

Instructions

The intent of the Main Specification is to tie together all of the relevant standard specifications for each portion of work required to complete this project. It also provides project specific details that are not covered by the standard specifications. Where there is a conflict between the Main Specification and standard specifications, the Main Specification takes precedence.

If a standard specification does not contain the required detail then the following options are available:

- Amend the standard specification if this enhances its usefulness
- Do not make reference to the standard specification from within the Main Specification. Refer to a customised project specific specification.
- Include a reference to the standard specification from within the Main Specification and include clauses in the Main Specification that override the standard specification.

The text highlighted in yellow is to be replaced with relevant content and the highlighting removed. These instructions are to be deleted so that the cover page is the first page of the Main Specification.

In the instance a contractor is engaged by Ergon to undertake the project design only this Main specification shall be updated by the designer for review by Ergon. The Designer shall provide Ergon with a summary of any changes/ departures from the standard specifications.

This Main specification shall form part of the designers RPEQ certification of the project.

This material is made available on the basis that it may be necessary for a Registered Professional Engineer of Queensland (RPEQ) to undertake or oversee the engineering services to meet statutory obligations.

Ergon Energy makes no representations, express or implied, as to the accuracy of the documents provided and accepts no liability howsoever arising for any loss resulting from the use of the documents or reliance placed on them.

The recipient agrees to indemnify Ergon Energy and keep it indemnified against any liability for any losses (including liabilities of the recipient to third parties), costs and expenses arising out of the use or reliance on the documents by the recipient.

The documents provided are to be used as a guide only. Subject to any other statutory obligation, to the extent practical, the recipient agrees to use reasonable endeavours to notify Ergon Energy of any errors or omissions it becomes aware of in the documents to enable correction/updating.



Ergon Energy Corporation Limited

**Main Specification for the
Construction of**

Project Title

?? kV Overhead Transmission Line

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1. Scope

Reason for the project, scope of works, whether redundant assets need to be removed, type of construction (timber, concrete or steel), access restrictions, any underground component, etc. Do not mention commissioning dates, this will be part of the contract.

Tabulated below is the extent of works required to be done by the Contractor for this project. The standard specifications can be located at <http://www.ergon.com.au/contractors,-suppliers--and--developers/design-and-construction-contractors/subtransmission-line-design-and-construction>

Contractor to Perform	Work	Standard Specification
Yes/No	Easement survey	Easement Survey
Yes/No	Site investigation - geotechnical (prior to foundation design and installation)	As per Design Manual
Yes/No	Site investigation – electrical resistivity	
Yes/No	Site investigation – thermal resistivity	
Yes/No	Engineering surveying and pegging	Engineering Survey
Yes/No	Prepare environmental management and cultural heritage plans	Prepare environmental management and cultural heritage plans
Yes/No	Route approvals – wayleaves, easements, Council, Main Roads, Railway, Telstra	Route Approvals Design Manual
Yes/No	Structure and foundation design	Design Manual
Yes/No	Line layout, data manual	Design Manual
Yes/No	Structure drawings – general arrangement, assembly and detail drawings	Design Manual
Yes/No	Structure prototyping (trial assembly)	Prototyping and Testing of Lattice Structures Prototyping and Testing of Pole Structures
Yes/No	Structure load testing	
Yes/No	Clearing and access work	RSC04 - Clearing and Access Works for Overhead Powerlines
Yes/No	Locating services -Dial Before You Dig	
Yes/No	Supply and install foundations, earthing	Wood Pole Overhead Powerline Construction
Yes/No	Delivery of structures and materials to site	Wood Pole Overhead Powerline Construction
Yes/No	Erection of structures	Transport and Erection of Pole Structures Erection of Tower Structures
Yes/No	Stringing of conductors/ earthwire/ OPGW/ ADSS/ ABC	Erection of Line Materials
Yes/No	Supply of structures and materials	Fabrication of Steel Pole Structures Manufacture of Concrete Structures Fabrication of Steelwork for Pole Structures
Yes/No	Removal of Redundant Assets	Removal of Redundant Assets

Note: Where Ergon Standard or Ergon Designed structures are to be used, Ergon will make facilities available for the Contractor to prototype the structures for familiarisation prior to construction. The Contractor is responsible for the cost of attending.

2. Work Site

2.1 Site Description

Location of the project (nearest town or city), length of the line, drawing number for locality plan or route plan.

2.2 Professional Responsibility

The contractor shall provide certification that the works are constructed in accordance with the design and specification. Certification is to be provided by a registered professional Engineer of Queensland (RPEQ).

2.3 Site Access

Ergon Energy shall obtain all of the necessary approvals to access the site. The Contractor shall be advised of any special requirements of entry that may be imposed by the following. The Contractor shall restrict activities to those parts of the property necessary for the performance of the works under this Specification.

2.4 Damage to Site

During the progress of work under this Specification, the Contractor shall be responsible for any damage to property caused by the Contractor. This includes but is not limited to

- Soil erosion and noxious weed infestation
- Services – water mains, power mains, telephone lines
- Infrastructure – roads, drains, contour banks, gates, grids, fences, hedges
- Agriculture - crops, orchids, livestock (cattle, sheep, poultry)
- Aquaculture

2.4.1 Cost of Making Good

In the event that the Contractor fails to repair, replace, clean up or make compensation as the case may be in accordance with the above clauses, the Superintendent reserves the right to have such work done and/or to make compensation and to deduct the costs thereof from any moneys due to the Contractor.

3. Contractors to Inform Themselves Fully

Contractors shall be deemed to have examined all documents, the site and its surroundings and to have satisfied themselves as to soil and ground conditions, terrain, access and all other details involved, having regard to the nature and extent of work to be carried out to this Specification.

4. References

4.1 Precedence

If conflict is found to exist between various parts of the contract, specifications and the listed documents, priority shall be given in the following order:

1. Letter of Offer
2. Project Specific Drawings
3. Main Specification (this specification)
4. Standard Drawings
5. Standard Specifications (Refer Section 2)

All equipment, materials and processes used shall comply in all respects with the latest issue at the time of tendering of the relevant Standard of the Standards Association of Australia, or lacking such Australian Standard, of the British Standards Institution, provided that where the requirements of any such Standard Specifications are specifically varied by this Specification, this Specification shall prevail.

4.2 Project Specific Drawings

An index of project specific drawings is provided in drawing number (Drawing Number).

4.3 Standard Drawings

The standard drawings (manuals) are available from <http://www.ergon.com.au/contractors--suppliers--and--developers/design-contractors>. The following drawings are required for the works to be performed under this Specification.

Required	Drawings/Manuals
Yes/No	Queensland Public Lighting Construction Manual
Yes/No	Overhead Construction Manual - Distribution
Yes/No	Overhead Construction Manual - Subtransmission
Yes/No	Underground Construction Manual

4.4 Other Requirements

The Contractor shall obtain the necessary approvals from relevant governing authorities. Where Ergon has received preliminary approval, subject to final design information or construction plans, Ergon will provide these to the Contractor to finalise.

Such authorities may include, but are not limited to are:

- Telstra
- Department of Main Roads
- Local Council
- Queensland Rail and Aurizon
- Powerlink Queensland
- Harbour Board.

Information on these approvals can be found in the Route Approvals standard specification.

These authorities may have specific requirements for activities on or around their assets, it is the Contractors responsibility to determine and conform to any such requirements.

5. Supply of Materials

Ergon Energy will supply the following materials in accordance with this Specification. The Contractor shall be responsible for loading, transportation, unloading and storage on site of Ergon supplied materials. Materials will be available from a major Ergon store, nominated below, during normal working hours.

All materials in the field shall be stored clear of the ground with an adequate area surrounding the material cleared of grass and other combustible material to prevent possible damage by fires. Materials shall be stored in areas free from declared plants. In the event of delay all materials (except the poles) shall be secured in a lockable fenced compound or warehouse.

Prior to taking delivery of materials from the Principal, the Contractor shall inspect and check such materials for damage and the accuracy of indicated quantities. The Contractor shall then sign a receipt form provided by the Principal thereby taking delivery. The Contractor shall then be held responsible for all losses, breakages and damage to such materials.

Supplied by Ergon	Supplied by Contractor	Material	Ergon Storage Location
Yes	No	Structures	Location
Yes	No	Crossarms, steelwork, bolts	Location
Yes	No	Staywire, stay insulators, fittings and stayrods	Location
Yes	No	Insulators	Location
Yes	No	Conductor/earthwire	Location
Yes	No	Conductor/earthwire hardware, dampers and joints	Location
No	No	OPGW or ADSS	Location
No	No	OPGW or ADSS hardware, dampers, splice boxes, downlead cushions	Location
No	Yes	Ground earthing materials	Location
No	Yes	Foundation materials - cement, imported backfill, concrete, reinforcing	Location
No	Yes	Consumable goods - stainless steel strapping, jointing compound, etc	Location

The Queensland Cabinet has mandated that Government Owned Corporations (i.e. Ergon Energy) complies with the Queensland Government -- State Procurement Policy (administered by the Department of Housing and Public Works) found at <http://www.hpw.qld.gov.au/about-us/ReportsPublications/Guidelines/Pages/procurement/Pages/.aspx>

6. Quality Requirements

Certification that the works are constructed in accordance with the design and standard drawings and specifications shall be provided by a Registered Professional Engineer of Queensland. The inspection and test points detailed below are the minimum that Ergon require for quality purposes, in some case the Engineer may request additional inspections be carried out for certification purposes.

6.1 Contract Quality Plan

The Contractor shall prepare, apply and administer a Contract Quality Plan relevant to this Contract conforming to the nominated Quality system Standard or as otherwise qualified in this Specification. The Contractor shall also supply controlled copies of the documents referred to in the Table of Quality Requirements.

These documents shall be delivered to the Superintendent in the quantities and at the times referred to in the Table of Quality Requirements.

6.2 Subcontracted Work

With the exception of suppliers of stock items, the Contractor shall assure himself of the quality standard of products and services provided by sub-contractors.

Where the Contractor is required by the Conditions of Contract to obtain the Superintendent's approval to subcontract work, the Contractor shall include with its request for approval the following:

- Details of the proposed sub-contractor's quality system.
- A justification of the Quality Standard selected.
- An assessment of the proposed Sub-contractor's ability to meet the Standard.
- The Contractor's Surveillance Plan for verifying the proposed sub-contractor's quality system and product conformance.

6.3 Notice of Intention to Commence Supply, Manufacture or Construction

The Contractor shall give the Superintendent written notice of the intention of the Contractor or the sub-contractors/suppliers to commence supply or manufacture or construction of any product, service or portion of work for use in this contract.

The notice shall be given in accordance with the times referred to in the Table of Quality Requirements.

Such notice shall contain the name of the manufacturer/supplier, the address of the point of manufacture/origin, the name and phone number of the contact person, order number, Quality Standard/category, Inspection and Test Plan (ITP) number and title, and the scope and description of the products/services to be supplied or completed.

6.4 Notice of Inspection or Test

When witness or hold points for quality surveillance or tests require the presence of the Superintendent's Quality Assurance Representative (QAR), the Contractor shall give notice in accordance with the times referred to in the Table of Quality Requirements.

6.5 Despatch of Manufactured Products

No product manufactured for this contract shall be despatched to the site, or place of delivery, without being accompanied by an Inspection Certificate/Release Note issued by the Contractor.

A non-conforming product shall not be despatched to the site or place of delivery, without prior permission from the Superintendent.

6.6 Right of Access

The Contractor shall provide access for the Superintendent's QAR to the Contractor's and the sub-contractor's premises or working area for the purpose of quality surveillance, progress assessment and quality audits.

6.7 Stock Items

The Contractor shall notify the Superintendent of any products supplied from inventory (stock) and shall, if requested, demonstrate by objective evidence that they were manufactured under a recognised quality system.

6.8 Traceability

Traceability requirements are detailed in the Table of Quality Requirements.

6.9 Records During the Contract

The Contractor shall retain sufficient records as objective evidence to assure the Superintendent that Contract requirements are being met. A register of those records shall be maintained.

Sub-contractor's records and supplier's certificates pertinent to the Contract shall be included.

The Register of Records shall be made available to the Superintendent's QAR for verification on request. Originals of documents shall be provided for examination on request.

The minimum records for this Contract are listed in the Table of Quality Requirements.

The Contractor shall supply to the Superintendent two copies of all records progressively as each element of the work is completed, i.e. structure fabrication, structure erection, stringing, etc.

The Contractor shall provide the Superintendent with copies of any test results requested by the Superintendent within the time referred to in the Table of Quality Requirements.

The Quality system Standard for this contract is Australian Standard Association Standard AS/NZS 9001:2008 Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation and Servicing.

NOTE: Where the Tenderer offers a quality system accredited to a Quality Standard other than that specified, it is the Tenderer's responsibility to prove to the Principal that it is equivalent.

6.9.1 Contract Quality Plan

The contract Quality Plan shall include:

	Required	To Be Submitted
Contract Quality Manual:		
Workshop/Office	YES	YES
Site	YES	YES
Contract Procedures:		
Workplace Health & Safety Management Plan	YES	YES
System Elements	YES	YES
Process/Production	YES	YES
Erection	YES	YES
Commissioning	NO	NO
Inspection & Test Plan/s:		
Design	YES	YES
Procurement	YES	YES

Manufacture	YES	YES
Construction	YES	YES
Erection	YES	YES
Commissioning	NO	NO

When required to be submitted to the Superintendent, two copies of the Quality Plan shall be submitted within 4 weeks of Contract award

When the Superintendent is satisfied that the above documents comply with the requirements he shall approve them as being suitable for use. Until such approval is obtained the Contractor shall not proceed with any works which require such documentation.

6.9.2 Notice of Intention to Commence Supply or Manufacture

The notice required before commencement of supply/manufacture is:

Queensland	7 days
Interstate	14 days
Overseas	21 days

6.9.3 Notice of Inspection or Test

The notice required before witness/hold points is:

On site	2 days
Elsewhere in Queensland	10 days
Interstate	10 days
Overseas	21 days

6.9.4 Traceability

The traceability requirement and extent for this contract is:

Item	Trace Requirements
Concrete Poles	Batch testing, Concrete characteristic strengths, Pole number, Manufacture details
Steel	Heat analysis & Mechanical properties for each section size
Welding	Welding procedures, welding inspections and tests.
Concrete	Batch, Characteristic strength, Structure no.

6.9.5 Records

- The Contractor shall supply the quality records for this Contract progressively as each element of the work is completed.

- Test results requested by the Superintendent shall be provided within 28 days of the test.
- The Register of Records shall be submitted to the Superintendent within 14 days from Practical Completion.
- The minimum quality records for this Contract are as listed in the List of Quality Records.

LIST OF QUALITY RECORDS

Document Title	To Be Submitted
Design Certification of Contractor Designed Structures	Yes
Daily/weekly log of Field Work	Yes
Structure Fabrication Production Schedules	No
Steelwork Fabrication Inspections and Tests	No
Structure Delivery Log	Yes
Structure Erection Log	Yes
Footing Resistance of Erected Structures	Yes
Stringing Programme	Yes
Stringing Log - Daily	Yes
Schedules of Non conformances	Yes

6.10 Milestones

The Contractor shall be held responsible for achieving the following milestones relating to implementation and application of quality requirements:

Item	Milestone Date
Supply of Contract Quality Plan	4 weeks after Contract Award
Implementation of Corrective Actions arising from Quality Plan Audits carried out by the Principal or as otherwise identified	4 weeks after Audit Report Advice
Supply of Quality Records	4 weeks after each element of work is completed.
Quality System Accreditation to AS 9001 or equivalent	Where nominated in Contract to be achieved within contract period

7. Summary of Technical Records

VOLTAGE	66 kV
CONDUCTOR	OXYGEN 19/4.75 AAAC 1120
EARTHWIRE:	14.0 mm OPGW with 48 Fibres– Refer to Manufacturer's Data Sheets (attached)
	11.4 mm OPGW with 48 Fibres– Refer to Manufacturer's Data Sheets (attached)
	Cherry 6/4.75 7/1.60 ACSR/GZ
INSULATION (Additional or reduced insulation may be specified at some locations)	
Suspension	5 discs - normal
Tension	6 discs - normal

The Principal designed structure types are:

Construction	Suspension	Flying Angle	Strain	Termination
Single Circuit – Concrete Pole	??	??	N/A	??
Double Circuit – Concrete Pole	N/A	N/A	N/A	N/A
Single Circuit – Steel Pole	N/A	N/A	N/A	N/A
Double Circuit – Steel Pole	N/A	N/A	N/A	N/A
Single Circuit – Lattice Tower	N/A	N/A	N/A	N/A
Double Circuit – Lattice Tower	N/A	N/A	N/A	N/A

A strain structure cannot be terminated on one side only. This applies to poles stayed only on the bisect of the line deviation angle. Temporary staying is required during stringing to terminate onto a strain pole. Strain towers shall not be temporarily stayed.

Occasionally an earthwire riser on a suspension structure is strained to accommodate a joint in the OPGW. Do not terminate the OPGW on one side only.