A Guide to Applying for a Transmission Connection

TasNetworks
Delivering your power

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About this guide

We are committed to making the connection process as easy as possible for our customers. We have written this guide to help you understand what is involved in connecting to the network and who you can contact for support.

The connection process is governed by the National Electricity Rules, which are amended from time to time. In the case of any inadvertent discrepancy between this guide and the Rules, the requirements of the Rules will apply.

This guide will also be updated from time to time, with updates published at https://www.tasnetworks.com.au/transmission-connections. Please refer to our website for the latest version.

Which connections does this guide apply to?

This guide applies to new connections to TasNetworks' transmission network, whether one of our 220 kV or 110 kV transmission lines or a direct connection into one of our transmission substations.

This will include most load and generator connections at a capacity of 5 to 10 MW or more.

A map of the Tasmanian transmission system is on page 4 of this guide.

You can find information about connections to TasNetworks' distribution network at https://www.tasnetworks.com.au/connections-help.

If you are not sure which connection type you require, please contact us at transmission.connections@tasnetworks.com.au.

TasNetworks

Your Tasmanian connection experts

TasNetworks develops, owns, operates and maintains Tasmania's electricity networks, distribution and transmission. Put simply, we're responsible for delivering power from Tasmania's generators and interconnector (Basslink) to almost every Tasmanian home and business. We also provide tailored transmission connection services for major energy projects throughout the State.

Our number one goal is to make it easy for you to bring your project to life – seamlessly, efficiently, safely and reliably. And we're in it for the long run – we'll be with you for the life of your connection, so we're focused on helping you succeed.

We have extensive experience with HV and LV electricity network and connection assets, including overhead transmission lines (pole and tower lines), underground

cables, electricity substations, network monitoring and protection systems, and telecommunications.

Making it easy for you to connect

We are committed to providing you with a streamlined connection application process and helping you navigate the connection requirements under the National Electricity Rules. We can help you by:

- meeting with you to discuss your project requirements before you submit a connection enquiry
- assigning you a connection project manager to support you through the connection application process and tailor a connection solution that meets your needs, including technical and commercial considerations
- assigning you a customer account manager to provide continuity of support throughout the life of your connection
- providing you with access to our design, planning and system performance experts to support you with engineering requirements
- updating you regularly on the status of your connection application.

We encourage you to get in contact with us early to discuss the connection process, timeframes and your potential options. A discussion during the pre-feasibility stage of your project could save you both time and money. All connection enquiries (formal or informal) are treated confidentially.

You can contact us at transmission.connections@tasnetworks.com.au.

Connection process responsibilities

TasNetworks

As a Transmission Network Service Provider (**TNSP**), we manage the connection process and are the main point of contact for developers (connection applicants) wishing to connect their facilities to our transmission system. We are responsible for undertaking an independent technical due diligence review of each connection application against the requirements of the National Electricity Rules. We are required to assess the impacts of your connection on the network, including on other network users and generators. We will work with you to agree the performance standards that will apply to your connection.

Australian Energy Market Operator

The Australian Energy Market Operator (**AEMO**) also has a role in assessing and negotiating performance standards that could affect power system security. AEMO is also involved in assessing simulation models of power system plant and associated control systems, as well as commissioning and post-commissioning activities.

Connection applicants

As an intending connection applicant, you are responsible for ensuring that your connection complies with your obligations under the National Electricity Rules and the terms of your connection agreement.

The Tasmanian transmission system at a glance

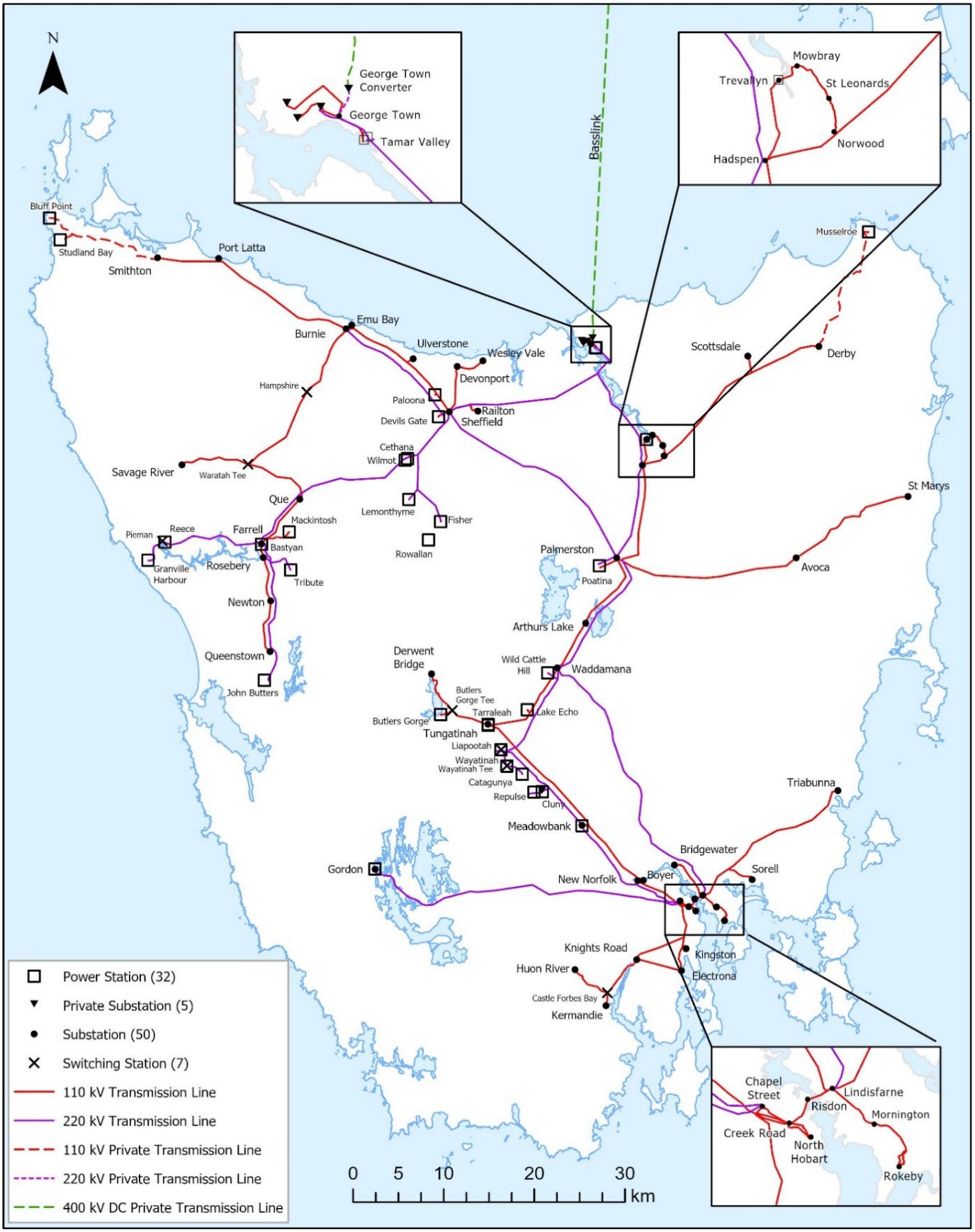
The Tasmanian power system is dynamic and unique compared to other regions of the National Energy Market. Generation dispatch, interconnector flow and system conditions can change significantly over a short period of time.

Tasmania is Australia's largest producer of renewable electricity, having achieved a world-leading 100 per cent self-sufficiency in renewable energy. While hydro-electric generation is a key part of the State's renewable energy mix, the proportion of the State's demand being met by wind and solar generation is continuing to grow. We are increasingly seeing events where greater than 80% of Tasmanian generation is coming from non-synchronous sources including wind. This creates a great opportunity for our customers to access green energy to power their operations through simply connecting to the grid. It also means both TasNetworks and new connection applicants have increasingly important roles to play in maintaining system strength and resilience.

As part of your project planning, we recommend you consider what support you may need to help you understand and meet your obligations under the National Electricity Rules when connecting to the Tasmanian transmission system. If you are engaging consultants, we recommend you ask them about their experience in the following areas:

- undertaking connection studies and lodging an application to connect
- modelling required to support your connection application in the National Energy Market
- interpreting and complying with National Electricity Rules requirements for your specific connection
- commissioning and plant performance testing.

A map of the Tasmanian power system is included on the following page.


N
George Town Converter
George Town
Tamar Valley
Basslink
Mowbray
Trevallyn
St Leonards
Norwood
Hadspen
Bluff Point
Studland Bay
Smithton
Port Latta
Burnie
Emu Bay
Ulverstone
Wesley Vale
Devonport
Hampshire
Paloona
Devils Gate
Railton
Sheffield
Cethana
Wilmot
Savage River
Waratah Tee
Que
Lemonthyme
Fisher
Rowallan
Pieman
Reece
Farrell
Mackintosh
Bastyan
Granville Harbour
Rosebery
Tribute
Newton
Queenstown
John Butters
Musselroe
Scottsdale
Derby
St Marys
Avoca
Palmerston
Poatina
Arthurs Lake
Derwent Bridge
Wild Cattle Hill
Waddamana
Butlers Gorge Tee
Butlers Gorge
Tarraleah
Lake Echo
Tungatinah
Liapootah
Wayatinah
Wayatinah Tee
Catagunya
Repulse
Cluny
Meadowbank
Triabunna
Bridgewater
Sorell
Gordon
New Norfolk
Boyer
Knights Road
Kingston
Huon River
Electrona
Castle Forbes Bay
Kermandie
Chapel Street
Lindisfarne
Risdon
Mornington
Creek Road
North Hobart
Rokeby
Power Station (32)
Private Substation (5)
Substation (50)
Switching Station (7)
110 kV Transmission Line
220 kV Transmission Line
110 kV Private Transmission Line
220 kV Private Transmission Line
400 kV DC Private Transmission Line
0 5 10 20 30
km

Connection process overview

The connection process has four key stages:

- Preliminary enquiry (also known as pre-feasibility or pre-enquiry)
- Enquiry
- Application
- Construction and completion

The process is governed by Chapter 5 of the National Electricity Rules. To make the connection process as easy as possible for you, we have outlined each stage of the process starting on page 8.

Your connection project manager will be available to help you navigate the process during each of these stages. They can also provide you with information on additional services or the support TasNetworks can offer to help you streamline your project as much as possible.

Before we describe the four stages, below is some information about connection costs and timeframes.

Paying for your application, connection and infrastructure

You may need to budget for up to five different types of costs:

1. Early investigation costs
2. Your connection application fee
3. Asset development costs
4. Ongoing asset operation and maintenance costs
5. For load customers, network charges to cover your use of the transmission system

Early investigation costs

In some cases, a connection enquiry fee may apply to cover our reasonable costs of providing certain information required by the National Electricity Rules. If that is the case, we will advise you of the fee payable and get your agreement before starting work.

If you are considering engaging TasNetworks to provide any optional additional services to support your project feasibility and design, such as preliminary design services, we can provide you with indicative pricing for those services.

Connection application fee

Your connection application fee is based on our reasonable costs of all work required to assess your application and prepare a connection offer. We will provide

you with an estimate of the connection application fee as part of our connection enquiry response.

You will need to pay this amount at the time of submitting your connection application. If you would prefer not to pay the full amount upfront, we would be happy to discuss options for staged payments. In the event that the cost of processing your application is expected to exceed the amount you have paid, we will advise you of the reasons for the increase and a revised estimate to complete, which you will need to pay before work on your application continues. However, if the final costs of processing the application are less than the estimate, we will refund the balance of the fee at the end of the application process.

The actual cost will be influenced by factors including the connection option you choose, the quality of information you provide to support your application (especially modelling information), and the degree to which you wish to negotiate the access standards to apply to your connection (rather than meeting the automatic access standards) or any other terms of your offer to connect.

Asset development costs

The National Electricity Rules require connecting parties to pay for the cost of any assets or works required to facilitate their connections.

Certain works, such as augmentations of the shared transmission network, are regulated as 'negotiated services' that only TasNetworks (as the TNSP) may provide. Our charges for these services will be based on the costs incurred in providing the service, determined in accordance with the cost allocation methodology approved by the Australian Energy Regulator. We have to calculate the price of these services in the same way for all our customers.

Other works are classified as non-regulated (or 'contestable') services. This includes the design and construction of dedicated connection assets for your facility. While TasNetworks offers these services, you are free to choose which service provider you engage. Your connection project manager can provide you with more information about the non-regulated services TasNetworks offers and arrange a no-obligations proposal for your consideration.

When we respond, we will advise which services are negotiated and which are contestable. If you prefer, we would also be happy to discuss this with you at an earlier stage of your project. We can also provide indicative pricing for all categories of works to help inform your project feasibility assessment and planning, or to help you compare different connection options.

Costs for these services may be paid in advance of your connection, or as an annuity payable over the lifetime of your connection agreement (typically around 25 years).

Operation and maintenance costs

You will need to pay for operation and maintenance costs of any assets TasNetworks needs to construct for your connection. There will be an annual charge for these services payable in monthly instalments.

Transmission network charges

Your network charges cover the costs of providing access to the shared transmission system. In the National Energy Market, network charges are only payable by load customers, not by generators (who are not guaranteed a committed level of network access).

Network charges are calculated based on TasNetworks' Pricing Methodology, approved by the Australian Energy Regulator.

More information about transmission network charges can be found on our website: https://www.tasnetworks.com.au/poles-and-wires/pricing/our-prices.

Timeframes

When we respond to your connection enquiry, we will also provide you with a preliminary program setting out proposed milestones for connection activities for your project. Timeframes will depend on project specifics, but below are some indicative timeframes to help inform your project planning.

Connection enquiry

When you submit your connection enquiry, we check it for completeness. We will advise you within **5 working days** whether we have all the information we need to process your enquiry.

Once we have your complete application, we will provide you with a response to your enquiry within **30 working days**.

Connection application timeframes

Your preliminary program will include a proposed date for making the offer to connect. In order to meet this timeframe, we will need to receive your complete modelling, demonstrating compliance with applicable performance standards, at the time shown in the preliminary program.

The actual time to process your application and provide an offer to connect will depend on the quality and completeness of your connection application. In addition, if you will be seeking to negotiate the access standards to apply to your connection (rather than meeting the automatic access standards) or any other terms of your offer to connect, extra time may be required.

To avoid delays, we advise you to plan for the following timeframes:

- At least **6 weeks** in advance, let us know when to expect your application.
- At least **6 months** prior to commissioning your plant, submit your complete connection application package.

Construction and commissioning

Construction and commissioning of the assets required to establish your connection could take anywhere from **2 to 24 months**, depending on where and how you choose to connect to the network.

Preliminary enquiry or pre-feasibility

You are encouraged to contact TasNetworks during the pre-feasibility or feasibility stages of your project to begin discussing a connection. You will want to consider factors such as location, size, network constraints, infrastructure requirements, loss factors, and competing or dependent projects.

We can assist by providing you with information about the connection process and our network, including an early indication on the connection considerations at your proposed location. While more detailed investigation will be required at later stages, we may be able to highlight any potential issues that may affect your ability to connect to the network.

We would be happy to discuss aspects including:

- National Electricity Rules requirements that will apply to your connection
- the size, type and location of the proposed connection
- the suitability of the location for the proposed connection
- potential network or physical constraints
- the requirement for runback schemes or inter-trips to facilitate the proposed connection
- network augmentations or new transmission infrastructure, both regulated and unregulated, required to host the proposed connection
- additional services TasNetworks can provide, such as assistance with the design of dedicated connection assets.

Enquiry

The first formal step of the National Electricity Rules process is to submit a connection enquiry with key data about the proposed facility and its electrical attributes.

What information do you need to provide?

We will need information about your project, including:

- proposed location(s) and voltage of the connection

- size (in MW) of the proposed connection, including known future stages, indicative power factor and expected energy consumption and/or generation (MWh per month)
- general plant information
- intended timing of construction and commercial operation.

The connection enquiry form details all the information we need, and can be found on our website: https://www.tasnetworks.com.au/transmission-connections.

What will you receive in our connection enquiry response?

We will respond within 30 working days with a response that includes:

- high-level information about the works required to facilitate your connection, including which components must be performed by TasNetworks and which are non-regulated (contestable)
- technical specifications of the interface with the shared transmission network required to provide your connection
- a preliminary impact assessment, including capacity, network constraints and relevant performance standards
- a preliminary program showing proposed milestones for connection activities
- an estimate of the connection application fee.

This enquiry response is based on our preliminary assessment. We will need to carry out more detailed technical reviews during the application stage.

Contracts and documentation

Submitting a connection enquiry is as simple as filling in the application form on our website (https://www.tasnetworks.com.au/transmission-connections) and emailing it to your connection project manager or our transmission connections mailbox: transmission.connections@tasnetworks.com.au.

In some circumstances, you may also need to enter into an agreement with TasNetworks during the connection enquiry stage. For example, if you require access to certain network information, we may ask you to sign a non-disclosure agreement before the information is provided.

If you choose to engage TasNetworks for any additional ('contestable' or 'non-regulated') services – for example, route options assessment or preliminary design relating to your dedicated connection assets – that work will be covered by a services agreement.

National Electricity Rules references

Section 5.3.2 of the Rules applies to the Enquiry stage above.

Application

Following our connection enquiry response to you, the next formal step in the connection process is for you to submit a connection application.

What information do you need to provide?

Your application must include:

- information about the detailed design of your plant
- connection studies demonstrating how the connecting plant meets the applicable performance standards
- if you wish to propose something less than the automatic access standard, supporting information demonstrating that the proposed performance standard is appropriate
- payment of the connection application fee.

There are checklists to help you prepare your application.

For load connections, see TasNetworks' Connection Application Checklist on our website: https://www.tasnetworks.com.au/Documents/Manual-documents/Transmission/Connection-Requirements-Checklist

For generator connections, see AEMO's Generator Connection Application Checklist on AEMO's website: https://aemo.com.au/-/media/files/electricity/nem/network_connections/stage-3/connection-application-checklist.pdf

Detailed network information, power system models and modelling user guides can be obtained from AEMO in accordance with Chapter 3 of the National Electricity Rules. AEMO's modelling requirements can be found at: https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/participate-in-the-market/network-connections/modelling-requirements. When obtaining this information from AEMO, you should also contact us to request TasNetworks' associated models. Any modelling data you submit as part of your connection application must use TasNetworks' models.

Connection application assessment

Once we have received your application, we will undertake our due diligence review of the connection application and work with you to agree any negotiated access standards.

We will consult with AEMO about any negotiated standards that are AEMO advisory matters and any proposed system strength remediation (if applicable). Once TasNetworks and AEMO have both confirmed that the facility will be able to meet performance requirements, AEMO will respond to TasNetworks according to sections 5.3.4A and 5.3.4B of the National Electricity Rules.

Consideration of other projects

Be aware that other projects that become 'committed' during the course of your connection process may have an impact on your connection application.

The National Electricity Rules do not contain any 'queuing' arrangements for concurrent connection enquiries or applications. This means there may be concurrent projects progressing through the connection process, and at a certain point, a project may become 'committed', at which point other projects need to start taking the 'committed' project into account (including in their connection studies).

For example, for load connections, the available network capacity in an area may reduce because it has subsequently been taken up by other connecting parties. This could increase the timeframes and costs associated with your connection. The National Electricity Rules do not allow TasNetworks to reserve capacity for customers during the connection application process.

For generators, the likelihood of dispatch constraints may be increased due to other generators connecting. In addition, 'committed projects' need to be taken into consideration by generators when assessing system strength impacts. To help manage this, TasNetworks is required to report key connection information about generator projects to AEMO. This is published on AEMO's website: https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information.

Appendix 1 provides more information about when a development will be considered a 'committed project'. This is different for load and generation connections.

Offer to connect and connection agreements

Once TasNetworks and AEMO are satisfied that performance standards can be met, connection agreements can be signed.

There will generally be two contract documents that will form part of our offer to connect: an Asset Development Agreement (covering any design and construction works required to facilitate your connection) and a Connection Agreement. When we issue the final agreements we will let you know the validity period for entering into the agreements, after which they expire. If not accepted within the validity period, a connection applicant can re-request the offer to be made.

If you have chosen to engage TasNetworks to provide additional non-regulated (contestable) services relating to your connection (for example, the design and construction of your dedicated connection assets), these may be able to be incorporated into the contract documents discussed above.

National Electricity Rules references

Sections 5.3.4, 5.3.4A, 5.3.4B and 5.3.7, schedule 5.2 (for generation customers), schedule 5.3 (for load customers) and schedule 5.3a (for Market Network Service Providers) of the Rules apply to the Application stage above.

Construction and completion

Once agreements are in place and any conditions precedent have been satisfied, TasNetworks will start construction and installation of any works required to facilitate your connection.

The National Electricity Rules require you to provide both TasNetworks and AEMO with written notice at least three months before undertaking any commissioning and compliance testing of new or replacement equipment. You will need to liaise with TasNetworks and AEMO to develop a procedure for commissioning your connection and facility. TasNetworks and AEMO will provide feedback as required. TasNetworks' preference is to witness all commissioning and compliance testing, and to be involved with the testing as much as is practical.

Commissioning must not begin until the commissioning program has been finalised and both TasNetworks and AEMO have agreed to it.

National Electricity Rules references

Sections 5.8.2 and 5.8.4 of the Rules apply to the construction and completion stage above.

Appendix 1: Committed projects

Treatment of concurrent projects

The National Electricity Rules do not contain any 'queuing' arrangements relating to concurrent connection enquiries or applications. This means there may be concurrent projects progressing through the connection process, and at a certain point, a project may become 'committed', at which point other projects need to start taking the 'committed' project into account.

For example, for load connections, the available network capacity in an area may reduce because it has subsequently been taken up by other connecting parties. This could increase the timeframes and costs associated with your connection. The National Electricity Rules do not allow TasNetworks to reserve capacity for customers during the connection application process.

For generators, the likelihood of dispatch constraints may be increased due to other generators connecting. In addition, 'committed projects' need to be taken into consideration by generators when assessing system strength impacts. To help manage this, TasNetworks is required to report key connection information about generator projects to AEMO. This is published on AEMO's website: https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information.

TasNetworks' experience has shown that different projects will advance through the connection process at different rates, and this is strongly influenced by the quality and completeness of each submission.

Throughout the process, TasNetworks will treat all concurrent connection enquiries and applications on their individual merits in accordance with the processes set out in Chapter 5 of the National Electricity Rules.

Should a proposed project reach 'committed project' status, it may be necessary for TasNetworks to take account of that project in any concurrent technical assessments of other projects. This may also include having to recommence assessments which are partially complete, as the presence of the committed project may change the technical requirements applying to other subsequent connections. TasNetworks and AEMO may require that the connection applicant's connection studies be repeated to include the newly committed project and the connection application be resubmitted. TasNetworks may be required to review the technical requirements for the connection to take account of changed circumstances or regulatory changes.

When a project will become committed

Load connections

For connections of load to TasNetworks' transmission network, becoming 'committed' relates to the stage at which there is a firm commitment between TasNetworks and the connection applicant regarding the connection. This also defines the point at which there is a firm commitment to available network capacity. TasNetworks considers this to have occurred once the following criteria have been met:

Load customer connections: committed project definition	
Criteria	**Description**
Site	The applicant has firm rights to the land (for example, purchased, settled, acquired, legal right to acquire, lease) on which the project will be constructed.
Connection application	The applicant has submitted a complete connection application to TasNetworks.
Suppliers	The applicant has selected suppliers of major plant or equipment components, nominated primary plant, and provided associated models to TasNetworks.
Planning and approvals	The applicant has obtained all required planning and construction consents able to be obtained during this development period (principally, a development application approval). This does not include consents and approvals required immediately prior to, or after, construction has begun (for example, a building permit). Performance standards for the facility (which ultimately require approval by TasNetworks and AEMO) have progressed to a stage where there are no material issues preventing connection, as determined by TasNetworks acting reasonably.
Commitment to proceed	The applicant and TasNetworks have each obtained Board approvals for the connection. TasNetworks and the applicant have signed an Asset Development Agreement and Connection Agreement. All applicant-controlled conditions precedent of the Asset Development Agreement have been satisfied within the nominated timeframe.

Finance	The applicant has achieved a positive investment decision, with written confirmation provided on behalf of the applicant and any financiers.

Generator connections

For generators, AEMO sets out the requirements for conducting system studies, including the stage at which other developing projects must be taken into account. See the definition of 'committed project' in AEMO's 'System Strength Impact Assessment Guidelines'. AEMO also has a definition of 'committed project' in its 'Generation Information Guidelines', which relates to publication of project data.

These documents are available on AEMO's website:

- AEMO's System Strength Impact Assessment Guidelines: https://aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/System-Security-Market-Frameworks-Review/2018/System_Strength_Impact_Assessment_Guidelines_PUBLISHED.pdf
- AEMO's Generation Information Guidelines: https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/generation_information/2020/final-generation-information-guidelines.pdf