

An aerial photograph of a large-scale solar farm in a dry, brown landscape. The solar panels are arranged in long, parallel rows. Several workers in safety gear are visible on the ground, and a white utility vehicle is parked near one of the rows. The text 'PROJECT DEVELOPMENT PROCESS' is overlaid in a white box in the upper center of the image.

PROJECT DEVELOPMENT PROCESS

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This section provides an overview of the feasibility and development process.

Developers follow a staged development process and invest gradually in site planning and investigation as they gather more information on sites and reduce risks.

The stages will vary according to the site, the technology, and the developer so this toolkit provides a general process based on discussions with a number of developers.

The development process is based on a staged investment approach to manage development risks incrementally with a

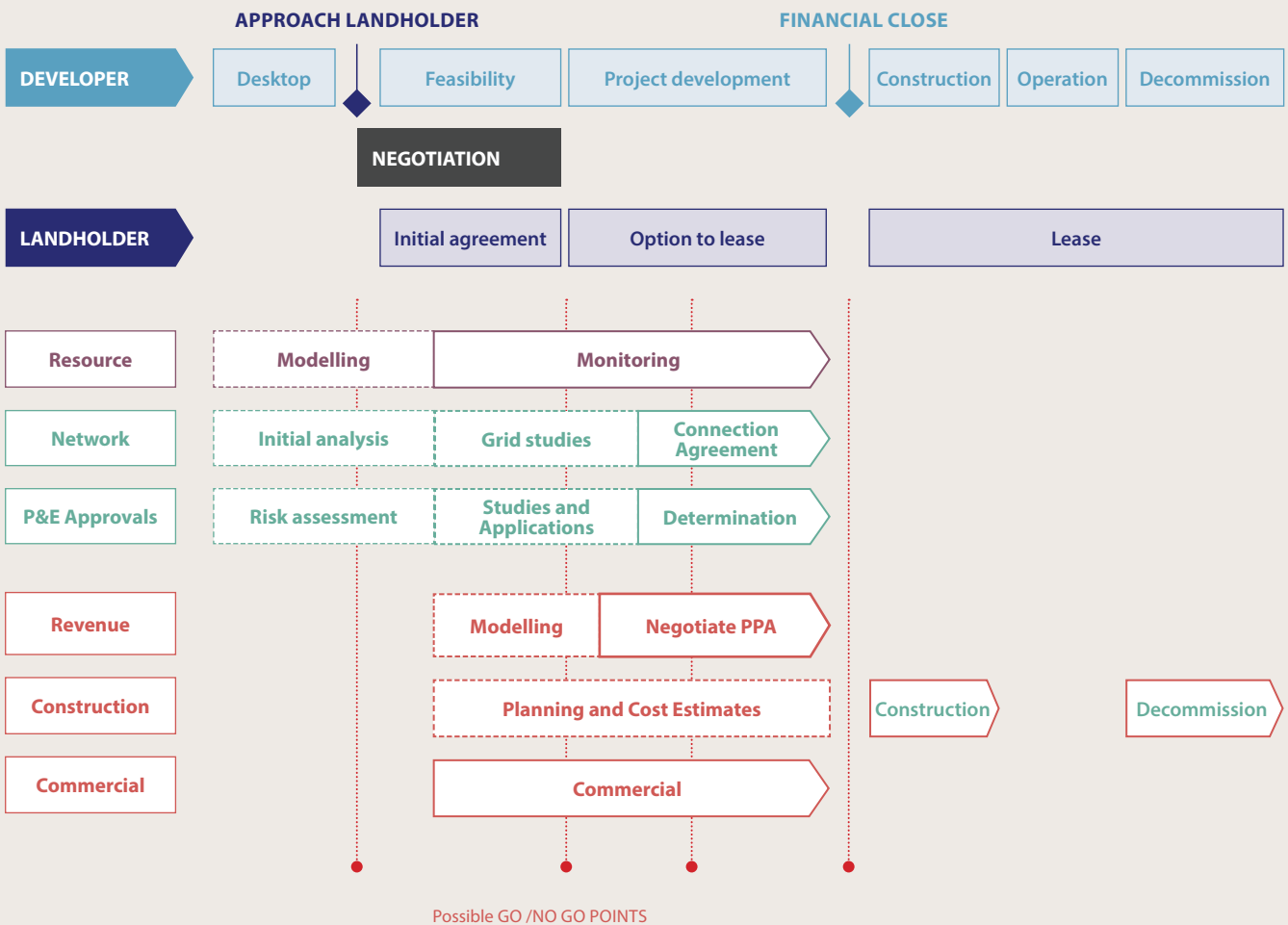
series of major reviews that the developer may have at key stages of the investigations such as the receipt of a major consultant report or response from a government assessment agency. Accordingly, the level of detail a developer has will increase as the project develops. The developer may not have a high level of detail about the project at the time they approach landholders.

The overall project development phases are shown at Figure 4 and the general phasing of work conducted through these stages is shown at Figure 5. The level of detail that is generally available at each stage of the project is shown in Table 2.

Figure 4: Project Development Phases



Figure 5: Development Process





Whitsunday Solar Farm. Image Courtesy: Edify Energy

Stage	Tasks	Project Design and Layout	Level of Detail
Desktop	Information gathered from available on-line resources and research.	Concept	Very Low
Pre-feasibility	Preliminary investigations and Network Connection Inquiry.	Indicative	Low - Medium
Feasibility	Detailed investigations, planning applications, Federal Referral for Matters of National Environmental Significance (threatened biodiversity), Network Connection Agreements.	Near final	High
Construction	Building the project.	Final (Though subject to change depending on conditions encountered during construction)	High – Very High.
Operation	Project operates and generates power.	Finalised	Completed
Decommission	Decommission the project and make good the site in accordance with plans.	Final. Decommissioning Plan with likely cost.	High

Table 2: Project Development Phases: Level of Detail

There are a number of lines of investigation that occur simultaneously to understand any factors that may impact the planning and design of a project. At all stages, the developer is undertaking a number of work packages within each of the disciplines as indicated in Table 3.

While these investigations are ongoing, there is a chance that information may be found that changes the scope of the project and may force the developer to reconsider the design or even viability of the project. These are major review points or go/no-go points.

All of the investigations culminate in a financial analysis which will consider the project costs, risks, revenue and project finance. In seeking project finance, banks may request changes to agreements to ensure there is enough security and their interests are protected.

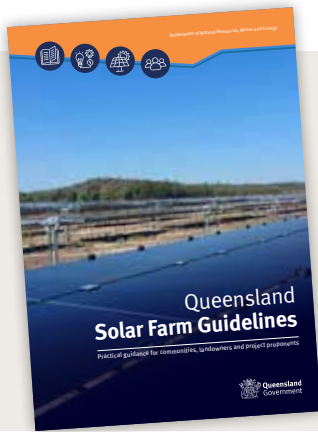
As such, until all investigations are completed, there is the potential for plans to change.

At the desktop assessment phase for example, the developer may produce an indicative layout of the project based on what is known about the site from research, GIS mapping and other similar assessments. These layouts are refined as more detailed studies are conducted to identify opportunities or risks, such as the suitability of the local network and the extent of any environmental constraints.

'Micro-siting' may also occur during the construction phase, where the location of infrastructure may be changed in response to site matters.

Desktop assessment		Pre-feasibility		Project Development		Financial Close		Construction		Operations		Decommission	
Resource assessment	GIS site selection.	On site monitoring.	Detailed assessments.										
Network connection	GIS Researching Network Planning Information.	Network connection enquiry. Market participant registration (AEMO).	Connection to the grid is approved by the network service provider.	Network connection works to be completed by the developer or Network Service Provider.									
Planning and Environmental approvals	Initial planning due diligence. Risk assessment.	Local and/or State government consultations and pre-lodgements Environmental studies such as biodiversity, cultural heritage, and geotechnical and impact assessments.	Lodge applications and obtain approvals under all relevant state and local government legislation. Some projects will also require referral to the Commonwealth Government under the Environmental Protection and Biodiversity Conservation Act.	All the required approvals are in place.									
Construction	Conceptual capital and operational estimates.	Estimates and quotes.	Tender process and contracts.	Contracts in place for construction with potentially some pre-construction works or procurement underway.	Engineering, Procurement and Construction (EPC) contractors on site for construction following the approved plans.								
Revenue: Power Purchase Agreements (PPA) or Off-take agreement	General industry figures.	Modelling and initial discussions with retailers.	Negotiate and agree terms of PPA.	Off-take agreements between the energy producer and the buyer are in place.									
Commercial		Integration of all above information to determine the overall viability of the project and recommend actions to the Board.	Agreements finalised by this stage. Economic estimates for the capital expenditure, production and generation meet the requirements of the lender, investor and proponent.	The Board considers and may approve the project.									Consideration may be given to extending the lifespan of the project.

Table 3 Project Development Process: Work Packages



Queensland Solar Farm Guidelines

The Queensland Solar Farm Guidelines provide details of the Planning and Approvals Framework for Solar Farms in Queensland at Chapter 2 and details on the Stages of Solar Farm development at Chapter 3.

For more Information about project planning stages including legislated planning requirements, refer to the [Planning and Development in Queensland](#) section of Useful Resources.

A number of matters that may lead to a major review or a decision to cease work on a project are shown in Table 4.



Warwick Solar Farm. Image Courtesy: University of Queensland

Table 4: Possible project review and go/no-go points

Pre-feasibility

Initial contact with local Council and/or the State Government indicates it is unlikely that the required approvals would be granted.

Unable to get landowner consent to access land.

Initial network inquiry indicates poor network strength or capacity.

Project development stages

Planning and environmental assessments identify significant issues that may require a change (i.e. sensitive areas, geotechnical assessment).

Planning applications refused or approval conditions affect project feasibility.

Unavailable Network Connection.

Unable to secure Power Purchase Agreements.

Combination of issues identified in project modelling indicating that the project is not techno-economically feasible including:

- a. constrained network
- b. insufficient solar, wind, water or available biomass resources
- c. capital constraints
- d. constraints in the supply chain.

FID or financial close

Board not supportive of project or prioritises another project.

Investors or financiers not satisfied that all risks are managed.

How long will the development process take?

The time it takes for the development phase will vary significantly depending on the technology and scale as well as the number of environmental and planning factors that need to be considered and mitigated.

As a result, it is difficult to provide a meaningful generalised timeline. Landholders should therefore ask the developer to give examples of how long the development process has taken them for similar projects on other sites.

Refer to the Australian Energy Infrastructure Commissioner website for examples of planning and development time frames:

www.aeic.gov.au/observations-and-recommendations/chapter-4-planning-permits