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Major Customer Connection Manual

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1 Introduction

1.1 Purpose of this Manual

The National Electricity Rules (NER) set out the relevant processes and requirements that Connection Applicants must comply with to:

a) establish a new Connection; or
b) alter an existing Connection.

This Manual is intended to guide Connection Applicants whose Connection is classified as a Major Customer Connection through the relevant process to obtain a Connection Offer and enter into the relevant connection agreements with the Distribution Network Service Provider (DNSP). Technical requirements are set out in the STNW3522 Standard for Major Customer Connections, which can be found on the DNSP's website.

Please contact the DNSP to confirm the applicable requirements and obtain specific information in respect of establishing a new Connection, or to alter an existing Connection.

1.2 Scope

This Manual is intended for use by parties whose Connection is designated as a "Major Customer Connection". Major Customer Connections are defined in the DNSP's Connection Policy as those Connections that fall within the tariff classes of Connection Asset Customer (CAC) and Individually Calculated Customer (ICC), Embedded Generators and Real Estate Developments.

The Major Customer Connections to which this Manual applies will typically include:

a) large commercial Premises coupled at High Voltage or sub-transmission with an installed *load* capacity of greater than 1,000 kVA (1 MVA);

b) Micro Embedded Generators with an installed capacity of greater than 30 kVA;

c) Non-registered Embedded Generators (i.e. with an installed capacity of greater than 200 kVA);

d) large load Premises coupled at Low Voltage with an installed *load* capacity of greater than 1,000 kVA (1 MVA);

e) Real Estate Developments, which include the commercial development of land in one or more of the following ways:
   i. residential housing and commercial and / or industrial subdivisions;
   ii. commercial and / or industrial multi-tenanted Premises, e.g. shopping centres and office buildings; and
   iii. multi-residential Premises, e.g. residential unit towers; and

This Manual may also apply to Embedded Networks that are not Registered Participants, where the *parent connection point* would involve a category described in a) - e) above. For Embedded Networks, requirements shall apply at the *parent connection point* of the Embedded Network.

1.3 Subdivisions

While also considered Major Customer Connections, this Manual may have variations that are covered in other DNSP policies and standards for 1.2 (e) above. For those categories, the following documents are applicable within the DNSP's websites.

For Energex refer to:
https://www.energex.com.au/home/our-services/connections/residential/residential-subdivisions

For Ergon Energy refer to
https://www.ergon.com.au/network/contractors-and-industry/developers-toolkit/residential-subdivisions

In the event of any inconsistency between:

- the subdivision documents referenced in this Section 1.3; and
- this Manual,

the documents in Section 1.3 will prevail.

The design and construction of underground electrical reticulation and any associated street lighting by a Real Estate Developer for the following Real Estate Development categories shall need to be carried out in accordance the DNSP requirements:

a) urban residential subdivisions;

b) rural residential subdivisions;

c) commercial & industrial subdivisions;

d) commercial developments within a residential subdivision; and

e) street lighting.

1.4 Exclusions to this Manual

This Manual does not apply to:

a) the design, supply and installation of HV reticulation that is owned and/or operated by a Connection Applicant, or is on the Connection Applicant's side of the Connection Point (subject to the installation meeting the necessary standards for interconnection with the Distribution Network);

b) low voltage equipment that is owned or operated by the Connection Applicant (subject to the equipment meeting the necessary standards for interconnection with the Distribution Network); and

c) the removal or relocation of existing DNSP assets.

Technical requirements, including connection arrangements, are detailed in the STNW3522 Standard for Major Customer Connections, which can be found on the DNSP's website.

1.5 Contact Information

Refer to Table 1 for contacts for various Major Customer Connection types.

Table 1 - DNSP Contact Details

Major Customer type	Contact
LV load Connections	custserve@energex.com.au for Energex, networkenquiries@ergon.com.au for Ergon Energy
EG Systems capacity > 30kVA and less than <1500 kVA	ergongeneration@energyq.com.au for Energex, energexgeneration@energyq.com.au for Ergon Energy
EG Systems capacity > 1500 kVA	majorcustomers@energyq.com.au for Energex and Ergon Energy
HV Connections	majorcustomers@energyq.com.au for Energex and Ergon Energy
Subdivisions, major real estate developments	contestable@energyq.com.au for Energex, CCG.Contestable@ergon.com.au for Ergon Energy

2 Definitions, Abbreviations and Acronyms

A list of definitions used in this Manual is set out below[1].

Term	Acronym	Definition
Alternative Control Services	ACS	A distribution service provided by the DNSP that the AER has classified as an alternative control service under the NER.
Augmentation		Work to enlarge the Distribution System or to increase its capacity to transmit or distribute electricity.
Australian Energy Market Operator	AEMO	The entity responsible for the management of the NEM and who oversees the system security of the interconnected national electricity system in respect of which the NEM applies.
Australian Energy Regulator	AER	Regulatory body established by section 44AE of the *Competition and Consumer Act 2010* (Cth) that regulates energy markets, and energy networks, under national energy legislation and regulations.

[1] Terms in italics and not otherwise defined in this document, have the meaning given to that term in the:
a) NERL or the NERR; or
b) NEL or NER.

Term	Acronym	Definition
Build, Own and Operate	BOO	Refers to either: • For Customer Assets, the Major Customer (or a contactor/consultant engaged by the Major Customer) designs and constructs the Customer Assets and retains ownership and operational control over those assets; or • For DNSP assets, the DNSP designs and constructs the Connection Assets and retains ownership and operational control over those assets.
Connection		A physical link between the Distribution System and a Premises to allow the flow of electricity across the Connection Point.
Connection Alteration		An alteration to an existing Connection including an addition, upgrade, Extension, expansion, Augmentation or any other kind of alteration.
Connection Applicant		A Major Customer that has, or intends to, submit a Connection Application. For the avoidance of doubt, where another party submits a Connection Application on behalf of the Major Customer (for example, as described in the relevant definition in rule 5A.A.1 of the NER or a contractor or consultant engaged by the Major Customer) the Connection Applicant is the Major Customer, not the party submitting the Application.
Connection Application		An application to establish or alter a Connection in accordance with the process and requirements set out in Chapter 5 or Chapter 5A of the NER (as applicable).
Connection Asset		Refers to DNSP owned and operated assets that are dedicated to facilitating the Connection to the Distribution Network and the supply of electricity across the relevant Connection Point. The Connection Assets are those that comprise the components of the Distribution System used to provide the Ongoing Service and are dedicated to the Major Customer (typically located from the Network Coupling Point to the Connection Point). For the avoidance of doubt, the Connection Assets will not include any assets that are owned or operated by the Major Customer.
Connection Offer		Means an offer to establish a Connection or alter an existing Connection that is made in response to a Connection Application. For the avoidance of doubt, this encompasses a *connection offer* under Chapter 5A and offer to *connect* under Chapter 5 of the NER.
Connection Point	CP	The physical point or link where the Connection Assets meet the Customer Assets so as to permit the flow of electricity between the Premises and Distribution System, being the agreed point of supply.

Term	Acronym	Definition
Contestable		A service is contestable if the Energy Laws of the participating jurisdiction in which the service is to be provided permit the service to be provided by more than one supplier as a contestable service or on a competitive basis.
Current Transformer	CT	Measurement transformer for current.
Customer Asset		Refers to the assets that are owned and/or operated by a Major Customer downstream of the Connection Point.
Defect		Refers to anything in relation to the Transferable Connection Assets that is, or is likely to: a) amount to a breach or non-compliance in respect of the NCEC; b) amount to a non-compliance with a relevant law; or c) cause the Distribution System or the broader *power system* to operate in a manner inconsistent with the requirements of the applicable Energy Laws and regulations.
Design, Construct and Transfer	DCT	Refers to circumstances where a Major Customer constructs the Transferable Connection Assets and intends to gift those assets to the DNSP upon completion (from which time those assets will become Connection Assets and the DNSP will have ownership and operational control).
Detailed Response		The detailed response to enquiry means the response to a connection enquiry prepared under rule 5.3A.8 of the NER, which must contain the information set out in S5.4B of the NER.
Distribution Determination		The determination made by the AER at 5-yearly intervals concerning the economic regulation of a Distribution Network.
Distribution Network		A *network* which is not a Transmission Network. This Manual refers to the Low Voltage or High Voltage portion of the Distribution Network.
Distribution Network Service Provider	DNSP	Depending on the context means either Energex (who owns and operates the Distribution System in South East Queensland) or Ergon Energy Network (who owns and operates the Distribution System in the remainder of Queensland).
Distribution System		A Distribution Network, together with the Connection Assets associated with the Distribution Network, which is connected to another Transmission Network or Distribution System. Connection Assets on their own do not constitute a Distribution System.
Embedded Generating System(s)	EG System(s)	One or more Embedded Generating Units and auxiliary equipment that are interconnected with a Distribution Network.
Embedded Generating Unit	EG Unit	A Generating Unit connected within a Distribution Network and not having direct access to the Transmission Network.

Term	Acronym	Definition
Embedded Generator	EG	Broadly, an entity who is registered with AEMO in respect of the ownership, operation or control of an Embedded Generating System.
Embedded Network		A *distribution system*, connected at a *parent connection point* to either a Distribution System that forms part of the *national grid*, and which is owned, controlled or operated by a person who is not a DNSP.
Energy Laws		Has the meaning given to that term in the NERL, which, for the avoidance of doubt, includes the Electricity Distribution Network Code under the *Electricity Act 1994* (Qld). Relevant laws relating to the subject matter of this Manual at the date of publication are set out in Section 3.3 (NB this list may not be exhaustive or complete)..
Energy Storage System	ESS	A system comprising one or more components (e.g batteries) that store electricity generated by distributed energy resources or directly from the grid, and that can discharge the electricity to *loads*.
Extension		An extension required to connect a power line or facility outside the present boundaries of the Distribution System to facilitate a new or altered Connection where there is a reasonable likelihood that the Extension will be used to supply another customer or customers within the planning horizon.
Financially Responsible Market Participant	FRMP	The entity that is financially responsible under the NER for a *connection point*.
High voltage	HV	A voltage greater than 1 kV.
Low Voltage	LV	Voltage of 1 kV or less.
Manual		Refers to this Major Customer Connection Manual.
Metering Coordinator	MC	A person who is registered by AEMO and engages in the coordination and provision of metering services for a *connection point*.
Micro Embedded Generator		A *small customer*, *large customer* or *Market Small Generating Aggregator* who operates, or proposes to operate, an Embedded Generating Unit for which a *micro EG connection* is appropriate, that is, the kind contemplated by Australian Standard AS 4777 (Grid connection of energy systems via inverters).
National Electricity Law	NEL	The *NEL* as it applies in Queensland under the National Electricity (Queensland) Law, as defined in the *Electricity - National Scheme (Queensland) Act 1997* (Qld), and under which the NER are established.
National Electricity Market	NEM	The name of the wholesale electricity market in Australia and the associated interconnected *national grid*.
National Electricity Rules	NER	The NER are made under the NEL. The NER governs the operation of the NEM.

Term	Acronym	Definition
National Energy Retail Law	NERL	The National Energy Retail Law (Queensland), as defined in the *National Energy Retail Law (Queensland) Act 2014* (Qld).
National Energy Retail Rules	NERR	The National Energy Retail Rules established under the NERL.
National Metering Identifier	NMI	This is a unique identifier for each *metering installation* for a *connection point* within the NEM.
Negotiated Connection Establishment Contract	NCEC	An agreement between the DNSP and a Major Customer under which the parties agree to carry out certain works to either establish or alter a Connection.
Negotiated Ongoing Connection Contract	NOCC	An agreement between the DNSP and a Major Customer that describes the terms and conditions on which the DNSP agrees to provide Ongoing Services.
Network Coupling Point	NCP	The point at which Connection Assets join a Distribution Network, used to identify the distribution service price payable by a Major Customer.
Non-registered Embedded Generator		An *embedded generating unit operator* that is neither a Micro Embedded Generator nor a Registered Participant.
Ongoing Services		Refers to the provision of ongoing connection services by the DNSP to the relevant Major Customer at the Connection Point. For the avoidance of doubt, this may cover *customer connection services*, *connection services* or *network services*.
Planning Report		A high-level document that reviews the specific Major Customer requirements, examines the relevant Distribution Network conditions and sets out available option(s) for the proposed Connection or Connection Alteration or modification.
Powerlink		Queensland Electricity Transmission Corporation Limited ABN 82 078 849 233 trading as Powerlink Queensland, being the relevant Transmission Network Service Provider in Queensland.
Premises		Means any land (whether a single block or multiple contiguous blocks), building(s) (whether whole or part), structure(s) (or adjuncts thereto) and *embedded networks*, *generating units* or other electrical equipment that are owned, occupied, controlled or operated by the Major Customer in the vicinity of the proposed Connection, or are *connected* to the Distribution System, and which can reasonably be considered to be part of a single overarching operation.
Project Scope		A more detailed document prepared after a Planning Report, which considers one only of the options listed in that Planning Report and scopes out the works.

Term	Acronym	Definition
Project Sponsor		Person/s within the DNSP that is responsible for liaising with the Major Customer and coordinating the Connection process on behalf of the DNSP.
Registered Participant		A person who is registered by AEMO in any one or more of the categories described in Chapter 2 of the NER.
Real Estate Developer		A person who carries out a Real Estate Development.
Real Estate Development		The commercial development of land including its development in one or more of the following ways: • residential housing and commercial and / or industrial subdivisions; • commercial and / or industrial multi-tenanted Premises; and • multi-residential Premises.
Retailer		Person who holds a retail authorisation issued under the *National Energy Retail Law* in respect of the sale of electricity.
Standard Control Services	SCS	A distribution service provided by the DNSP that the AER has classified as a standard control service.
Transferable Connection Assets		Refers to the assets constructed by, or on behalf of, a Major Customer in respect of a Major Customer Connection where, under the terms of the NCEC, the ownership of these assets is to be transferred to the DNSP upon completion.
Transmission Network		In Queensland, the electricity network owned and operated by Powerlink.
Transmission Network Service Provider	TNSP	A person who engages in the activity of owning, controlling or operating a Transmission System.
Transmission System		Includes a Transmission Network together with any associated *connection assets*.
Voltage transformer	VT	Measurement transformer for voltage.
Works		Refers to the design, construction, testing and commissioning works by either or both the DNSP and Major Customer under a NCEC.

3 Relevant rules, regulations, standards, reference material and codes

There are a range of applicable standards, reference materials and industry codes which define Connection types and requirements, and network standards as set out below. However, please note that the details listed below may not be exhaustive or complete and additional laws and requirements may apply.

3.1 Ergon Energy and Energex controlled documents

Please note that this Manual reflects the DNSP's policies and procedures and relevant regulatory arrangements at the time of publishing, and these may change from time to time. A copy of the latest version of this Manual may be obtained searching for 'Major Customer Connections' on the following websites:

- https://www.energex.com.au/
- https://www.ergon.com.au/

Also note the following references for further details.

- Major Customer Ergon Energy Network fact sheets available at:https://www.ergon.com.au/network/connections/major-business-connections/manuals-and-fact-sheets
- Ergon Energy Network - Design and Construction Standards. Available at https://www.ergon.com.au/network/contractors-and-industry
- Major Customer Energex fact sheets available at:https://www.energex.com.au/home/our-services/connections/major-business/manuals-and-fact-sheets
- Energex technical documents available at:https://swp.energex.com.au/service_providers/technical_docs/asp/technical_documents.asp

Controlled documents relevant to this Manual include:

Document number	Document name	Document type
	Developer Handbook Developer Design and Construct	Ergon Energy Reference
	Subdivision standard – Developer Design and Construct Estates	Energex Reference
	Management of Disputes	Fact Sheet
	Metering Installation Design	Fact Sheet
	Planning Reports and Project Scopes	Fact Sheet
	Security Requirements	Fact Sheet
	Tenure Requirements	Fact Sheet
	Transferable Connection Assets	Fact Sheet
01811	Queensland Electricity Connection Manual	Reference
STNW1174	Standard for Low Voltage Embedded Generating Connections	Standard
STNW1175	Standard for High Voltage Embedded Generating Connections	Standard
STNW1179	Standard for Plant Energisation	Standard
STNW3511	Dynamic Standard for Low Voltage Embedded Generation Connections	Standard
STNW3522	Standard for Major Customer Connections	Standard

3.2 Australian and New Zealand Standards

Document number	Document name	Document type
AS 2067	Substations and high voltage installations exceeding 1 kV a.c.	Australian Standard
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)	AU/NZ Joint Standard
AS 7000	Overhead line design standard	Australian Standard
AS 60038	Standard Voltages	Australian Standard
AS/NZS 61000 Series	Electromagnetic compatibility	AU/NZ Joint Standard

3.3 Legislation, regulation and reference material

Set out below is a list of the related legislation and regulations and other reference material.
In the event of any inconsistency between:

- legislation and regulation; and
- this Manual,

the legislation and regulations shall prevail.

Document name	Document type
Construction and operation of solar farms – Code of Practice 2019	Code of Practice
Electricity Act 1994 (Qld)	Legislation
Electricity Regulation 2006 (Qld)	Regulation
Electrical Safety Act 2002 (Qld)	Legislation
Electrical Safety Regulation 2013 (Qld)	Regulation
Electricity – National Scheme (Queensland) Act 1997 (Qld)	Legislation
National Electricity (Queensland) Law, as defined in the *Electricity – National Scheme (Queensland) Act 1997* (Qld)	Legislation
Managing electrical risks in the workplace - Code of Practice 2021	Code of Practice
National Energy Retail Law (Queensland) Act 2014 (Qld)	Legislation
National Energy Retail Law (Queensland), as defined in the *National Energy Retail Law (Queensland) Act 2014* (Qld)	Legislation
National Electricity Law	Legislation
National Electricity Rules	Regulation
Professional Engineers Act 2002 (Qld)	Legislation
Clean Energy Council – Embedded Generation Connection Guide	Reference
Distribution Determination Ergon Energy 2020-2025, 5 June 2020	Reference
Distribution Determination Energex 2020-2025, 5 June 2020	Reference
Ergon Energy Connection Policy	Reference
Energex Connection Policy	Reference
Ergon Energy Tariff Structure Statement	Reference
Energex Tariff Structure Statement	Reference

4 The Connection process

4.1 Overview

The processes for establishing a Connection or altering an existing Connection, will depend upon the nature and circumstances of the Connection. The NER sets out the relevant processes in:

a) Chapter 5A of the NER;
b) Chapter 5 of the NER (including (but not limited to) rules 5.3 and 5.3A).

4.2 Who is covered by Chapter 5A of the NER?

Chapter 5A of the NER applies to *retail customers*, which includes Micro Embedded Generators and Non-registered Embedded Generators that are subject to the standing exemption from the obligation to register under Chapter 2 of the NER and have not otherwise made an election under rule 5A.A.2 to seek a *connection* under rule 5.3A of the NER and Real Estate Developers. Chapter 5A may also apply to Embedded Networks, unless the total generation connected within the Embedded Network indicates that rule 5.3A applies.

4.3 Who is covered by rule 5.3 of the NER?

Rule 5.3 of the NER applies to Registered Participants and parties intending to become a Registered Participant (other than those covered by rule 5.3A of the NER).

4.4 Who is covered by rule 5.3A of the NER?

Rule 5.3A of the NER applies to a Connection Applicant that is seeking to connect a Generating System to the Distribution Network and the Connection Applicant:

a) intends to be registered with AEMO as a *Generator* for that generating system;
b) is required to apply to AEMO for an exemption from the requirement to register as a *Generator* (generally, this will capture Generating Systems that are rated 5 MW and above); or
c) is a Non-Registered Embedded Generator that has made an election under rule 5A.A.2 to seek a Connection under rule 5.3A of the NER.

Further details (including the Generator Registration Guide) are available on AEMO's website at: http://www.aemo.com.au/.

As at the date of this Manual, rule 5.3A will apply to all Connection Applicants that are connecting a Generating System (which includes Energy Storage Systems) to its Distribution Network with a total capacity at the Premises ≥ 5 MW (as well as some Generating Systems below this threshold that choose to register).

4.5 A summary of the Connection process

There are five main stages to the connection process:

1. Enquiry and technical assessment;
2. Connection Application;
3. Connection Offer and acceptance;
4. Connection Works; and
5. Ongoing Services.

4.6 Enquiry and technical assessment stage

The Major Customer (or the Major Customer's authorised consultant) initiates the Connection process by submitting a formal Connection enquiry to the DNSP. The DNSP then allocates a Project Sponsor who will be the Major Customer's point of contact throughout the Connection process.

Depending on the applicable Connection process and requirements for the Connection Application one or more of the following may be provided during this stage:

a) **Planning Report** - a high-level document that reviews the proposed Connection and sets out an appropriate Connection option (usually one, however additional options may be negotiated). The option is usually based on a standard Connection arrangement (refer to the STNW3522 Standard for Major Customer Connections).

b) **Project Scope** - a more detailed assessment of the Connection Applicant's preferred Connection arrangement, that also identifies the relevant Works to establish or alter the relevant Connection Assets and/or the shared network; and

c) **Detailed Response** - for Major Customers that are connecting under Chapter 5 of the NER. Schedule 5.4B sets out the information that must be provided by the DNSP as part of a Detailed Response. A Detailed Response supplied by the DNSP will encompass both a Planning Report and a Project Scope (including an estimate). Further information about the Detailed Response is available in the Embedded Generation Packs, available on the DNSP's websites for EG Connections.

Where the DNSP is entitled to charge a fee for the enquiry and technical assessment services, it will issue a quote for service and recover the associated charges from the Major Customer. Please refer to our Planning Reports and Project Scopes fact sheet for further information.

4.7 Connection Application

Following receipt of the relevant enquiry information, a Major Customer may submit a Connection Application to the DNSP. The Connection Application must contain all the documentation and information required by the DNSP, as referred to in the Planning Report or Detailed Response.

The DNSP will review the Connection Application for completeness, and if complete, assess the Connection Application package for the purpose of preparing a Connection Offer.
Further information about the Application process for Generating Systems is available in the Embedded Generation Packs, available on the DNSP's websites for EG Connections.

4.8 Connection Offer and Contracts

A Connection Offer will generally be comprised of the following types of contracts:

a) a Network Connection Establishment Contract (NCEC); and
b) a Network Ongoing Connection contract (NOCC) or an amendment to an existing NOCC (if applicable).

Exceptions to the above may arise for a Real Estate Development who, due to the nature of the development being for financial gain, will not require an Ongoing Supply, as well as certain LV Connections that will be subject to the relevant Deemed Standard Connection Contract (pursuant to the NERL and NERR) for the Ongoing Supply and a Negotiated Connection Contract. For more

information, refer to the Embedded Generation Packs, available on the DNSP's websites for EG Connections.

5 Economic regulation and charging arrangements

5.1 General

The AER regulates the revenue that the DNSP can earn, and the prices that the DNSP can charge, for certain services provided by means of, or in connection with its Distribution System. The charges payable by a Connection Applicant to the DNSP will (where applicable) be comprised of the following components:

a) charges for services classified as Alternative Control Services (ACS);
b) capital contributions for services classified as Standard Control Services (SCS); and
c) charges for Extension assets to which a pioneer scheme applies.

5.2 Classification of distribution services as SCS and ACS

In order to regulate the prices that the DNSP can charge for its services, the AER has classified the DNSP's regulated *distribution services* into SCS and ACS. It is important to note that the AER's classification of services decision should not be taken to be a determination that entitles a Connection Applicant to construct their own dedicated Connection Assets. Rather, it is a pricing decision that sets out how the price for the service is to be determined and how costs and revenue are to be treated for regulatory purposes.

In the case of Major Customer Connections, the AER determined that a number of particular services should be classified as an ACS. This is detailed in the DNSP's Distribution Determination, and further described in STNW3522 Standard for Major Customer Connections.
Where there is sufficient competition for *connection services*, the AER may determine that it is appropriate to not classify the service as SCS or ACS as a DNSP does not have sufficient market power to set prices above the efficient cost. In this case, the *connection service* would be classified as unregulated.

Further information on applicable economic regulation and the classification of distribution services can be found in the DNSP's fact sheets and the STNW3522.

5.2.1 Location of Connection Assets

For the purpose of determining the appropriate service classification under the AER's Distribution Determination, the DNSP identifies the following relevant points:

a) **Connection Point**: delineates the physical location where the Customer Assets meet the Connection Assets. The Connection Assets for a Major Customer's Connection may include:
   i. high voltage overhead or underground mains;
   ii. low voltage overhead or underground mains and services;
   iii. distribution transformers; or
   iv. protection systems, communications systems, and any other secondary systems.

   All assets upstream of the Connection Point will ultimately be owned and operated by the DNSP, and conversely, assets downstream of the Connection Point will generally be owned and operated by the Major Customer. The DNSP and the Major Customer shall have an isolation device that can isolate the Connection Point.

b) **Network Coupling Point**: identifies the boundary between the DNSP's dedicated Connection Assets and the shared Distribution Network, and is used to identify the *distribution service* price payable by a customer. When determining the Network Coupling Point, the DNSP will consider the current status of the Distribution System, existing Connection Applications and the DNSP's strategic plans out to the nominated planning horizon. The Major Customer can obtain further details on this from the Project Sponsor.

5.3 Method of cost recovery

5.3.1 ACS

These tend to be a service provided for the benefit of a particular Connection Applicant with the charge recovered from that benefiting customer rather than all customers, for example in relation to the Connection Assets. To manage the risk of non-payment, which could increase the DNSP's financial liability, payment of ACS charges is taken upfront by the DNSP before the relevant DNSP activity is undertaken. These services are commonly provided by the DNSP, but some services may be contestable (i.e., may be carried out by the Major Customer - refer to Section 7.1 for further information). Where an ACS is provided by the DNSP, the amount recoverable from the Major Customer will be based on the maximum allowable revenue as determined by the AER.

5.3.2 SCS and Capital Contributions

SCS are generally those services that are core *distribution services* associated with the access and supply of electricity to customers (i.e., usually a "shared service" across more than one customer). The DNSP typically recovers these costs through network tariffs (or network charges) that are billed to Retailers and then passed on to customers through their retail account. If the Major Customer does not have a Retailer, the DNSP will issue an invoice directly to the Major Customer. However, under certain circumstances, Connection Applicants may be required to contribute towards the costs associated with a SCS (referred to as a "capital contribution").

The DNSP's network charges for standard control services are based on assumptions about the typical nature of Connections and the number of new Connections to be made over the planning horizon, which in turn determines the required capacity of the Distribution Network. Where a new Connection or Connection Alteration is non-standard and/or made outside the planning horizon, the DNSP incurs costs that are not recovered through the network charges for SCS.

Under the DNSP's Connection Policy the DNSP may require a capital contribution from certain Connection Applicants towards the cost of the Extension, other Augmentation or Connection Assets. However, there are restrictions on when capital contributions can be applied, which are described in the DNSP's Connection Policy, as well as how the capital contribution is to be calculated.

5.4 Major Customer Works

In addition to the costs for ACS and SCS (including capital contributions), a Major Customer will also be responsible for the costs of any Works that it carries out for itself on the Major Customer's side of the Connection Point.

5.5 Contestability of Works

The AER has recognised that the services of design and construction of assets that are dedicated to one or more Major Customer Connection Applicants (that is, Works in respect of Connection Assets that are classified as ACS) may potentially be contestable (subject to other relevant

considerations, including a risk assessment of the proposed activities by the DNSP). The classification of a service as ACS does not of itself mean that a service is in fact contestable. The DNSP is subject to a range of statutory and regulatory obligations that are intended to ensure the safe, efficient, and stable operation of the Distribution System so that it is capable of delivering Connection services to all network users, and as such, the DNSP will not accept a level of risk higher than would exist if the DNSP had undertaken the relevant services. Asset categories and their construction options are detailed in STNW3522 Standard for Major Customer Connections.

5.5.1 Works Activities in the Application and Offer

Where relevant activities are determined to be contestable, and the Connection Applicant wishes to undertake those activities, this must be expressly identified in the Connection Application. The NCEC must clearly identify and detail the Works to be performed by each party (including the responsibility and coordination of the party's respective activities).

5.5.2 Major Customer's request to gift or transfer assets

If it is determined that the Works are contestable, the Major Customer (or subcontractor on their behalf) must ensure that the Connection Assets are designed and constructed to meet the relevant standards and technical requirements, as well as any other applicable requirements.

The Connection Applicant may also seek to transfer those assets to the DNSP, and for the DNSP to have ongoing responsibility (including the operation and maintenance) of those assets. For the DNSP to accept such a transfer, certain preconditions would need to be satisfied (including that the assets are compatible with the Distribution Network, constructed using suitable contractors, and appropriate manufacturers and suppliers, and warranties provided).

A request by the Major Customer to transfer Connection Assets to the DNSP must be made as part of the Connection Application and agreed to upfront. The DNSP will not accept ownership and responsibility for assets designed and constructed by the Major Customer unless it is part of the Connection Offer terms and conditions.

5.6 Transmission Network and Market Operator activities

A Major Customer Connection may also impact on the Transmission Network and the NEM which AEMO manages. Where Powerlink or AEMO need to assess the impact of the Connection (for example, with respect to the Transmission Network, *system strength* or applicable *access standards*) or carry out relevant Works or activities to enable the Connection, the Major Customer will be responsible for reimbursing the DNSP for any costs charged by Powerlink and AEMO.

5.7 Subsequent sharing of Connection Assets – Pioneer Scheme

If a dedicated network Extension asset ceases, within seven years after its installation and energisation, to be dedicated to the exclusive use of the customer occupying the Premises, the Major Customer may be entitled to a partial refund under the DNSP pioneer scheme. More details, including the relevant calculations for a refund, can be found in the DNSP's Connection Policy.

6 Security requirements

6.1 Background

As subsidiaries of a Queensland Government-owned corporation, the DNSP has a responsibility to employ sound financial practices with regard to the financial risks that can arise in relation to the carrying out of Works to enable Major Customers to connect to the Distribution Network, and the provision of Ongoing Services.

To minimise such risk, the DNSP may request financial security (referred to as collateral) from Major Customers to manage this financial risk.

Please refer to the Security Requirements fact sheet for further information.

7 Establishing Connection Assets

7.1 Construction Options for Connection Assets

Broadly, there are three options for the construction and ownership of Connection assets for a Major Customer Connection, namely:

a) Major Customer Build, Own, Operate (BOO):

   i. the Major Customer designs, constructs, owns and operates the Customer Assets at the Major Customer's cost;

   ii. in carrying out the BOO activities, the Major Customer must ensure that the activities are performed in accordance with the relevant Australian Standards, industry codes and statutory requirements;

   iii. the Major Customer must ensure that the Customer Assets are constructed to comply with the applicable technical requirements (including any regulatory requirements) and so that the Connection does not adversely affect any other *Distribution Network User*;

   iv. this arrangement may affect the location of the Connection Point (which delineates where the Major Customer's assets meet the DNSP's Distribution System); and

   v. there may still be services carried out by the DNSP to facilitate the Connection, some of which may be classified as ACS and the cost of those are recoverable upfront from the Major Customer.

b) Design, Construct, Transfer (DCT):

   i. the Major Customer designs and constructs the Transferable Connection Assets at its expense, and then transfers those assets to the DNSP to own and operate;

   ii. from the time of transfer, the DNSP will be responsible for the ongoing maintenance and operation of the Transferable Connection Assets, which are then Connection Assets (any non-transferred assets remain the responsibility of the Major Customer);

   iii. before the DNSP will accept the Transferable Connection Assets, certain pre-conditions must be satisfied as described in the NCEC; and

iv. there may still be services carried out by the DNSP under this arrangement to facilitate the Connection, some of which may be classified as ACS and the costs of which are recoverable upfront from the Major Customer.

c) DNSP Build, Own, Operate (DNSP BOO):

i. the DNSP designs, constructs, owns and operates the Connection Assets, with the Major Customer paying upfront charges for any services classified as ACS;

ii. the Connection Assets are part of the Distribution System and will be used by the DNSP to provide Ongoing Services to the Major Customer (NB the Major Customer does not have any proprietary interest in the Connection Assets and they could be used to provide Ongoing Services to other *Distribution Network Users* in the future); and

iii. indicative construction timeframes are shown in Appendix 1 (please note that these are estimates only and may not reflect the actual timeframes).

Potential Connection topologies and arrangements can be found in the STNW3522 Standard for Major Customer Connections, located on the DNSP's website.

7.2 Due Diligence for Transferable Connection Assets

Before the DNSP accepts the Transferable Connection Assets in accordance with the terms set out in the NCEC, the DNSP will carry out a due diligence process to confirm that the various aspects of the Transferable Connection Assets meet the relevant requirements, including:

a) the Major Customer has provided all things necessary for the DNSP to operate and maintain the Transferable Connection Assets as part of the Distribution System;

b) tenure over such assets and sufficient access rights to the Transferable Connection Assets;

c) environmental, cultural heritage or social issues;

correct labelling of equipment;

d) all required documentation, including drawings, as defined in the STNW3522 or referred to in the NCEC; and

e) compliance with relevant legislative and contractual requirements.

All associated design manuals and test certificates for the Transferable Connection Assets must be provided to the DNSP prior to commissioning of the Connection Point.

7.3 Warranties and Defects

Under the NCEC, the DNSP may require security from the Major Customer to cover the estimated costs of rectifying any Defect. The amount of the required security and length of time it must be maintained will be determined based on the circumstances and the nature of the Transferable Connection Assets.

The Major Customer will also be liable for any Defects identified during the Defects rectification period, the details of which are set out in the NCEC.

8 Metering

Major Customers are required to ensure that their facility complies with metering requirements under Chapter 7 of the NER and should discuss these requirements with their Retailer.

Note that a Connection Point will not be energised until a FRMP has been nominated and all necessary documentation has been provided to enable the Ongoing Services to commence. Metering infrastructure broadly comprises two sets of components, being:

a) the Instrument transformers (i.e. CTs and VTs); and
b) the metering installations themselves which are housed alongside those instrument transformers (which must be allocated a NMI by the DNSP).

A summary of the relevant metering requirements is set out below. Note that Embedded Networks shall also comply with metering as per the QECM (Queensland Electricity Connection Manual). Further information on metering requirements is available in the QECM and QEMM (Queensland Electricity Metering Manual), available on the DNSP's website.

a) Typically, Major Customer Connections require Type 1-4 metering installations. The provision of such metering installations is contestable and, accordingly, is a commercial arrangement with the Metering Coordinator selected by the Major Customer or their Retailer.

b) The FRMP is ultimately responsible: Under Chapter 7 of the NER, the FRMP (usually the Retailer, or may be a *Market Customer* or *Market Generator*) has to be responsible for the Connection Point before the transfers of electricity at that Connection Point can be included in the NEM (that is, be a market Connection Point). The FRMP has the ultimate responsibility for ensuring that the Connection Point has:
    i. a NMI
    ii. a Metering Coordinator
    iii. a metering installation which is registered with AEMO.

c) The Metering Coordinator is responsible for the provision, installation and maintenance of a metering installation (and may appoint one or more Metering Providers and Metering Data Providers for these purposes). A Metering Provider is responsible for providing, installing and maintaining relevant metering installations and a Metering Data Provider is responsible for data services including collection (reading) and processing of metering data.

d) In some instances where long project lead times are involved, a Major Customer may not have selected a Retailer to act as the FRMP at the time of making the Connection Application. Where a Retailer is yet to be selected, the Major Customer should appoint the Metering Coordinator.

e) Note that a Connection Point cannot be energised until a FRMP has been nominated and has provided all necessary documentation to enable supply to commence.

Please refer to the Metering Installation Design fact sheet for further information.

9 Tenure requirements

9.1 General

Various forms of tenure can apply to the acquisition of rights in land for constructing, operating and maintaining electrical infrastructure, such as:

a) easements (which can be used in conjunction with a variety of existing tenure rights);

b) licence agreements or wayleave agreements;

c) agreements relating to non-freehold land under various legislation (such as the *Land Act* 1994 (Qld) and *Nature Conservation Act* 1992 (Qld)), which land can include, among other things, State Forests, National Parks, Unallocated State Land, Road Reserves and railway land; and

d) freehold land.

Please refer to our Tenure Requirements fact sheet for further information.

10 Dispute resolution

Where a Major Customer has a disagreement or dispute with the DNSP that is unable to be efficiently resolved at the Project Sponsor level, please refer to our Management of Disputes fact sheet for further information.

Appendix 1 – Typical Timeframes (informative)

Where Connection Assets are deemed to be not eligible to be contestable, these will be completed by the DNSP. Table 2 provides indicative timelines for construction of such assets.

Table 2 – Typical Timeframes

Description of Works involved in Connection Application	Design and Construction[2] by the DNSP (from executed NCEC)
Greenfield Zone Substation (does not include property acquisition)	36 months
Existing Zone Substation modification (Simple[3]) (e.g. feeder protection upgrade)	12 months
Existing Zone Substation modification (Complex[4]) (e.g. new feeder bay or switchboard upgrade)	30 months
Greenfield 132/110kV Overhead (OH) & Underground (UG) transmission Works or 66/33kV Sub-transmission works	27 months
Modifications to Sub Transmission UG Works (33 kV or 66 kV)	15 months
Modifications to Sub Transmission OH Works (33 kV or 66 kV)	12 months

These timeframes are indicative only and assume that the DNSP will follow its usual methodology processes for Distribution Network investment.

Property acquisitions, easements, environmental approvals, plant procurement, and resource availability could affect these dates significantly. Property or easement acquisitions can add significant delays (up to 24 months) to these indicative periods if cultural heritage, environmental or material change of use issues are encountered.

Communication requirements, such as interfaces to Powerlink, or facilitating dual and diverse communications paths, may also add further delays.

[2] Approximate time taken to energise the project after receiving a signed Connection Agreement from the Connection Applicant.

[3] Simple = No Augmentation of existing Distribution Network.

[4] Complex = Augmentation of existing Distribution Network required, relay protection switchgear required, zone substation, 132/110 kV, 66 kV, 33 kV, 22 kV Works.

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