FEED deliverables will also embed design decisions that are then carried through tender processes, and ultimately may be incorporated into the detailed designs for works packages.

2.2 Considerations for the Principal

While FEED will typically play an important role in the development of a project or works package, the Principal must be mindful of various project-specific characteristics when determining its FEED approach and use of FEED deliverables, including:

- undertaking FEED requires significant development funding, often before a final investment decision has been made
- the capital cost of the project will often be high in comparison with the low liability caps and professional indemnity insurance limits achievable under the FEED contracts
- the same FEED deliverables may be used/relied upon by numerous Contractors.

In these circumstances, the Principal must consider how the risk of FEED errors that cause material performance failures, cost increases and delays can be managed and/or mitigated.

3. Managing and/or mitigating the risks posed by the potential for errors in FEED deliverables

3.1 Understanding the potential for error and the consequences

The best way to manage and/or mitigate a risk is to understand it. Therefore, an important part of scoping each FEED contract should be an analysis of:

- which decisions to be made, actions recommended, or deliverables submitted, by the Contractor under the relevant FEED contract are critical to the project or works package
- the consequences of potential errors made in connection with these critical FEED decisions, recommendations or deliverables
- the processes required to be implemented by the project to monitor and review these critical FEED decisions, recommendations and deliverables, as detailed designs continue to be developed under the FEED contract
- the risk mitigation strategies to be implemented in relation to each critical FEED decision, recommendation and deliverable. For example, among the first deliverables to be obtained from the ultimate works Contractors might be a verification study in which the critical FEED decisions, recommendations and deliverables are evaluated and either confirmed or amended.

Above all, the management and/or mitigation of the potential for errors in FEED deliverables should be addressed in a specific and traceable manner, guided by a clear overarching strategy, so that the Principal has confidence that FEED errors can be addressed without the project incurring significant delays and additional costs.

This is particularly important because, as noted below, it may not be practicable, either from schedule or budgetary perspectives, to have the FEED fully verified by future works Contractors. This means that it will be necessary for works Contractors to place some degree of reliance on certain FEED decisions/deliverables that have been undertaken or procured by the project delivery team, increasing the potential significance of any errors in those FEED decisions/deliverables.

If works Contractors were precluded from placing reliance on those FEED decisions/deliverables which have not been verified, it is likely that works Contractors will:

- refuse to assume any risk associated with those FEED decisions/deliverables
- add a significant premium to assume risk associated with those FEED decisions/deliverables
- require additional time and cost to reperform or verify those FEED activities (for example, duplication).

3.2 Peer review

The first risk mitigation step is to implement processes that minimise the possibility of errors. This is best done through a peer review of the critical FEED decisions/deliverables by the works Contractor, or if applicable, a lenders' technical advisor.

3.3 Contractual allocation

It may not be practicable, either from schedule or budgetary perspectives, to have the FEED fully verified by future works Contractors. Therefore, a mixture of different contractual strategies that transfer risk and responsibility away from the Principal should be adopted, including no reliance by works Contractors. Some of these are discussed below, while the challenges of others are noted.

Novation of FEED contracts

Novating the FEED contracts to future works Contractors may not be possible or appropriate due to:

- the number of works Contractors relying on the same FEED deliverables
- the number and identity of works Contractors not being known until formal procurement processes have been completed
- the indivisibility of the FEED deliverables, in that many are likely to be interwoven and not capable of neat dissection for the purposes of novation
- the low liability caps and professional indemnity insurance limits provided under the FEED contracts.

Verification of FEED deliverables during the tender period

Verification of the FEED deliverables might be possible to some extent during tender processes, but only where elements can be verified without undermining the ability of the Principal to compare and evaluate tenders (for example, requests for verification might lead to tenders being subject to numerous assumptions, qualifications, caveats and differing interpretations).

If this is feasible then it should be expressly addressed in the tender materials and the relevant works contracts with an associated risk transfer. The tender period will need to be long enough to allow Contractors time to allocate resources and carry out verification.

Verification of FEED deliverables at defined milestones

Verification of the FEED deliverables should be possible during the development of detailed designs. If this is feasible, then it should be expressly addressed in the tender materials and the relevant works contracts with an associated risk transfer.

The goal of the Principal should be that the majority of FEED deliverables will have been verified by defined hold points in the design development process and before the relevant works are constructed or equipment procured.

As part of the scope of each FEED contract, the analysis of critical FEED decisions/deliverables could also include the development of a verification Programme that identifies the point at which each FEED decision will be capable of verification by a works Contractor.

3.4 Insurance

It is important that early, proactive discussions take place with the Principal's risk management and insurance advisors so as to evaluate how the above risks can be managed by the proposed captive insurance arrangements.



Glossary

Investing in Energy Transition Projects



Throughout these papers, a number of terms have been adopted for uniformity. These terms are set out below. Actual agreements might use different terms. For example, “Principal” might be “Owner” or “Developer”; however, this does not have any effect on the substantive use of the terms in these papers.

Contractor	means the contractor hired by the Principal.	Lender	means a project financier.
CP	means condition precedent.	LNG	means Liquefied Natural Gas.
Defect	means an aspect of the construction works that does not comply with the Contract.	LOI	means Letter of Intent.
DLDs	means Delay Liquidated Damages.	MAC clause	means a Material Adverse Change clause.
D&C Contract	means Design and Construct Contract.	MOU	means Memorandum of Understanding.
D&B Contract	means Design and Build Contract.	NOD	means Notice of Delay.
ECA	means Export Credit Agency.	NPP	means Non-Principal Participant.
ECI	means Early Contractor Involvement.	NPV	means Net Present Value.
EOT	means extension of time.	OECD	means the Organization for Economic Cooperation and Development.
EPC	means Engineering, Procurement and Construction.	O&M	means Operating and Maintenance.
EPC Contract	means an Engineering, Procurement and Construction Contract.	O&M Contract	means an Operating and Maintenance Contract.
EPCM Contract	means an Engineering, Procurement and Construction Management Contract.	OEM	Original Equipment Manufacturer.
ESG	means Environmental, Social and Governance.	PLDs	means Performance Liquidated Damages.
FEED	means Front End Engineering Design.	PMC	means Project Management Contractor.
FM	means Force Majeure.	PPA	means Power Purchase Agreement.
IP	means Intellectual Property.	Principal	means the project owner.
IPP	means Independent Power Producer.	Program	means a program that sets out the sequence in which a Contractor will perform its activities, the duration of each activity, and the inter-relationship between the activities.
ITT	means Invitation to Tender.	SOPA	means Security of Payment Act.
Investor	means a project investor.	SOW	means Scope of Works.
KPI	means Key Performance Indicator.	SPV	means Special Purpose Vehicle. Alternatively known as the Project Company in a project financing.
LDs	means Liquidated Damages.	TOC	means target out-turn cost.

How to contact us



If you have any questions about this paper, please contact the editor, Damian McNair, Partner, Energy Transition.

PwC Australia has a dedicated Energy Transition business, consisting of a hub of 132 multidisciplinary and highly-skilled experts helping to facilitate Australia's successful transition to a decarbonised economy by 2050. We are helping accelerate our clients through the energy transition and their related ESG priorities as Australia moves to a net zero economy.

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