



**Ergon Energy Corporation Limited**

**Specification for  
UDC Civil Works**

**RSC07**

# Specification for UDC Civil Works



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## 1. PURPOSE AND SCOPE

The purpose of this Specification is to provide Ergon Energy's civil requirements for Underground Distribution Construction (UDC) Projects.

This document outlines Ergon Energy's requirements for the supply of materials, trenching, installation of conduits for underground cables, Street Lighting foundations, padmounted substation and free-standing high voltage switchgear sites associated with all UDC and Street Lighting.

Note that survey marks required for construction purposes, easements, footpath levels, cable routes and other services, are the responsibility of the Contractor and shall be established and verified by a licensed surveyor.

All work shall be to Ergon Energy's required Construction Standards and in accordance with the Construction Issue Plan(s), associated drawings, this Specification (including any attachments), and other referenced documents.

### Note

Any specific requirement shown on the Construction Issue Plan and/or other information provided by Ergon Energy override the general requirements set out in this specification.

## 2. REFERENCES

### 2.1 ERGON ENERGY CONTROLLED DOCUMENTS

This specification shall be read in conjunction with the Ergon Energy documents listed below and if conflict is found to exist between various parts of this specification & the listed documents, the matter shall be referred to Ergon Energy via the Liaison person for resolution.

Ergon Energy controlled documents referenced in this specification may be accessed through the Ergon Energy website: [www.ergon.com.au](http://www.ergon.com.au)

Document number or location	Document name	Document type
	Underground Construction Manual	Standard
	Public Lighting Construction Manual	Standard
BS001405R107	Electricity Entity Requirements: Working Near Overhead and Underground Electric Lines	Reference

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Document number or location	Document name	Document type
PW001200T100	Certification of Completion – Civil Works	Template
PW001200T101	Certificate of Acceptance – Civil Works	Template
RSC08	Specification for UDC Electrical Work	Specification
RSC09	Specification for Horizontal Directional Drilling	Specification
RSC10	Specification for UDC Electrical Testing	Specification
PW000400R100	Approved Products List	Template

## 2.2 OTHER DOCUMENTS

Document number or location	Document name	Document type
AS 3600	Concrete Structures	Australian Standard
AS 3972	General Purpose and blended cements	Australian Standard
AS 2758.1	Aggregates and rock for engineering purposes – Concrete aggregates	Australian Standard
AS/NZS 4671	Steel reinforcing materials	Australian and New Zealand Standard
AS 1289	Methods of testing soils for engineering purposes	Australian Standard
	Construction Issue Plan/s and associated drawings provided.	

Note that any reference in this Specification to an Australian Standard is a reference to the latest edition, as published by Standards Australia.

## 3. DEFINITIONS, ABBREVIATIONS AND ACRONYMS

### 3.1 DEFINITIONS

The following list has been provided for clarification of the terminology used by Ergon Energy in this Specification. Note that where a term used is already defined in the Developer Handbook or the Negotiated Connection Establishment Contract, it has the meaning given to that term in those documents.

TERM	DEFINITION
As Constructed Plan	The Construction Issue Plan, certified as required in this Specification, which has been modified to include any variations approved during the course of construction, and other required information.
Audit	A process by which Ergon Energy checks for compliance with applicable Ergon Energy specifications and drawings and relevant laws such as the <i>Electrical Safety Act 2002</i> (Qld) and the <i>Electrical Safety Regulation 2013</i> (Qld).
Approved Suppliers Register (ASR)	The register of contractors that have been assessed, accepted and rated by Ergon Energy as being suitable to undertake electrical design and construction works associated with DD&C Projects.
Certificate of Acceptance – Civil Works	A certificate issued by Ergon Energy advising that the work as detailed on the Certificate of Completion – Civil Works has been inspected and accepted by Ergon Energy.
Certificate of Completion – Civil Works	A certificate issued to Ergon Energy advising all works undertaken have been completed in accordance with Ergon Energy's requirements.
Construction Issue Plan	A Construction Plan that has been assessed as compliant by Ergon Energy and certified by the RPEQ, or nominated representative, for use in construction of the Project.
Construction Plan(s)	A plan or plans as defined in Ergon Energy's specification RSD04 – Distribution Design Drafting Standard.
Construction Standard	The standard of construction required by Ergon Energy. This is the standard of construction that ensures a quality of supply acceptable to Ergon Energy's customers, continuity of supply and the least long-term cost to Ergon Energy. The Development must be designed and constructed in accordance with Ergon Energy specifications and drawings as applicable to the satisfaction of the Liaison Person. Construction carried out by the Developer's Contractors must meet this standard.

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TERM	DEFINITION
Contractor	<p>A company or person (including a subcontractor engaged by the Contractor) selected to undertake construction associated with the Project.</p> <p>Note that where necessary in this Specification reference is made to the Civil Contractor (undertaking works to this specification) and the Electrical Contractor (undertaking the associated electrical works) for the purpose of coordination during construction as necessary.</p>
Designed by Ergon Energy	Refers to a Project where Ergon Energy is responsible for the design of the civil works.
Designed by Developer	Refers to a Project where a Developer is responsible for the design and construction of the civil works.
Designer	An entity who is involved in the design of the DD&C works.
Developer	Any entity that enters into an agreement with Ergon Energy for Electrical Reticulation works.
Development	The area being developed by the Developer, usually where the Developer has entered into a negotiated Connection Establishment Contract with Ergon Energy in respect of the Electrical Reticulation within that area.
Electricity Footpath Allocation	The corridor in the footpath allocated by the local government authority for the installation of electric cables and plant. All trench alignments and maximum widths detailed on regional "Trench Detail" drawings are contained within the applicable Electricity Footpath Allocation.
Electrical Reticulation	The electrical reticulation located within a Development for the purposes of distributing electricity within that Development.
Horizontal Directional Drilling	A guided direction drilling technique for the trenchless installation of pipelines, ducts (conduits) and cables.
Liaison Person	A person appointed under the Negotiated Connection Establishment Contract by either Ergon Energy or the Developer, who has authority to deal with the other party's Liaison Person.
Negotiated Connection Establishment Contract	In this Specification, means the aggregate general terms and site-specific terms comprising the Negotiated Connection Establishment Contract for the connection of subdivision (Developer reticulates and gifts reticulation).
Project	The Electrical Works to be undertaken, including Augmentation Works, Network Extension and the Electrical Reticulation, including Street Lighting where required.
Project Agreement	An agreement between Ergon Energy and an Ergon Energy Contractor pursuant to which the Contractor is to carry out works on the Project on Ergon Energy's behalf.



TERM	DEFINITION
Project Number	The Ellipse Work Request Number issued by Ergon Energy for the Project.
Public Body	Means the local government or a Queensland Government department or public authority (for example, the Department of Transport and Main Roads).
Street Lighting	Road lighting installed as part of the Project and designed to Australian Standards and / or applicable local government / Department of Transport and Main Roads requirements, and as approved by that body.
Site Manager	The Contractor's site representative with authority to deal others as required for completion of the Project. The Site Manager is also required to have authority to submit and sign the Certificate of Completion – Civil Works
Thermal Fill	Trench backfill/bedding material that meets a required thermal resistivity.

## 3.2 ACRONYMS AND ABBREVIATIONS

The following abbreviations and acronyms appear in this specification.

ACRONYM	DEFINITION
HV	High Voltage
LV	Low Voltage
RPEQ	Registered Professional Engineer Queensland
UDC	Underground Distribution Construction

## 4. SITE RESPONSIBILITY

### 4.1 SECURITY, SAFETY, ENVIRONMENTAL AND ERGONOMIC CONSIDERATIONS

Where a Developer designs the Project, the Developer is responsible for site security, safety and environmental considerations in respect of the civil works.

Where Ergon Energy designs the Project, these issues will be managed in accordance with the relevant Project Agreement.

### 4.2 COMPLIANCE WITH LAWS AND AUTHORISATIONS

Where a Developer designs the Project, the Developer is responsible for ensuring compliance with all laws, authorisations and the requirements of any relevant authority or utility provider, and for documenting and implementing a safety management system that complies with such laws and authorisations.

Where Ergon Energy designs the Project, these issues will be managed in accordance with the Project Agreement.

## **4.3 LAYING OF CONDUITS FOR THE INSTALLATION OF ELECTRICAL CABLES**

Where a Developer designs the Project, the civil works for which the Developer is responsible includes the laying of conduits for the installation of electrical cables. An Electrical Contractor who is on the Approved Suppliers Register must supervise this work.

## **5. CONSTRUCTION DRAWINGS AND PLANS**

### **5.1 REFERENCES TO DRAWINGS IN THE ERGON ENERGY UNDERGROUND CONSTRUCTION MANUAL**

Where this Specification refers to drawings in Ergon Energy's Underground Construction Manual, that reference will not include the name of the Manual. However, the folder name will be nominated in upper case letters, followed by the drawing number. For example:

LV CONSTRUCTION drawing No. 5025

refers to drawing No. 5025, which resides within the LV CONSTRUCTION folder of the Underground Construction Manual.

### **5.2 REFERENCES TO THE QUEENSLAND PUBLIC LIGHTING CONSTRUCTION MANUAL**

Where this Specification refers to drawings in the Queensland Public Lighting Construction Manual, that reference will include the manual name, followed by the folder name in upper case letters, and then the drawing number. For example:

Queensland Public Lighting Construction Manual, COLUMNS MINOR ROAD drawing No. 1-6-4

refers to drawing No. 1-6-4, which resides within the COLUMNS MINOR ROAD folder of the Queensland Public Lighting Construction Manual.

### **5.3 VARIATION TO THE CONSTRUCTION ISSUE PLAN**

All variations to the Construction Issue Plan that are proposed during the course of the work must be submitted in writing to the Designer for approval, allowing sufficient time for assessment / approval and re-issue prior to construction. Approved variations must be included in the As Constructed Plan.

Where a Developer designs the Project, the proposed variations must be submitted to the Designer, with a copy of the correspondence being provided to the Ergon Energy Liaison Person.

Where Ergon Energy designs the Project, the proposed variations must be submitted to the Ergon Energy Liaison Person.

## 5.4 AS CONSTRUCTED PLAN(S)

The As Constructed Plan must be signed and dated by the Site Manager and the person licensed to perform electrical installation work, as required under the *Electrical Safety Act 2002* (Qld).

All variations to the Construction Issue Plan must be added in a neat and legible manner so that the amendments can be easily understood. Changes shall be marked-up in red and be able to be scaled and dimensioned. Note that freehand sketches are unacceptable.

All As Constructed Plans supplied by the Contractor must include drawings showing the materials, finished sizes, tolerances and clearances of all the various parts of the works in sufficient detail to enable maintenance, routine inspections, repairs to and renewal of any part to be undertaken by Ergon Energy so that Ergon Energy does not have to dismantle any of the works to obtain these details.

## 5.5 AS CONSTRUCTED CIVIL WORKS SURVEY PLAN

An As Constructed Civil Works Survey Plan may be provided to Ergon Energy on a spreadsheet in lieu the Cable Location Log. The spreadsheet must capture the alignment (in Eastings and Northings) and the depths (RL) of conduit works performed under this Specification, and as a minimum include the following:

- Project Number and Location
- Construction Issue Plan No.
- Contractor details
- Date
- Size and number of conduits installed
- The property side, upper conduit, at appropriate spacing (recommend minimum, alternative boundaries between pillars)
- Truncation point
- Road crossings at kerb inverts
- Any other amendments and or differences from the Construction Issue Plan(s)
- End of conduit runs

All levels (to Australian Height Datum) and positional (northing and easting) must be determined using equipment that is sufficiently accurate for a survey plan although it is not a requirement for this information to be captured by a licenced surveyor. The requirement for the Cable Location Log is RSC08, Clause 15.7 is waived if a Civil Works Survey Plan is provided.

## 5.6 AS CONSTRUCTED PACK

The Contractor shall provide an As Constructed Pack for all works, which must include, as a minimum:

- As Constructed Plan(s); and
- As Constructed Civil Works Survey Plan(s); and
- RL Plan for the subdivision.

## 6. PRE-START MEETING

A pre-start meeting must be held before site works start, unless Ergon Energy expressly directs otherwise.

**Note:** The pre-start meeting is designed to facilitate the resolution of all issues that may need to be resolved before the site works start. Accordingly, sufficient time must be scheduled to allow such resolution.

Where the Developer designs the Project, the Developer (or its nominated representative) must arrange and facilitate the meeting. Attendees must, at a minimum, include the Developer or Developer's representative, Contractors, relevant Liaison Personnel and representatives of any other authorities involved in the Project.

Normally five business days' notice of a meeting is sufficient notice for Ergon Energy's Liaison Person. However, if significant travel is required from the relevant Ergon Energy depot to the site, additional notice must be provided (as agreed with Ergon Energy's Liaison Person).

Where Ergon Energy designs the Project, Ergon Energy will arrange and facilitate the pre-start meeting.

## 7. AUDITS

### 7.1 GENERAL

Although the Contractor is responsible for construction and compliance with this Specification and the Construction Issue Plan, Ergon Energy may conduct audits in accordance with this Clause 7.

**Note:** Any specific requirements shown on the Construction Issue Plan and other information provided by Ergon Energy override the general requirements set out in this Clause 7, to the extent that they differ.

### 7.2 AUDITS DURING CONSTRUCTION

The Contractor or their representative must notify Ergon Energy's Liaison Person at the stages of construction listed below.

- Trenches - after the installation of conduits and prior to backfilling.

- Padmounted Substation and Free-standing High Voltage Switchgear Sites
  - Before pouring the foundation footing (block work designs only), after the reo bar installation during the installation of the bond beam in the pad mounted substation foundation (where applicable).
  - After the installation of foundation, conduits and earthing, and prior to backfilling.
- Pole Terminations – during excavation for conduit/cable within 1.0 m of the pole.
- Road Lighting Foundations – after the installation of conduit bend, hold down bolts, formwork, and prior to concreting (cast in situ foundations only).
- Retaining Walls – before the pouring of wall footings, prior to core filling of blockwork, but after reo bar installation.

Whilst notification is mandatory, audits may be carried out at Ergon Energy's discretion. Points of interest are generally communicated at the Pre-start meetings. Notwithstanding, it is a requirement that appropriate advanced notice is given to allow the Ergon Energy's Liaison Person to carry out the audit. Where Ergon Energy elects to carry out an audit, this will normally be arranged within two Business Days of the notification. Note that sites that require significant travel from the relevant Ergon Energy Depot require additional notice, as agreed with the Liaison Person.

Should the Contractor fail to provide the above notice, the Contractor shall be responsible for exposing conduits or undertaking such other work as is deemed necessary by the Ergon Energy Liaison Person to facilitate Ergon Energy carrying out a satisfactory audit.

Random audits may be undertaken throughout the course of construction, at the discretion of the Ergon Energy Liaison Person.

**Note:** Ergon Energy shall not be liable for any rectification works or replacement of materials due to erosion, subsidence or damage from any other cause, to excavations and/or materials that may result from excavations being left open pending audit by Ergon Energy's Liaison Person.

## 7.3 ADDITIONAL AUDIT REQUIREMENTS WHERE THERMAL FILL IS USED

In locations where Thermal Fill is used, additional audits will be required. The audit requirements for these locations will be defined in the specification provided by Ergon Energy.

## 7.4 RECTIFICATION OF DEFECTS FOUND DURING AN AUDIT

The Contractor must rectify any defects that are identified during an audit as soon as possible; at a time, and in a manner, acceptable to the Ergon Energy Liaison Person.

## 7.5 FINAL AUDIT

### 7.5.1 DESIGN BY DEVELOPER

Where the Developer designs the Project, the final civil works audit is conducted after the Certificate of Completion – Electrical Works (along with required documentation) is received by Ergon Energy (refer Clause 24.1).

Should any defects be found during the final audit, the Certificate of Completion – Civil Works (including accompanying documentation) will be returned to the Developer to enable access for rectification purposes.

Following the rectification of faults by the Developer, the Developer shall submit a new Certificate of Completion – Civil Works, together with accompanying required documentation, and a re-audit shall be conducted.

### 7.5.2 DESIGN BY ERGON ENERGY

Where Ergon Energy designs the Project, Ergon Energy will carry out a detailed audit of works upon receipt of the Certificate of Completion – Civil Works and the As Constructed Pack. Note that this audit will only be carried out after completion of real property pegging and when allotment numbers (where applicable) and final footpath/finished surface levels have been established.

Ergon Energy may require the ends of all conduits at changes in direction, road crossings, pillar locations, pad mounted substations and any other positions selected by the Ergon Energy Liaison Person to be exposed at no cost to Ergon Energy.

Electrical works (including cable installation) shall not commence until all of the defects found during audits have been rectified by the Developer or Contractor, and the Certificate of Acceptance – Civil Works (refer Clause 24.4) has been issued by Ergon Energy.

## 7.6 RE-AUDITS

Re-audits will be carried out to ensure that any identified defects have been rectified. Ergon Energy shall charge for each re-audit.

## 8. MATERIALS

### 8.1 SUPPLY OF MATERIALS

#### 8.1.1 DESIGN BY THE DEVELOPER

The Developer is responsible for obtaining all the materials necessary for the construction, installation of the civil works. All materials and equipment and used for the construction and maintenance of the electricity distribution infrastructure is required (as a minimum) to be complying with PW000400R100 Approved Products List, which is available from the Ergon Energy website ([www.ergon.com.au](http://www.ergon.com.au)),

Materials to be supplied include, but are not limited to:

- conduits and associated bends, draw ropes, polymeric cable protection covers, orange warning tape, 'E' markers (for use at kerbs), markers for creek crossings, bedding, approved back fill material;
- bollards;
- padmounted substation foundation(s) (including unculvert assembly or bored pier for 11 kV, footing & block wall arrangement for 22 kV), free-standing High Voltage switchgear footings, site finish, and all materials required for the construction of retaining walls for sites (where required); and
- foundations for Street Lighting and, where applicable, associated pits.

All materials shall be new and undamaged. PVC conduit that is unduly faded and/or damaged by exposure to the elements must not be used.

## 8.1.2 DESIGN BY ERGON ENERGY

The Contractor is responsible for obtaining all the materials necessary for the construction, installation of the civil works. All materials and equipment used for the construction and maintenance of the electricity distribution infrastructure is required (as a minimum) to be complying with PW000400R100 Approved Products List, which is available from the Ergon Energy website ([www.ergon.com.au](http://www.ergon.com.au)), expect for:

- cable warning plaques or cable warning posts to CONSTRUCTION PRACTICE drawing No. 5063, or 5065, when these items are required.

Appropriate notice is required for supply of these items, as agreed with the Liaison Person.

An appropriately skilled and experienced person, acceptable to Ergon Energy, must oversee materials procurement.

**Note:** The supply of concrete for the installation of plaques or sign posts is not included. Where possible, this issue should be discussed at the pre-start meeting.

## 8.2 APPROVAL OF MATERIALS

Approved materials, including known manufacturer/supplier names and catalogue numbers (where applicable), are listed in PW000400R100 Approved Products List. Note that the list of known manufacturers/suppliers is not intended to be exclusive, and approved products may be purchased from other suppliers without the approval of Ergon Energy.

Ergon Energy accepts no liability for the correctness of the drawings and specifications and it is the Developer's responsibility to ensure that materials purchased are suitable for the intended use.

## 8.3 SUPPLY OF EARTH CABLE AND COORDINATION

Supply and delivery to site of additional earth cable to be installed in trenching is the responsibility of the Electrical Contractor, and the Civil Contractor must liaise with the

Electrical Contractor and Liaison Person to ensure that the cable is made available prior to trench excavation and conduit installation.

**Notes:**

- The location and extent of additional earth cable, where required, shall be shown on the As Constructed Plan.
- The Electrical Contractor is responsible for the completion of any connections/joints required in the cable.

## 9. UNDERGROUND SERVICES AND DAMAGE TO PROPERTY

### 9.1 EXISTING SERVICES

Information shown on Construction Issue Plans or otherwise provided detailing the existence and location of services such as electricity, communications, gas, water, storm water and sewerage is provided as a guide only, and specific site information must be obtained from the relevant service provider. The services of “Dial Before you Dig” (phone No 1100) should be utilised where the relevant service provider is a subscriber. The Contractor must undertake site investigation (including the careful excavation of trial holes where necessary) to confirm the exact location of relevant services.

All such trial holes must be backfilled to the standard acceptable to the relevant service provider, e.g. appropriate backfill material, warning tapes, etc.

### 9.2 EXISTING ERGON ENERGY ASSETS

Where construction is to be undertaken in proximity to existing Ergon Energy assets, the Contractor must comply with the *Electrical Safety Act 2002* (Qld), the *Electrical Safety Regulation 2013* (Qld), applicable Codes of Practice and the provisions of the Ergon Energy/Energex document entitled “BS001405R107 Electricity Entity Requirements: Working Near Overhead and Underground Electric Lines”, which is available on Ergon Energy’s website.

**Important: Any electrical cable or conduit uncovered during the work must be treated as “Live” unless and until advised otherwise by the Ergon Energy Liaison Person.**

### 9.3 DAMAGE

Any damage to underground services or property that is attributable to work by the Contractor, their agents or employees during the course of the work must be immediately reported to the Ergon Energy Liaison Person and the relevant service provider. The Contractor must rectify any such damage in accordance with the requirements, and to the satisfaction, of the relevant service provider at no cost to Ergon Energy.



## 10. ELECTRICITY CABLE ROUTE AND ALIGNMENTS

### 10.1 GENERAL

The Developer must provide a reasonably level Electricity Footpath Allocation/cable route free of all obstructions such as trees and stumps, etc.

Conduits shall be installed where specified within the Electricity Footpath Allocation/cable route and in accordance with the *Electrical Safety Act 2002* (Qld) and *Electrical Safety Regulation 2013* (Qld).

### 10.2 FOOTPATH TRENCH & CONDUIT ALIGNMENT

The trench & conduit line along the footpath relative to the RP Street alignment shall be as detailed in the applicable TRENCHING drawing for the Ergon Energy Region (& locality if specified).

### 10.3 LIGHTING ALIGNMENT

Foundations shall be located on the alignment approved by the Public Body as shown on the Construction Issue Plan.

## 11. SPECIFIC TRENCHING, CONDUITS, BACKFILL AND REINSTATEMENT IN DEFINED LOCATIONS

In certain locations, such as where one or more major feeder cables occur, a specific cable installation design is required, which may include specific trench details, bedding material and backfill with specific thermal properties (Thermal Fill). Construction information shall be provided on the Construction Issue Plan.

**Note:** Any specific requirements shown on the Construction Issue Plan and other information provided by Ergon Energy override the following standard requirements of Clauses 12, 13, 14, and 17 to the extent they differ.

## 12. TRENCHING

### 12.1 GENERAL TRENCHING AND CONDUIT REQUIREMENTS

The accuracy of property boundary pegs and/or survey marks and finished surface levels must be established before excavation and installation of conduits. Any trenching or conduits that are incorrectly located relative to required locations and finished surface levels will be rejected.

Trenches are to be kept as straight as possible and within the Electricity Footpath Allocation along public footpaths, with minimum dimensions in accordance with the applicable TRENCHING drawings.

Where conduits pass from the footpath to a roadway, the change in level of trench must be gradual and must facilitate a conduit bend of not less than 1830 mm radius.

The top of the conduits or cables below finished ground shall not be:

- less than the minimum dimension shown on the applicable TRENCHING drawing; or
- more than 300<sup>1</sup> mm deeper than as shown on the applicable TRENCHING drawing.

**Notes:**

- The preference is for Ergon Energy assets to pass under other services where such services prevent achievement of the above minimum depth requirements. In cases where it is not practical to pass under other services additional protection shall be provided in accordance with TRENCHING drawing 5016 (for footpaths) and 5017 (for roadways). The notes on these drawings must be followed.
- Polymeric cable protection cover must be marked with the words “ELECTRIC CABLE” or similar along its length.

Any proposed variation in depth or alignment must have prior written approval from the Ergon Energy Liaison Person (refer Clause 5.3). Any such variations must be recorded on the As Constructed Plan.

## 12.2 BREAKING OF SURFACE

The breaking of bitumen, asphalt, concrete, paved or tiled surfaces of footpath and roadways must be in accordance with the requirements of the local government authority, and elsewhere in consultation with the relevant property owner and Ergon Energy.

Surfaces are to be cut neatly and cleanly to avoid jagged edges.

## 12.3 GRASSED AREAS

Excavations must be neatly cut, and care must be exercised, to minimise damage or disruption to the surrounding surface.

## 12.4 JOINT USE TRENCHES

No services other than those shown on the applicable TRENCHING drawing are to be permitted in Ergon Energy's trenches or within Ergon Energy's alignment, unless prior written approval is obtained from Ergon Energy.

## 12.5 TRENCHING IN PROXIMITY TO POLES

Prior to trenching, to ensure minimum disturbance of pole foundations, the requirements of the Ergon Energy/Energex document entitled “BS001405R107 Electricity Entity Requirements: Working Near Overhead and Underground Electric Lines” must be

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<sup>1</sup>Where additional depth is required to pass under other services this 300 mm tolerance applies to the depth required to achieve the undercrossing.

implemented. The Ergon Energy Liaison Person must be consulted to determine whether there are any additional site-specific requirements.

Trenching at pole terminations must cause the minimum disturbance to the pole foundation and be in accordance with TRENCHING drawing No 5144 or 5173 (as applicable).

## **12.6 PADMOUNTED SUBSTATIONS**

Trenching at padmounted substations shall be in accordance with TRENCHING drawing No 5115 for 11kV or 5142 for 22kV.

## **12.7 ADDITIONAL EARTH CABLE**

In areas of poor earthing, the addition of an earth cable in trenches may be required. The location and extent of any such additional earthing must be shown on Construction Issue Plan. The cable is to be placed in the bottom of the trench and, at each end of the earth cable 'run', the cable must be brought to just below the ground surface, with 1.5 m of excess cable being coiled for any future connection. Polymeric orange warning tape must be tied to the cable and must extend above ground to aid in future location.

## **12.8 DEWATERING**

Trenches and other excavations shall be dewatered by pumping at locations and times approved by the Ergon Energy Liaison Person. The pump size shall be appropriate to the quantity of water to be removed.

# **13. CONCRETE WORK**

## **13.1 GENERAL**

Concrete work shall comply with the requirements of AS 3600.

## **13.2 PREPARATION AND PLACEMENT**

Concrete shall be prepared and placed in accordance with Section 17 of AS 3600.

## **13.3 CEMENT TYPE**

All cement shall be Portland Cement Type GP and shall conform to the requirements of AS 3972

## **13.4 AGGREGATES**

Aggregates must comply with the requirements of AS 2758 Part 1. The nominal maximum size of aggregate for reinforced concrete shall be 20 mm.

## **13.5 WATER**

Water used in mixing concrete must be clean and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substances.

## 13.6 REINFORCEMENT

Reinforcement must comply with section 17.2 of AS 3600 and AS/NZS 4671.

Reinforcement stored on site must be suitably protected from the weather and suitably supported clear of the ground.

Reinforcement must be accurately placed in position to the tolerance levels set out in section 17.5.3 of AS 3600, and must be secured against displacement by tying with annealed wire of not less than 1.5 mm diameter at all intersections of bars and laps of fabric. Reinforcement shall be supported from formwork or ground surfaces by approved concrete, metal or other chairs, spacers or ties, to provide the cover specified on the drawings

## 13.7 FORMWORK

Formwork must comply with the requirements of section 17.6 of AS 3600.

Formwork shall be designed and constructed to prevent any movement or distortion during the placement and compaction of concrete. All formwork must be positioned and supported to the tolerance levels set out in section 17.5.2 of AS 3600. Forms shall be closed to prevent leakage of mortar. Any movement observed in the formwork during placing of concrete, resulting in formwork being pushed out of position, or out of plumb, or collapsing in any way will result in the work being rejected.

All rectification and restoration works must be carried out at no cost to Ergon Energy.

## 13.8 SURFACE FINISHES

The surface finish of formwork shall be in accordance with AS 3610 unless otherwise specified.

The following surface finishes are required:

- For footings and concrete surfaces below ground level      Class 5
- For exposed concrete surfaces      Class 3
- For internal concrete surfaces in pits      Class 3

Surfaces specified as Class 3 finish must be true and free from stone pockets, depressions, voids, projections beyond the surface, or other large blemishes. Imperfections must be either filled with mortar or tooled and smoothed away, as required to produce an even, sound surface. All exposed corners shall have a 45° arris and be a minimum of 20 mm wide.

Unformed concrete surfaces on floors, slabs, etc., shall be finished in accordance with section 17.1.4 of AS 3600 so that dense uniform and even surfaces true to line, levels and sections are obtained with a minimum of working of the surface.

The surface of outdoor slabs provided around pad mounted substations and similar must be finally broom finished to avoid slippery conditions in adverse weather.

The surface of indoor floors, pits and similar must be finally finished by means of steel trowel.

## 13.9 CURING OF CONCRETE

Concrete must be fully protected and moist cured or covered by an approved curing compound for a period of at least seven (7) days after pouring. After initial set has occurred, all exposed surfaces must be continuously protected against drying by covering with reinforced building paper or an approved alternative.

During the curing period, no construction loading of any type or duration is permitted without approval from the Ergon Energy Liaison Person.

Any concrete adversely affected by the omission of or by inadequate curing is liable to rejection.

**Note:** The curing period may be reduced with approval from Ergon Energy

## 13.10 REMOVAL OF FORMWORK

Formwork and propping shall not be removed earlier than seven (7) days after pouring. During such period, no construction loading of any type or duration shall be permitted without the approval of Ergon Energy. This requirement prohibits the transportation of loads across concrete surfaces and stacking of materials thereon, prior to stripping of formwork and propping.

Formwork shall be removed in such a way as not to shock or jar the concrete.

## 14. HORIZONTAL DIRECTIONAL DRILLING

Should the installation of conduit be required by trenchless techniques, refer to Ergon Energy's "RSC09: Specification for Horizontal Directional Drilling".

## 15. CONDUITS

### 15.1 MATERIALS

Conduit and accessories shall be in accordance with CONSTRUCTION PRACTICES drawing No. 5124. Except for instances where a pit is necessary, all deviations in conduit require an appropriate bend.

## 15.2 CONDUIT INSTALLATION

### 15.2.1 GENERAL

Conduits shall be laid straight and evenly supported along their length on bedding materials specified in CONSTRUCTION PRACTICES drawing No. 5084, to maintain 50 mm clearance between the underside of conduits and the bottom of the trench. Conduit sockets may be disregarded for the purpose of measuring clearances between conduits, sides and the bottom of trenches.

All conduits and bends must be continuously laid on the prepared bed and jointed together in a watertight manner using PVC solvent cement.

Where new construction adjoins existing assets and the relevant detail is not shown on the Construction Issue Plan, the Contractor must consult with Ergon Energy's Liaison Person to determine Ergon Energy's requirements.

At the end of each conduit 'run', all conduit ends must be cleanly and squarely cut and capped with PVC conduit caps. These conduit end caps are reusable and may be reclaimed by the Contractor. Note that the use of foam plugs or polymeric plugs is acceptable only where the prior written agreement of the Ergon Energy Liaison Person has been obtained.

If conduit has been improperly installed, jointed or damaged, the Contractor must rectify this at no cost to Ergon Energy.

### 15.2.2 FOOTPATH CONDUITS

Footpath conduits must be installed in accordance with the Construction Issue Plan and drawings provided. The distance from the RP Street Alignment to conduits shall be within the dimensions shown on the applicable TRENCHING drawing, and in no instance shall conduits be located outside the Electricity Footpath Allocation. Required minimum clearances to other services must be maintained.

Note
Additional polymeric cable protection covers placed directly on top of the conduit / cable entering or leaving the ground vertically where the conduit / cable is less than 600 mm below finished surface level and not covered by the foot print of the equipment, e.g. At pillars between the pillar and where the 45° 1200 mm radius bend is less than 600mm below finished surface level, refer to applicable TRENCHING drawing.

Refer TRENCHING drawing No. 5197 for the requirement of LV and HV conduits for future extensions.

Refer TRENCHING drawing No. 5196 for the exclusion zone at LV pillars.

## 15.2.3 LIGHTING CONDUITS

Conduits must be continuous from pillars/pits to the top of foundations.

Should the foundation for a light be within 0.5 m of the pillar providing supply to that light, 32 mm diameter orange flexible plain conduit to AS2053 Part 4 may be used.

**Note:** Flexible conduit does not provide the required degree of mechanical protection, and hence all conduit not covered by the pillar base must be covered by a polymeric cable protection cover.

## 15.2.4 ADDITIONAL CABLE PROTECTION OUTSIDE ELECTRICITY FOOTPATH ALLOCATION

All conduit/cable outside the Electricity Footpath Allocation requires the addition of a polymeric cable protection cover placed a minimum of 75 mm (and maximum of 150 mm) above the cable/conduit (refer CONSTRUCTION PRACTICES drawings No. 5022, 5124 and applicable TRENCHING drawings).

## 15.2.5 ROAD CROSSING CONDUITS

Conduits must be installed in accordance with the Construction Issue Plan. Where conduits are a continuation of footpath conduits, they shall be continuous, and connected to the footpath conduits (unless otherwise stipulated on the plan). Where a change in level from the footpath to the roadway is required, a conduit bend of not less than 1830 mm radius shall be provided.

Where the Developer designs the Project, road crossing conduits are the only conduits that may be installed before the pre-start meeting referred to in clause 6). Ergon Energy will require two Business Days' notice before the Developer starts installing of road crossing conduits.

However, any road crossing conduits installed by a Developer without an approved Construction Issue Plan prior to a pre-start meeting will be installed entirely at the Developer's risk and, when inspected, must be in compliance with both Project and Ergon Energy requirements, including the requirements of clause 4.2 of this Specification.

If conduit has been improperly installed, jointed or damaged, this must be rectified at no cost to Ergon Energy.

## 15.2.6 CLEANING AND DRAW CORDS

After installation, conduits must be cleaned of all dirt and foreign matter using a mandrel, and an approved 6 mm synthetic draw cord (previously unused) must be installed. These cords must be continuous and free running (i.e. not glued to the conduit or crimped in a join) in each conduit run, and must extend beyond the end caps by at least 500 mm.

If during cable installation the conduit is found not to be clean, or the draw cord improperly installed, the Contractor will have to rectify this at no cost to Ergon Energy

## 16. CONDUIT/CABLE MARKERS

### 16.1 KERB MARKERS

The location of all electrical conduit road crossings shall be clearly marked with “E” markers securely embedded flush in the kerb face vertically above the conduit. Markers must be located within a tolerance along the kerb of 200 mm of the actual centre of the conduit.

### 16.2 SURFACE OR ABOVE GROUND CABLE MARKERS

The location of buried conduit must be identified in:

- paved areas by the placement of in-ground cable warning plaques; and
- other areas by either the placement of in-ground cable warning plaques or above ground warning markers directly above the conduit.

The locations and details will be provided on the Construction Issue Plan or advised by the Ergon Energy Liaison Person.

### 16.3 ELECTRONIC CABLE MARKERS

Ends of spare conduit must be identified by placing an electronic cable marker 150 mm above the line of conduit. If this is not detailed on the Construction Issue Plan, the Ergon Energy Liaison Person will advise the required locations.

Note that the Ergon Energy Liaison Person may also require electronic cable markers to be placed elsewhere.

## 17. PUBLIC LIGHTING

### 17.1 GENERAL

Lighting foundations must be constructed in accordance with the following requirements, and the Construction Issue Plan shall nominate the type required and locations.

Tolerance on the location of the foundation shall be in accordance with the relevant local government authority's requirements.

Pits for services looping pole-to-pole for Base Plate Mounted (BPM), and for services to Slip Base Mounted (SBM) poles shall be installed in accordance with the applicable drawings, and the Construction Issue Plan will nominate the type required and locations.

Where pits are installed on sloping ground, no part of the pit shall project above the finished surface line, and a concrete collar must be provided around the top of the pit to provide support in that area.

In addition to the requirements in the QUEENSLAND PUBLIC LIGHTING CONSTRUCTION, pit locations must not be located in or within one metre of swale drains



within the road verge, or in floodways beside creeks, or other locations where they are likely to sustain significant and repetitive damage due to site conditions.

Foundation holes must be bored to the depth shown on the drawings, and all loose material must be removed from the base and walls, as necessary to keep the holes free of water.

Grouting under the lighting column base plate does not form part of the civil works.

## 17.2 BARRICADE

Once the construction of the foundation has finished, a barricade comprising 3 star pickets wrapped with orange plastic mesh must be provided around each foundation. The star pickets must be firmly driven into the ground, project a minimum of 900 mm and be capped to prevent injury to persons. The mesh must be securely fixed.

The location of the lighting conduit must be confirmed prior to driving in the star pickets, to avoid possible damage.

After the lighting columns have been erected (by others), the Contractor may reclaim the star pickets and plastic mesh.

## 17.3 MINOR ROAD LIGHTING

Options for Minor Road lighting foundations are either precast concrete, or cast *in situ* concrete, in accordance with Queensland Public Lighting Construction Manual, COLUMNS MINOR ROAD drawing No 1-6-3 or 1-6-4 and referenced ASSEMBLIES drawing 1-2-855 or 1-2-840 (as applicable).

Precast foundations must be installed in accordance with Queensland Public Lighting Construction Manual, ASSEMBLIES Page 1-2-855.

Cast *in situ* foundations shall be in accordance with Queensland Public Lighting Construction Manual, ASSEMBLIES Page 1-2-840.

Construction of cast *in situ* foundations shall also be in accordance with the following:

- Position bolts vertically and orientated as shown on the detail drawing.
- Protect bolt threads with tape or other approved temporary means during concrete placement.
- Rigidly support hold down bolts and conduit in position during concrete placement.
- Form the top of footings to size and shape as shown on the detail drawing.
- On completion, remove temporary thread protection and ensure nuts run freely on bolts.

Concreting shall not proceed until the final arrangement including hold down bolts, conduit bend(s), and formwork has been inspected and approved by the Ergon Energy Liaison Person.

## 17.4 MAJOR ROAD LIGHTING – BPM AND SBM

Options for Major Road lighting are either Base Plate Mounted (BPM) or Slip Base Mounted (SBM) in accordance with Queensland Public Lighting Construction Manual, COLUMNS MAJOR ROAD drawings and referenced ASSEMBLIES, and the required type shall be shown on the Construction Issue Plan.

Options for BPM pole foundations are either precast concrete or cast *in situ* concrete.

Precast foundations shall be backfilled in accordance with Queensland Public Lighting Construction Manual, CONSTRUCTION PRACTICES drawing No 1-3-7-1.

Cast *in situ* foundations shall be in accordance with Queensland Public Lighting Construction Manual, ASSEMBLIES Page 1-2-810, and the construction requirements of clause 17.3 above.

SBM pole foundations are cast *in situ* concrete and shall be in accordance with Queensland Public Lighting Construction Manual, COLUMNS MAJOR ROAD drawing No 1-5-9-1 to 1-5-9-9 as applicable, and the construction requirements of Clause 17.3 above.

## 18. BACKFILL AND REINSTATEMENT OF EXCAVATION

### 18.1 BEDDING MATERIAL

Bedding material required in Projects generally shall be as specified in CONSTRUCTION PRACTICES drawing No 5084, and approval for the material intended for use shall be obtained from the Ergon Energy Liaison Person prior to delivery to site (refer also to clause 10).

### 18.2 CONDUIT

Bedding material only shall be used around the conduit.

Conduit ends, including the bends at each pillar location and elsewhere, shall be securely supported in position during placement and compaction of bedding material.

All conduits must be separated by compacted bedding material. Spacers that are used to maintain separation between conduits must be removed before compacting the bedding material. Bedding material shall be placed in layers not exceeding 100 mm, packed under and around the sides to avoid the formation of air pockets beneath pipes or collars, and finished at a level of 50 mm minimum above conduits (unless shown otherwise in the Underground Construction Manual drawings or the Construction Issue Plan).

### 18.3 BACKFILLING GENERALLY

Backfilling must be completed as soon as practicable after the installation of foundation, conduits and earthing at padmounted substation and free-standing High Voltage switchgear sites, and the installation and audit of conduits in trenches.

Polymeric cable protection cover must be installed where required. Orange Caution Tape shall be installed where shown on the applicable TRENCHING drawing, and backfilling continued.

Footpath trenches and roadway trenches shall be backfilled to meet local government authority requirements.

Trenches in areas other than footpaths and roads (e.g. on private property) shall be backfilled in loose layers not exceeding 250 mm, and compacted to achieve 95% of standard maximum dry density obtained in accordance with AS 1289. In areas such as car parks and internal roadways, 98% of standard maximum dry density is required. Backfill material and compaction of car parks and internal roadways shall match the area prior to excavation.

Rock, sharp objects or any other material that could damage conduit is not permitted in backfill within 200 mm of the conduit.

## **18.4 BACKFILLING AT PITS AND PILLARS**

Pits at padmounted substations, free-standing High Voltage switchgear, termination poles, each pillar location and at any other locations such as cable joints and nominated cable pulling pits shall be backfilled with bedding material to 50 mm below finished ground line, and the remaining 50 mm is to be backfilled with topsoil. When required by the Electrical Contractor, these locations shall be re-excavated to allow the installation of cables (refer clause 19). At the time of re-excavation, topsoil must be stored separately to bedding.

## **18.5 REINSTATEMENT OF SURFACES**

Permanent reinstatement of surfaces shall be carried out as soon as practical after backfilling, the surface level and finish shall match as near as possible the surface prior to excavation and be to the satisfaction of the local authority or owner and Ergon Energy as applicable. Additionally the reinstatement of concrete driveways and slabs shall include the drilling and doweling of adjoining concrete surfaces where practical during the reinstatement work.

## **19. LV PILLARS**

All pillars shall be located where shown on the Construction Issue Plan, with conduit bends at each, installed in accordance with the applicable TRENCHING drawing.

The 40 mm diameter service conduits shall be installed into the consumer's property at an angle of 45° to the property boundary, in accordance with the applicable TRENCHING drawing. Note that in sloping ground the service conduit bottom leg shall be parallel to the ground surface, and must maintain the required 600 mm cover. Service conduits are to be extended at the time of base installation by the Electrical Contractor.

Installation of pillars does not form part of the civil works.

## **20. CABLE INSTALLATION CO-ORDINATION – SUBDIVISIONS DESIGNED BY ERGON ENERGY**

It is the responsibility of the Developer to excavate and expose the conduit ends for the pulling in of cables at padmounted substations, free-standing High Voltage switchgear, termination poles, each pillar location and at any other locations such as cable joints and nominated cable pulling pits. The timing of this shall be coordinated by the Developer to suit the installation of cables by Ergon Energy.

## **21. PADMOUNTED SUBSTATIONS AND FREE-STANDING HIGH VOLTAGE SWITCHGEAR**

### **21.1 GENERAL AND COORDINATION**

Padmounted substations and free-standing High Voltage switchgear are self-contained transportable units designed for installation on stable level foundations.

The Civil Contractor shall liaise with the Electrical Contractor and Liaison Person to:

- ensure all earthing (and conduits where required) is installed during foundation construction; and
- return to complete site finish after installation of cables and backfilling of cable pits and in accordance with applicable construction drawings prior to the commissioning of electrical works.

### **21.2 SUBSTATION FOUNDATION AND SITE FINISH**

#### **21.2.1 11 KV**

"Uniculvert" or "Pier" foundations shall be constructed in accordance with PADMOUNTED SUBSTATIONS drawings No. 5005 or 5009 (as relevant). Site finish shall be in accordance with PADMOUNTED SUBSTATIONS drawing No. 5004.

#### **21.2.2 22 KV**

Foundations shall be constructed in accordance with the following drawings:

- 4.1m long substation, base 800 mm maximum above ground, No 5274
- 4.1m long substation, base 1400 mm maximum above ground, No 5276

Site finish shall be in accordance with the above drawings and PADMOUNTED SUBSTATIONS drawing No. 5118. Note that in locations where it is necessary to provide an elevated substation and the distance above paving to the base at HV and/or LV cabinet access doors exceeds 400 mm, service platform(s) and access ladder(s) are required.

## 21.3 FREE-STANDING HIGH VOLTAGE SWITCHGEAR FOUNDATION AND SITE FINISH

### 21.3.1 11KV

“Uniculvert” foundations shall be constructed in accordance with HV SWITCHGEAR drawing No. 5232. The site finish shall be in accordance with HV SWITCHGEAR drawing No. 5217.

### 21.3.2 22KV

Ergon Energy shall provide foundation and site finish details. Alternatively, a design approved by a RPEQ may be offered for consideration by Ergon Energy. Written agreement and approval from Ergon Energy is required prior to construction.

## 21.4 SITE EARTHING

Earthing is the responsibility of the Electrical Contractor.

**Note:** Installation of earthing during construction of the foundation will require liaison between the Electrical Contractor and the Ergon Energy Liaison Person.

## 21.5 RETAINING WALLS SUBSTATION SITES

### 21.5.1 11 KV

Concrete masonry retaining walls for steep sloping sites shall be constructed in accordance with PADMOUNTED SUBSTATIONS drawings No 5001, 5007, 5008 and safety fence No 5011.

### 21.5.2 22 KV

Concrete masonry retaining walls for steep sloping sites shall be constructed in accordance with PADMOUNTED SUBSTATIONS drawings No 5283, 5281 and safety fence No 5011.

## 21.6 RETAINING WALLS FREE-STANDING HIGH VOLTAGE SWITCHGEAR SITES

Retaining walls for steep sloping sites shall be either concrete masonry or an equivalent approved by Ergon Energy, designed and approved by a RPEQ. Written agreement and approval from Ergon Energy is required for retaining wall design prior to construction.

## 22. PROPERTY ACCESS

Ergon Energy requires electricity LV pillars to be placed on the footpath immediately adjacent to the real property survey pegs. Should the Developer require special driveway arrangements, such arrangements must be indicated on the Developer’s plans submitted to Ergon Energy. Any additional costs of this will be borne by the Developer.

## 23. CLEAN-UP ON COMPLETION

On completion of the work, the Contractor must restore all work sites to a clean, safe condition. All excess material and waste shall be disposed of at an approved refuse site at no cost to Ergon Energy.

## 24. CERTIFICATES TO BE PROVIDED

### 24.1 CERTIFICATE OF COMPLETION – DESIGNED BY DEVELOPER

For Projects designed by the Developer, the Contractor must, upon completion of the civil works, provide a Certificate of Completion – Civil Works to the Ergon Energy Liaison Person that certifies that the civil works have been carried out in accordance with Ergon Energy's requirements. Ergon Energy will carry out a final audit of civil works in conjunction with the final audit of electrical works.

### 24.2 CERTIFICATE OF COMPLETION - DESIGNED BY ERGON ENERGY

For Projects designed by Ergon Energy, the Developer must, upon completion of the civil works, provide a Certificate of Completion – Civil Works to the Ergon Energy Liaison Person that certifies that the civil works have been carried out in accordance with Ergon Energy's requirements. Ergon Energy shall carry out a final audit of civil works only after receiving this Certificate of Completion – Civil Works.

### 24.3 CERTIFICATE OF ACCEPTANCE – DESIGNED BY DEVELOPER

For Projects designed by the Developer, only one Certificate of Acceptance (which also initiates the Defects Rectification Period) will be issued. This certificate shall be issued following completion of the associated electrical works and testing in accordance with Ergon Energy's "RSC08: Specification for UDC Electrical Works" and "RSC10: Specification for UDC Electrical Testing", which are available on Ergon Energy's website.

Where any defects are found during the final audit, the Certificate of Completion – Electrical Works will be returned to the Developer to enable access for rectification purposes. At the same time, the Certificate of Completion – Civil Works will be returned as part of the accompanying required documentation. Should civil works require rectification, a new Certificate of Completion – Civil Works will need to be submitted.

### 24.4 CERTIFICATE OF ACCEPTANCE - DESIGNED BY ERGON ENERGY

For Projects designed by Ergon Energy, Ergon Energy will issue a Certificate of Acceptance – Civil Works, which initiates the Defects Rectification Period (refer clause **Error! Reference source not found.**), after an acceptable final audit and before the commencement of electrical works.

## 25. FAULTS FOUND DURING CABLE INSTALLATION

### 25.1 DESIGNED BY DEVELOPER

Where defects are identified during the installation of underground cable and accessories in Projects designed by the Developer, the Developer is liable for such rectification and/or additional costs. Electricity supply to the Project may be withheld until the Developer reimburses any outstanding costs.

### 25.2 DESIGNED BY ERGON ENERGY

Where Ergon Energy is responsible for the provision of civil works and defects are identified during the installation of underground cable and accessories, the Contractor is liable for such rectification and/or additional costs.

## 26. RECTIFICATION OF DEFECTS

### 26.1 GENERAL

The Defects Rectification Period for civil works is 12 months from Ergon Energy's issue of the Certificate of Acceptance.

### 26.2 DESIGNED BY DEVELOPER

Ergon Energy shall only accept the Certificate of Completion – Civil Works together with the Certificate of Completion – Electrical Works (at completion of the electrical works in accordance with Ergon Energy's "RSC08: Specification for UDC Electrical Works").

After the Certificate of Completion – Electrical Works is issued both the Developer and the Contractor must consider the installation as live, and consequently will not have any access to the area.

Unless specifically directed otherwise in writing by Ergon Energy, Ergon Energy will rectify any defects that are found during the Defects Rectification Period, and recover the costs of doing so from the Developer. Should Ergon Energy instead direct the Developer in writing to undertake the rectification of defects, such rectification shall be undertaken at a time and in a manner directed by Ergon Energy, at no cost to Ergon Energy.

### 26.3 DESIGNED BY ERGON ENERGY

Where the Project is designed by Ergon Energy, after Ergon Energy issues the Certificate of Acceptance – Civil Works, the Contractor shall consider the installation as live, and consequently will not have any access to the area.

Unless specifically directed otherwise in writing by Ergon Energy, Ergon Energy will rectify any defects that are found during the Defects Rectification Period, and will recover the costs of doing so from the Contractor. Should Ergon Energy instead direct the Contractor in

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writing to undertake the rectification of defects, such rectification will be undertaken at a time and in a manner directed by Ergon Energy, at no cost to Ergon Energy.



## 27. AMENDMENT RECORD

Version	Change
10	General – Clauses have been renumbered between this version and the pervious version.
	Clause 1 – Deleted ‘and the provision of easements’
	Clause 3 – Revised in line with specification template, referenced now broken into Ergon Energy documents and other. Reference list updated to include documents referenced throughout the specification. Removed order of preference and changed to refer conflicts between the documents to Ergon Energy for resolution.
	Clause 2 – Definitions and terminology updated.
	Clause 7 - Modified to address audit requirements for Thermal Fill. Clause 11.3 added for faults found during audits requirements Clause 11.4 broken into two sub-clauses to highlight the differing requirements between developer design and ergon design Clause 11.5 Re-Audits added to highlight the re-audit requirements
	Clause 8 - Clause update to reflect and reference PW000400R100 Approved Products List to allow the removal of Appendix B and C. Clause 8.1.1 added to highlight the difference with Ergon designed works Clause 8.3 and 8.4 removed and combined into Clause 8.2.
	Clause 9 – Updated to remove references to Safety Advice Request Form and include reference to BS001405R107.
	Clause 12 – Include references to as constructed plans requirements.
	Clause 13 – Update references to clauses in



	AS 3600.
	Clause 17 – Remove references to BIG poles and update references to QPLCM.
	Clause 21 – Include reference to construction for 11 kV RMUs.
	Clause 24 – Updated references to certificates as separate forms.
	Appendix A – Certificate removed from specification, created as separate form, refer PW001200T100.
	Appendix B – Removed from specification.
	Appendix C – Form removed from specification.
	Appendix D – Certificate removed from specification, created as separate form, refer PW001200T101.
	Clause 27 – Added Amendment Record.