

EPC and EPCM
delivery models

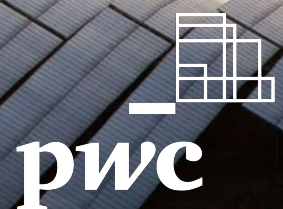


Engineering, Procurement and Construction (EPC) contracts in the solar sector

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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

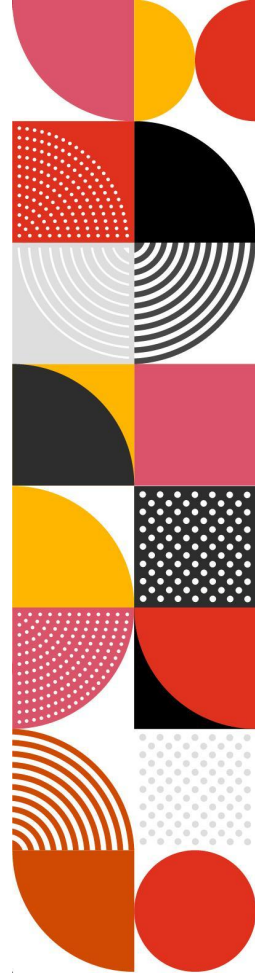
While our focus here is on the use of EPC Contracts in the solar sector, many of the issues are applicable to EPC Contracts in all sectors. EPC Contracts do not eliminate or mitigate against all risks; however, when drafted correctly they can ensure performance, timely delivery and rectification within 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/>.

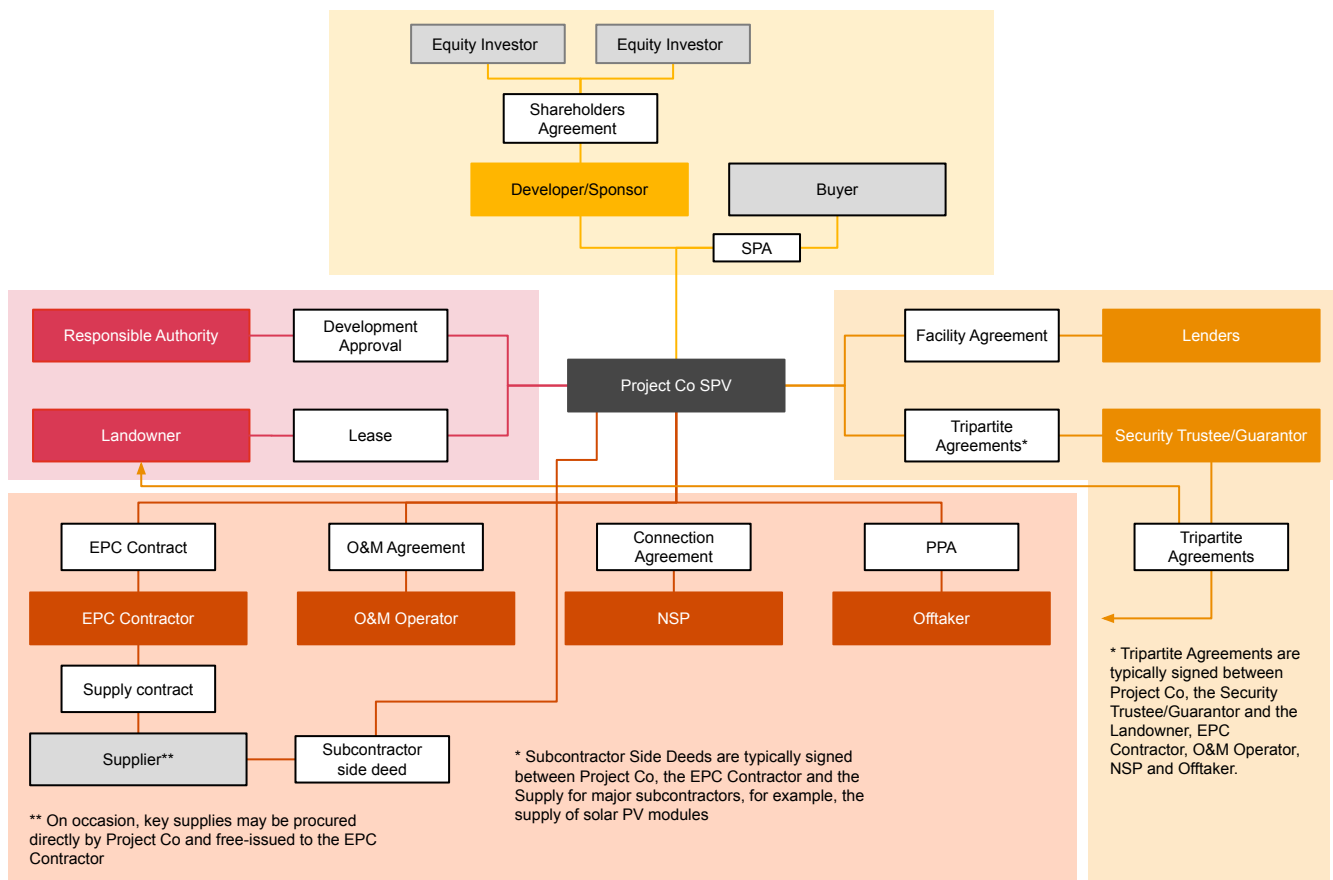
² Kathryn Diss, 'RCR Tomlinson administrators reveal debts of up to \$630m from collapsed engineering firm', *ABC News* (Web Page, 3 December 2018) <[https://www.abc.net.au/news/2018-12-03/rcr-tomlinson-administrators-reveal-debts-of-up-to-\\$630/10576754](https://www.abc.net.au/news/2018-12-03/rcr-tomlinson-administrators-reveal-debts-of-up-to-$630/10576754)>.

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.

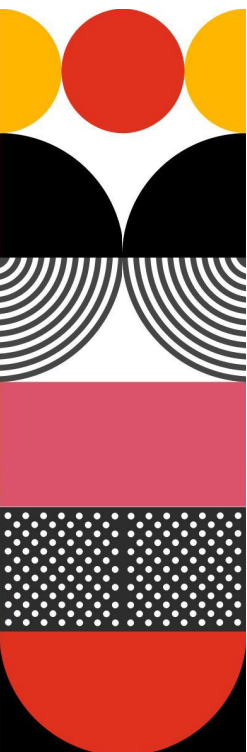
As mentioned above, the Project Company will assume responsibility for the delivery of the free issue generation equipment to a designated delivery point on site in the same way that the Contractor would arrange for the delivery of other equipment to that delivery point. The Contractor will not be responsible 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.

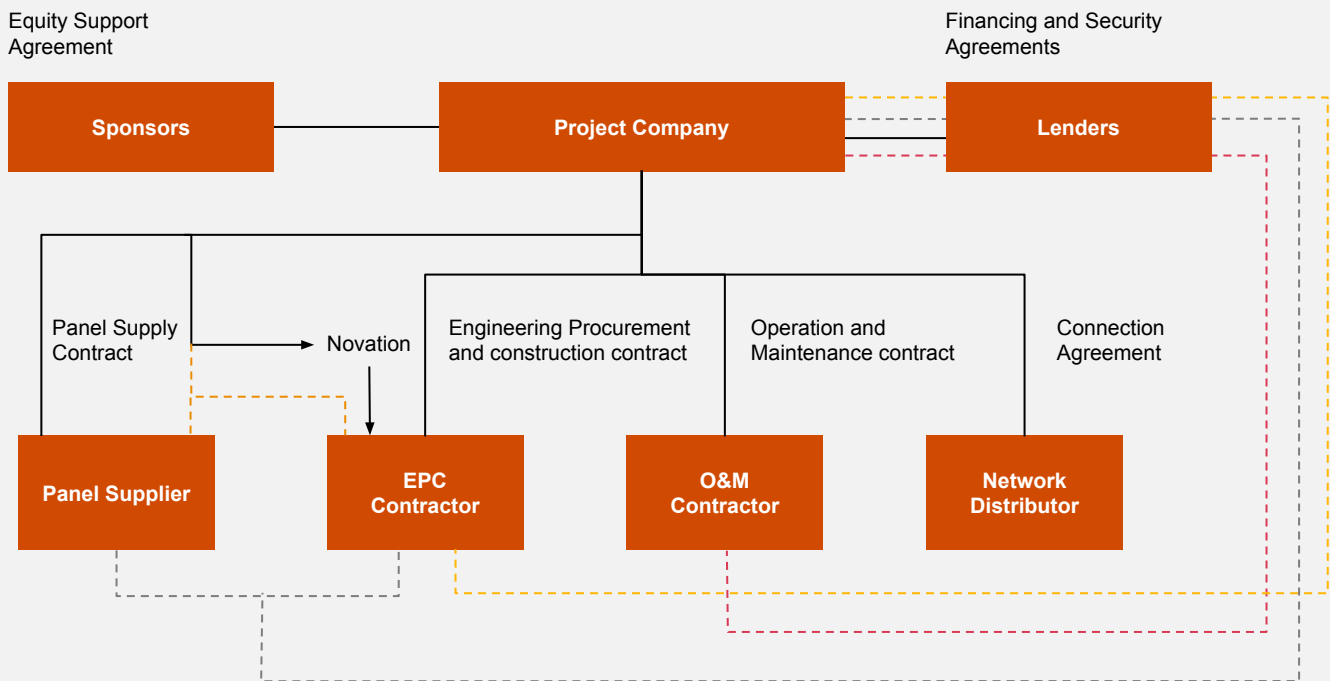
In advance of entering into the tripartite agreement, the Contractor will require details of the generation equipment supply agreement and the prices charged, though this information may be commercially sensitive to the supplier and the supplier must agree to this approach from the outset (and is in 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

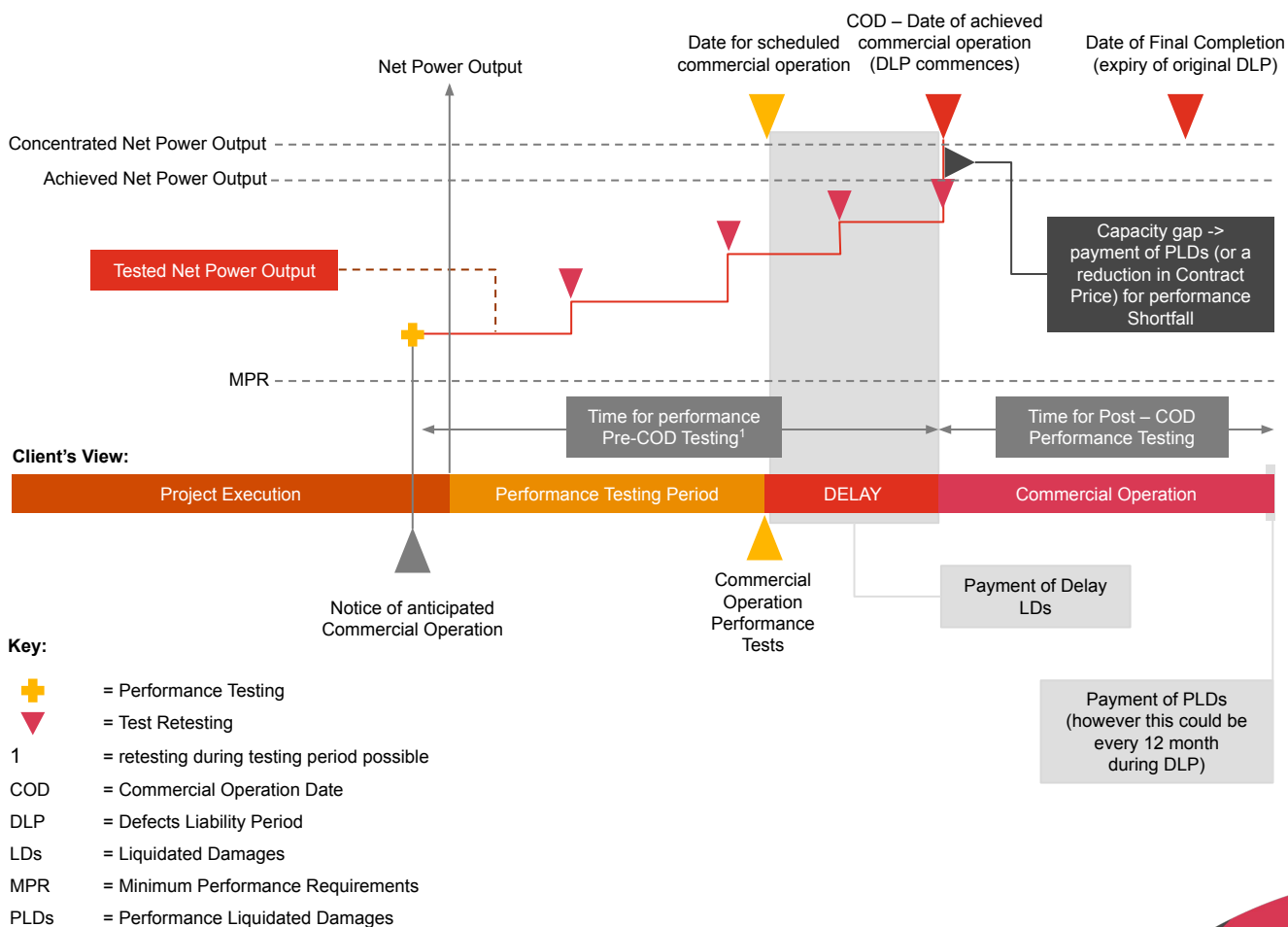
An example of the performance testing and guarantee regime we have used on a number of projects is included in Appendix 1.

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 programme 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:

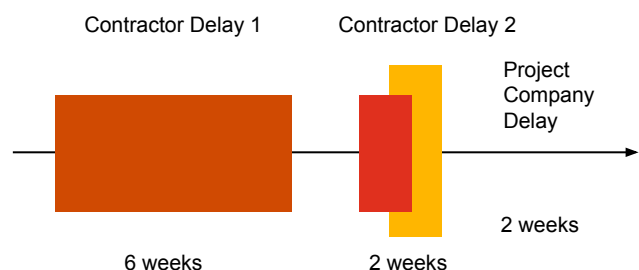
If more than one event causes concurrent delays and the cause of at least one of those events, but not all of them, is a cause of delay which would not entitle the Contractor to an extension of time under [EOT clause], then to the extent of the concurrency, the Contractor will not be entitled to an extension 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.

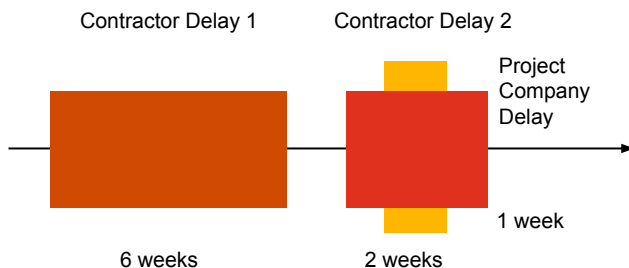
Example 1: Contractor not entitled to an EOT for Project Company caused delay



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).

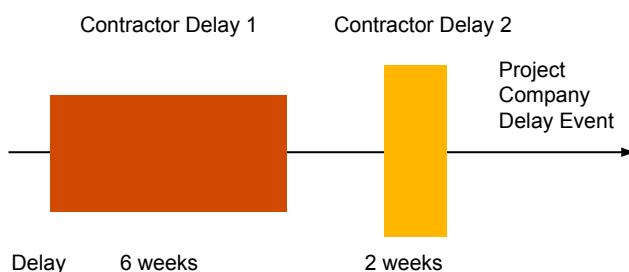


Example 2: Contractor entitled to an EOT for Project Company caused delay



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

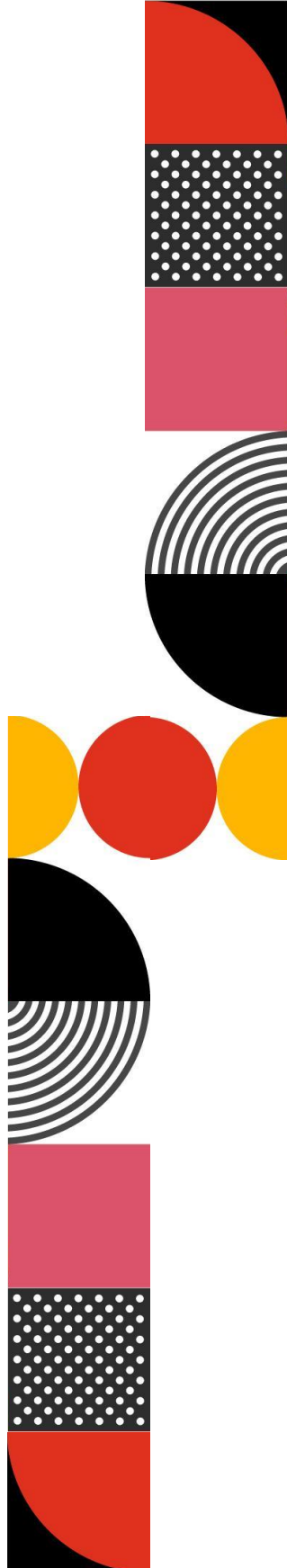
In the case of an exclusive remedies clause, the Project Company must ensure all necessary exceptions are expressly included in the EPC Contract. In addition, drafting must be included to allow the Project Company to recover general damages at law for delay and underperformance if the liquidated damages 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.





How to contact us

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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 Subcontract 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.





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