



**Ergon Energy Corporation Limited**

# **Specification for UDC Design**

## **RSD01**

## Contents

<b>1. PURPOSE AND SCOPE</b>	<b>1</b>
<b>2. REFERENCES</b>	<b>1</b>
2.1 ERGON ENERGY CONTROLLED DOCUMENTS	1
<b>3. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS</b>	<b>2</b>
3.1 DEFINITIONS	2
3.2 ACRONYMS AND ABBREVIATIONS	4
<b>4. SECURITY</b>	<b>4</b>
<b>5. SAFETY, ENVIRONMENTAL AND ERGONOMIC CONSIDERATIONS</b>	<b>5</b>
<b>6. ACTS, REGULATIONS, AND REQUIREMENTS</b>	<b>5</b>
6.1 LAWS AND AUTHORISATIONS	5
6.2 SAFETY MANAGEMENT SYSTEM	5
6.3 OTHER AUTHORITIES	5
<b>7. EXISTING ASSETS</b>	<b>5</b>
<b>8. PROJECT APPROVALS</b>	<b>5</b>
<b>9. DISTRIBUTION PLANNING INFORMATION</b>	<b>5</b>
9.1 INFORMATION REQUIRED BY ERGON ENERGY	5
9.2 INFORMATION REQUIRED BY THE DESIGNER	5
<b>10. CONSTRUCTION PLAN</b>	<b>6</b>
<b>11. DESIGN MATERIAL TO BE SUBMITTED</b>	<b>6</b>
<b>12. DESIGN AUDIT</b>	<b>6</b>
<b>13. CONSTRUCTION</b>	<b>7</b>
<b>14. ACCESS TO THE ERGON ENERGY DISTRIBUTION SYSTEM</b>	<b>7</b>
<b>15. HIGH VOLTAGE NETWORK DESIGN</b>	<b>7</b>
15.1 NETWORK PLANNING ARRANGEMENT	7
15.2 PADMOUNTED SUBSTATION / SWITCHGEAR SELECTION	7
15.3 PADMOUNTED SUBSTATION SITE SELECTION	8
15.4 ROAD RESERVE / EASEMENT REQUIREMENTS FOR PADMOUNTED SUBSTATION	8
15.5 POLE TOP SELECTION	8
15.6 CABLE SELECTION	8
15.7 SPECIAL REQUIREMENTS	8
15.8 FUTURE EXTENSION	8
<b>16. LOW VOLTAGE NETWORK DESIGN</b>	<b>8</b>
16.1 NETWORK PLANNING AND DESIGN ARRANGEMENT	8
16.2 LOOP PILLAR ARRANGEMENT	8
16.3 PILLAR EXCLUSION ZONE	9
16.4 PROPERTY ACCESS	9
16.5 COMMERCIAL AND INDUSTRIAL DEVELOPMENTS	9

16.6	ADMD.....	9
16.7	VOLTAGE DROP .....	9
16.8	SERVICE PHASING.....	9
16.9	CABLE SELECTION.....	10
16.10	CABLE JOINTS.....	10
16.11	POLE TOP SELECTION .....	10
16.12	INSTALLATION GUIDELINES.....	10
<b>17.</b>	<b>CABLES.....</b>	<b>10</b>
17.1	CABLE DATA .....	10
17.2	ROUTE SELECTION .....	10
17.3	CABLE PULLING.....	10
17.4	CONDUITS.....	11
<b>18.</b>	<b>EARTHING.....</b>	<b>11</b>
18.1	EARTHING SYSTEM.....	11
18.2	ADDITIONAL EARTH CABLE IN TRENCHING .....	12
18.3	DEVELOPMENTS ADJOINING EXISTING CMEN AREAS .....	12
18.4	CABLE SCREEN EARTHING.....	12
18.5	LOW VOLTAGE EARTHING .....	12
18.6	CABLE TERMINATION POLE EARTHING .....	12
18.7	PROXIMITY TO TELECOMMUNICATIONS.....	12
<b>19.</b>	<b>CONNECTION TO EXISTING ERGON ENERGY ASSETS.....</b>	<b>13</b>
19.1	ACCESS TO THE ERGON ENERGY DISTRIBUTION SYSTEM.....	13
<b>20.</b>	<b>EASEMENTS.....</b>	<b>13</b>
<b>21.</b>	<b>PUBLIC LIGHTING .....</b>	<b>13</b>
21.1	CONDITIONS FOR PUBLIC LIGHTING .....	13
21.2	PUBLIC BODY APPROVAL AND LIGHTING CATEGORY.....	13
21.3	DESIGN REQUIREMENTS .....	13
21.4	DESIGN INFORMATION TO BE PROVIDED.....	14
21.5	INFORMATION TO BE PROVIDED ON CONSTRUCTION PLAN.....	14
21.6	CONSTRUCTION .....	14
21.7	SERVICE CABLES AND CONDUITS .....	14
21.8	EARTHING.....	15
21.9	PEDESTRIAN FLOODLIGHTING .....	15
<b>APPENDIX C:</b>	<b>NON-STANDARD STREET LIGHTING INDEMNITY DEED.....</b>	<b>16</b>

## 1. PURPOSE AND SCOPE

This specification details requirements for the Electrical Reticulation and Public Lighting design of Underground Distribution Construction (UDC), up to 11 kV or 22 kV as applicable, within the Ergon Energy distribution area.

Design undertaken by the Developer's Designer shall be confined to the area defined in the Ergon Energy Design Parameters Advice including attachments.

All design shall be to Ergon Energy's required Design Standard and in accordance with this specification and referenced documents.

## 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 and 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
	Overhead Construction Manual	Standard
STWN3369	Standard for Distribution Line Design Underground	Standard
PW000102T102	Design Parameters Advice	Template
PW000400T100	Certificate of Electrical Reticulation Design	
PW000400T101	Certificate of Lighting Design	
RSD04	Distribution Design Drafting Specification	Specification
RSC07	Specification for UDC Civil Works	Specification

# Specification for UDC Design



DOCUMENT NUMBER OR LOCATION	DOCUMENT NAME	DOCUMENT TYPE
RSC08	Specification for UDC Electrical Work	Specification
RSC09	Specification for Horizontal Directional Drilling	Specification
RSC10	Specification for UDC Electrical Testing	Specification
PW000400R100	Approved Product List	Template

## 3. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

### 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 in the Negotiated Connection Establishment Contract or Developer Handbook, it has the meaning given to that term in those documents.

TERM	Definition
Aged Cable	Cables that have been energised for (1) one calendar year or more.
Approved Supplier 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.
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/s	A process by which Ergon Energy checks for compliance with applicable Ergon Energy specifications and drawings and relevant laws such as the Electrical Safety Act 2002 (Qld) and the Electrical Safety Regulation 2013 (Qld).
Authorisation	means an approval, consent, permit, clearance, licence or other preconditions required under Law of from an authority in relation to the Project.
Certificate of Electrical Reticulation Design	A certificate from the Designer advising that all design to be undertaken by the Developer has been completed in accordance with Ergon Energy's requirements and certified so by an RPEQ.

# Specification for UDC Design



TERM	Definition
Certificate of Public Lighting Design	A certificate from the Designer advising that all lighting layout design to be undertaken by the Developer has been completed in accordance with the requirements of the Public Body and certified so by an RPEQ.
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.
Customer Connection Group (CCG)	The Customer Connection Group within Ergon Energy that will facilitate the connection of the Electrical Reticulation to Ergon Energy's Distribution Network. The CCG will be the point of contact for the Developer.
Customer Connection Manager	A person appointed by the CCG to be responsible for managing the Project within Ergon Energy.
Design Parameters Advice	The Ergon Energy PW000102T102 document detailing network design parameters to which the Electrical Reticulation of the Project shall be designed.
Design Standard	Ergon Energy design standard. This is the standard of design that ensures the quality of the Ergon Energy electrical network, continuity of supply and the least long-term cost to Ergon Energy. The design carried out by the external Designer must meet this standard and be checked for compliance by Ergon Energy.
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.
Developer Design & Construct Works (DD&C Works)	All works to be completed by the Developer associated with the establishment of Electrical Reticulation within the development and the connection of that Electrical reticulation to Ergon Energy's Distribution Network.
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.
Electrical Contractor	The Electrical Contractor engaged by the Developer (selected from the Ergon Energy Approved Supplier Register) to carry out the DD&C Works (including any Street Lighting).
Electrical Reticulation	The electrical reticulation located within a Development for the purpose of distributing electricity with that Development.

# Specification for UDC Design



TERM	Definition
Electricity Footpath Allocation	Means the corridor in the footpath allocated by the local authority for installation of electric cables and plant.
Laws	includes legally binding law, legislation, statute, acts, ordinances, regulations, by-laws, orders, awards and proclamations that are enacted, issued or promulgated by the State of Queensland or any relevant local authority.
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.
Project	The Electrical Works to be undertaken, including Augmentation Works, Network Extension and Electrical Reticulation, including Street Lighting where required.
Public Body	Means the local government or a Queensland Government department or public authority (for example, the Department of Transport and Main Roads).
RPEQ	An engineer registered with the Board of Professional Engineers under the <i>Professional Engineers Act 2002</i> (QLD).
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.

## 3.2 ACRONYMS AND ABBREVIATIONS

The following abbreviations and acronyms appear in this specification.

TERM, ABBREVIATION OR ACRONYM	DEFINITION
CMEN	Common Multiple Earthed Neutral
HV	High Voltage
LV	Low Voltage
RMU	Ring Main Unit
RPEQ	Registered Professional Engineer Queensland
U/G or UG	Underground
UDC	Underground Distribution Construction

## 4. SECURITY

The Developer has responsibility for all issues of site security within the Development.

## 5. SAFETY, ENVIRONMENTAL AND ERGONOMIC CONSIDERATIONS

Refer Clause 6.

## 6. ACTS, REGULATIONS, AND REQUIREMENTS

### 6.1 LAWS AND AUTHORISATIONS

The Developer/Contractor must comply with all Laws and relevant Authorisations.

### 6.2 SAFETY MANAGEMENT SYSTEM

The Contractor shall have documented and implemented a safety management system that complies with all current statutory requirements.

### 6.3 OTHER AUTHORITIES

The Developer must comply with specific requirements of other authorities and utilities.

## 7. EXISTING ASSETS

If there is an existing power line traversing the proposed development the Developer shall undertake to relocate the line as part of the project.

## 8. PROJECT APPROVALS

The Developer shall provide to the Liaison Person written evidence that all necessary approvals or re-approvals have been obtained and other authorities notified of the Project on submission of the As Constructed Plan.

## 9. DISTRIBUTION PLANNING INFORMATION

### 9.1 INFORMATION REQUIRED BY ERGON ENERGY

The Developer shall provide all information in accordance with the applicable network connection services application form and an overall concept plan for the entire project, detailed plan of the present stage to be designed and constructed, and the proposed sequence of future stages.

Where the development includes proposed commercial centres and schools, for example, consideration of the future additional energy loads shall be made and incorporated into the proposed design and construction plan.

### 9.2 INFORMATION REQUIRED BY THE DESIGNER

Ergon Energy shall advise the Developer of the system voltage, point/s of connection to the Ergon Energy distribution network and also provide necessary planning information. This information is included in Schedule 1 of the Network Extension Agreement. Additional information may be requested by the Designer.



## 10. CONSTRUCTION PLAN

Drawings submitted shall be to the satisfaction of Ergon Energy and in accordance with RSD04 Distribution Drafting Design, which defines the Ergon Energy minimum construction plan standard. This includes any changes made during construction. Specific additional information that may be required by Ergon Energy shall also be included.

## 11. DESIGN MATERIAL TO BE SUBMITTED

The Developer shall submit to Ergon Energy the following documentation:

- Construction Plans in accordance with the requirements of Clause 10 above and certified by the Designer;
- Completed Certificate of Electrical Reticulation Design, PW000400T100;
- Completed Certificate of Lighting Design, PW000400T101;
- Completed Non-standard Street Lighting Indemnity Deed, Appendix C of this document, if applicable;
- LV Drop calculations for the entire LV reticulation of the project, submitted in both electronic and hard copy form;
- Padmounted Substation and free-standing HV switchgear site requirements and easement requirements (if applicable);
- Confirmation from the Public Body accepting the lighting design submitted as detailed on the As Constructed Plan;
- Schedule of HV and LV cables including all cable details;
- Cable installation pulling tension design calculations for selected cable runs if required by Ergon Energy;
- Other defined material Ergon Energy considers necessary.

## 12. DESIGN AUDIT

The Designer is responsible for design and compliance with this specification, however, Ergon Energy may conduct random audits of designs prior to issue for construction. Such Audit shall be for general compliance only and shall in no way relieve the Designer of responsibility for suitability or correctness of the design.

The audit shall be for compliance to the following:

- Offer of Network Connection Services;
- Original project plan submitted by the Developer (unless otherwise agreed by Ergon Energy);
- Ergon Energy design / planning criteria;
- Design material to be submitted;
- This specification;
- Construction standards;
- Ergon Energy's RSD04 Distribution Drafting Design standard; and
- Specified materials.

Should the Designer's design not comply with the requirements of this specification, the non-compliance shall be rectified and a re-audit undertaken to ensure such non-compliance has been rectified prior to issue for construction. Ergon Energy shall apply a charge for each re-audit.

Note: Confirmation of supply of correct / specified materials is subject to site Audit during construction.

## 13. CONSTRUCTION

Construction should not commence prior to Ergon Energy's final Design Audit and release of the Construction Issue Plan. Construction undertaken prior to the release of the Construction Issue Plan and associated pre-start meeting, as required, shall be at the Developer's risk and rectification of faults shall be undertaken at no cost to Ergon Energy.

## 14. ACCESS TO THE ERGON ENERGY DISTRIBUTION SYSTEM

The Electrical Contractor shall not have access to the Ergon Energy distribution system unless specifically authorised in writing by Ergon Energy. RSC08 UDC Electrical Works specification clause 7.2 "Access to the Ergon Energy Distribution System" details responsibility for supply and installation of materials for connection to the Ergon Energy distribution system associated with the Project.

Note: Ergon Energy shall notify in writing, on a case-by-case basis, where supply of material and installation as defined in the above referenced clause does not apply.

## 15. HIGH VOLTAGE NETWORK DESIGN

### 15.1 NETWORK PLANNING ARRANGEMENT

The Distribution Design Manual defines network planning arrangement details.

### 15.2 PADMOUNTED SUBSTATION / SWITCHGEAR SELECTION

The available range of padmounted substations and associated switchgear is contained in the Underground Construction Manual, PADMOUNTED SUBS folder, and general information for the selection of HV switchgear is provided in the STWN3369 Standard for Distribution Line Design Underground.

Note that 11 kV front entry (square) padmounted substations are available only as listed in the Underground Construction Manual, PADMOUNTED SUBS folder Dwg's 5189 and 5191, and the only option for HV switchgear is the 2 switch 1 fuse RMU.

Should a free standing ground mounted switchgear, RMUs, be required the information is contained in the Underground Construction Manual, HV SWITCHGEAR folder.

## 15.3 PADMOUNTED SUBSTATION SITE SELECTION

Requirements for site selection are contained in the STWN3369 Standard for Distribution Line Design Underground and Underground Construction Manual.

## 15.4 ROAD RESERVE / EASEMENT REQUIREMENTS FOR PADMOUNTED SUBSTATION

Provision of a site as either part of a road reserve or easement shall be in accordance with details provided in Underground Construction Manual, PADMOUNTED SUBS folder. Approval shall not be granted for a cabling route without associated vehicular access.

## 15.5 POLE TOP SELECTION

Arrangements shall be as defined in STWN3369 Standard for Distribution Line Design Underground & detailed in the Underground Construction Manual.

## 15.6 CABLE SELECTION

The standard range and application of underground cables is listed in STWN3369 Standard for Distribution Line Design Underground. All NQ Region and a number of other locations within the Ergon Energy area of supply require insect protected underground cables to be installed.

Note that a rationalised range of cables has been adopted and in some instances insect protected cables are the only option for areas where insect protection is not required.

## 15.7 SPECIAL REQUIREMENTS

Where heavily loaded and/or multiple cables are to be installed, Ergon Energy shall advise of requirements, which may include cable ratings to be used in design, cable trench cross-sections and non-standard bedding material.

## 15.8 FUTURE EXTENSION

Unless directed otherwise by Ergon Energy conduit(s) for future HV cable shall be terminated and capped in line with conduit for future LV distribution cable. An electronic cable marker ball shall be installed to identify the location of conduit ends.

## 16. LOW VOLTAGE NETWORK DESIGN

### 16.1 NETWORK PLANNING AND DESIGN ARRANGEMENT

STWN3369 Standard for Distribution Line Design Underground defines network planning arrangement details.

### 16.2 LOOP PILLAR ARRANGEMENT

Ergon Energy's standard arrangement for Development with underground LV supply is the loop pillar system including 1 way, 2 way and 3 way 'Normal' pillars, 'Cross-road' pillars, and 2 way

'Linking' pillars. Note the standard fuse panel has been rationalised to a 6 fuse arrangement or 6 fuse plus additional street light fuse where applicable.

Where the stage of the electrical development ends at a linking pillar or other standard pillar the pillar shall be installed in its final position. To facilitate the future installation of the next LV distribution cable a conduit bend(s) and starter(s) shall be installed in accordance with the Underground Construction Manual, TRENCHING Dwg 5197.

The provision of LV supply will be from a pillar located at the common property boundaries and within the normal electricity allocation. Written agreement from Ergon Energy is required if any pillar or distribution board is to be located off the common boundary.

## **16.3 PILLAR EXCLUSION ZONE**

An exclusion zone shall be provided at each pillar in accordance with the Underground Construction Manual, TRENCHING Dwg 5196, and no other service authority's pits or above ground plant are to be located within the exclusion zone.

## **16.4 PROPERTY ACCESS**

Ergon Energy requires that electricity LV pillars 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 and if additional costs result they shall be borne by the Developer.

## **16.5 COMMERCIAL AND INDUSTRIAL DEVELOPMENTS**

Ergon Energy's standard range of pillars or standard distribution cabinet is to be utilised as appropriate. The Designer shall ensure necessary separations to other service authority's assets are achieved.

## **16.6 ADMD**

The After Diversity Maximum Demand (ADMD) value to be applied is defined in the Ergon Energy Design Parameters Advice or, if not, as defined in STNW3369 Standard for Distribution Line Design Underground.

## **16.7 VOLTAGE DROP**

Permissible voltage range and design rules are specified in STNW3369 Standard for Distribution Line Design Underground.

## **16.8 SERVICE PHASING**

The following principles shall be adopted when determining service phasing:

- The total number of services on each phase shall as far as possible be equal.
- The sum of the moments of each phase shall as far as possible be equal.
- Designs shall, as far as practicable, eliminate possible future out-of-balances.

## 16.9 CABLE SELECTION

Standard cables are as follows:

- Mains cable – 240mm<sup>2</sup> stranded Al XLPE insulated 4 Core sector.
- Cross road cable - 16mm<sup>2</sup> stranded Cu XLPE insulated 4 Core circular.

Insect protected versions of the above cables are available and shall be used in NQ Region.

The Underground Construction Manual MATERIAL DATA folder provides physical details of cables including minimum bending radii's and maximum pulling tensions.

## 16.10 CABLE JOINTS

Joints are not allowed in HV or LV cables unless written agreement has been received from Ergon Energy.

## 16.11 POLE TOP SELECTION

Arrangements shall be as defined in STNW3369 Standard for Distribution Line Design Underground & detailed in the Underground Construction Manual and Overhead Construction Manual.

## 16.12 INSTALLATION GUIDELINES

STNW3369 Standard for Distribution Line Design Underground includes general statements on installation issues and recommended fuse link ratings.

## 17. CABLES

### 17.1 CABLE DATA

General and electrical design information is provided for both non insect protected and insect protected cables in STNW3369 Standard for Distribution Line Design Underground. The Underground Construction Manual, MATERIAL DATA folder provides physical details of cables including minimum bending radii and maximum pulling tensions.

Note: Cable fittings listed in the Underground Construction Manual for insect protected cable, e.g. termination and connection kits are supplied with necessary accessories to suit that cable.

### 17.2 ROUTE SELECTION

Factors to be taken into account are included in STNW3369 Standard for Distribution Line Design Underground.

### 17.3 CABLE PULLING

The design of cable routes shall be practical for the installation of cables and, where possible, the design of long cable runs and cable runs with a number of horizontal bends should be confirmed with the cable installer. Maximum cable installation pulling tensions provided in the Underground Construction Manual, MATERIAL DATA folder shall not be exceeded.

Additionally, the design shall be such that the maximum allowable cable side pressure, due to pulling around bends, is not exceeded during cable installation. Where reduced cable installation pulling tensions are required the revised maximum installation pulling tension shall be clearly noted on the Construction Issue Plan.

Note: Ergon Energy may require design calculations be submitted for selected cable runs.

## 17.4 CONDUITS

All cables are to be installed in conduit. The Underground Construction Manual provides the required conduit, bend, and application details in the MATERIAL DATA folder and specific installation details are provided in the TRENCHING folder. Due to possible installation and operational difficulties the size of LV cable conduits listed in the Underground Construction Manual MATERIAL DATA folder may be increased by either the Designer or Ergon Energy.

At locations such as the front of padmounted substations, and some pole terminations (dependent on cable size), cable is direct buried (not installed in conduit bends) due to the necessary bending radius of cable precluding the practical use of conduit bends. Applicable details are provided in the Underground Construction Manual TRENCHING folder.

Note: The Electricity Footpath Allocation is not uniform across Ergon Energy's area of supply and specific details (including cable burial depth) for each region, and locality within CA Region, are included in the Underground Construction Manual.

Spare conduits shall be provided to facilitate future HV cable installation to the next section of a Development and as specified in the Distribution Design Manual. Ergon Energy shall advise should spare conduits for future use, in addition to the foregoing, be required. Unless directed otherwise by Ergon Energy conduit(s) for future HV cable shall be terminated and capped in line with conduit for future LV distribution cable.

Refer clause 16.2 above for the requirement to enable a future subdivision extension to connect to an existing end pillar of a development.

Refer clause 15.8 for the requirement to enable a future subdivision extension to connect to an existing HV conduit of a development.

## 18. EARTHING

### 18.1 EARTHING SYSTEM

A Combined Multiple Earthing system (CMEN) is preferred for UDC and all reasonable steps shall be taken to provide this system. General information on CMEN and separate HV and LV earth systems is provided in STNW3369 Standard for Distribution Line Design Underground and site requirements are specified in the Underground Construction Manual.

## 18.2 ADDITIONAL EARTH CABLE IN TRENCHING

In areas of poor earthing the addition of an earth cable in trenches may be utilised to save considerable cost and effort in achieving the specified earth readings and, should the cable be required, the Construction Plan shall show the location and extent.

The Designer shall be responsible for conducting tests to establish earthing conditions; however Ergon Energy shall provide, on request, input if general earthing conditions in the vicinity of the project are known.

The additional earth cable may be utilised to connect to existing assets or otherwise utilised to aid in achieving the specified earth readings.

## 18.3 DEVELOPMENTS ADJOINING EXISTING CMEN AREAS

As the Contractor is not allowed to make the connection to an existing installed earth system it is not possible, during construction, to confirm the design earthing value for the interconnected installation has been achieved. Generally for a new development/extension, provided the earthing resistance as defined in the Underground Construction Manual and Overhead Construction Manual for each item of plant (e.g. LV Pillar, Padmounted Substation etc) is achieved the earthing value requirement for the interconnected installation will also be achieved.

However, should a new Padmounted Substation in a development/extension be fed from a HV feeder with a higher fault level than other feeders supplying the development, the foregoing may be inadequate. The Designer shall confirm HV feeder fault levels and specify the necessary earth resistances that must be met in the development/extension to achieve the required earthing value for the interconnected installation.

## 18.4 CABLE SCREEN EARTHING

Cable screen earthing shall be in accordance with the requirements STNW3369 Standard for Distribution Line Design Underground and details in the Underground Construction Manual.

## 18.5 LOW VOLTAGE EARTHING

LV pillars, cable pole terminations, and public lighting shall be earthed in accordance with the Underground Construction Manual and Lighting Construction Manual as applicable.

## 18.6 CABLE TERMINATION POLE EARTHING

The earthing requirement of a cable termination pole is dependent on all plant fitted to the pole (e.g. there may be an Air Break Switch) and to ensure all variations are addressed earthing requirements are included in the Overhead Construction Manual, EARTHING folder.

## 18.7 PROXIMITY TO TELECOMMUNICATIONS

Requirements are provided in STNW3369 Standard for Distribution Line Design Underground and the required clearances to common telecommunications assets are provided in the Underground Construction Manual.

Note that the relevant telecommunications company is to be advised and provided with intended construction details where HV earths are in proximity to telecommunication cables, pits or plant.

## **19. CONNECTION TO EXISTING ERGON ENERGY ASSETS**

### **19.1 ACCESS TO THE ERGON ENERGY DISTRIBUTION SYSTEM**

For the purpose of Electrical Works the Contractor shall not have access to the Ergon Energy distribution system (including earthing system) and Ergon Energy requirements for supply of materials and construction are contained in RSC08, UDC Electrical Works.

## **20. EASEMENTS**

The Developer shall grant to Ergon Energy any easement/s for electricity purposes as nominated, containing such terms and conditions as required by Ergon Energy – refer RSC07, UDC Civil Works specification.

Underground cable installations shall not be constructed through private lots using easements to provide access between streets or stages of a development. Developers shall create a laneway (road reserve) between property allotments to provide a suitable access for underground cable installation and maintenance.

## **21. PUBLIC LIGHTING**

### **21.1 CONDITIONS FOR PUBLIC LIGHTING**

Ergon Energy standard equipment current at the time of design only shall be accepted for Rate 2 Public Lighting.

### **21.2 PUBLIC BODY APPROVAL AND LIGHTING CATEGORY.**

The Designer shall confer with the Public Body to obtain necessary lighting scheme approval and agreement of the lighting category, or categories, to be applied. Additionally the Designer shall provide documentary evidence to Ergon Energy, as required in the Certificate of Lighting Design, demonstrating Public Body acceptance of the Public Lighting design submitted. All variations marked on the As Constructed Plan require re approval prior to submission to Ergon Energy.

### **21.3 DESIGN REQUIREMENTS**

Ergon Energy shall supply all necessary design information including luminaire and lamp information and luminaire photometric files ('I' tables in .cie format) to the Designer for use in the lighting layout design. Electrical design shall utilise service cable and details provided in the Queensland Public Lighting Construction Manual.



## 21.4 DESIGN INFORMATION TO BE PROVIDED

Documentation demonstrating compliance to the Public Lighting standard AS/NZS 1158 is required. Schemes that do not fully comply with the requirements of the Public Lighting standard, except as defined below, require provision of the indemnity included as Appendix C. Such documentation shall be submitted with the Certificate of Lighting Design.

Note that compliance is deemed to be achieved if Ergon Energy standard luminaires are used and all other aspects of AS/NZS 1158 are met.

## 21.5 INFORMATION TO BE PROVIDED ON CONSTRUCTION PLAN

Information defining design compliance to AS/NZS 1158 or where directed otherwise by the Public Body, compliance to requirements of that Public Body shall be provided on construction plans.

In addition to information necessary for correct installation of the scheme "Construction Codes", as appropriate, detailed in the Queensland Public Lighting Construction Manual shall be included in the material schedule of the Construction Plan.

Note each light is to be protected by a separate fuse. (One light, one fuse) Where there is requirement for two (2) lighting fuses are required in one pillar written agreement is required from Ergon Energy.

Two depths of foundation are available for Minor Road lighting columns, 1200 mm deep for Nostalgia and 7.5 m mounting height with 1.5 m single outreach, and 1500 mm for 7.5 m mounting height with 1.5 m double outreach. The applicable foundation depth(s) is to be shown on the Construction Plan.

## 21.6 CONSTRUCTION

Installation shall be in accordance with details provided in the Queensland Public Lighting Construction Manual and on the alignment agreed with the Public Body.

## 21.7 SERVICE CABLES AND CONDUITS

The Queensland Public Lighting Construction Manual, CONSTRUCTION PRACTICES folder, provides detail of service cables to be used and all underground service cables shall be installed in conduits as detailed in the Underground Construction Manual, CONSTRUCTION PRACTICES and TRENCHING folders.

Note that where a single service is intended to supply more than one (1) pole a LV pit as detailed in the Queensland Public Lighting Construction Manual, SERVICES folder, is required at each pole except the last. Looping from pole to pole, utilising the terminal panels is not allowed and the service shall T-off from the LV pit.

All Slip Base Mounted (SBM) poles shall be serviced individually from a SBM LV pit as detailed in the Lighting Construction Manual, SERVICES folder.

## 21.8 EARTHING

Ergon Energy standard poles installed in accordance with details provided in the Queensland Public Lighting Construction Manual and accompanying specifications are considered adequately earthed when connected to the multiple earthed neutral system (MEN) and do not require provision of an earth rod at the site as the pole foundation is considered an adequate earth.

Poles installed on bridges, where an effective earth as described above is not provided, shall be separately earthed. The earth conductor shall be installed with the supply cabling and shall have a cross sectional area in accordance with the Australian /New Zealand Wiring Rules AS/NZS 3000.

The earthing cable shall be bonded to the MEN neutral connection at the first pillar provided with an earth rod, or first pole, clear of the bridge structure. At each pole on the bridge the earth cable shall be bonded to the pole and the neutral conductor.

The provision of this clause shall also apply to public lighting installed on other structures that do not provide an effective earth.

## 21.9 PEDESTRIAN FLOODLIGHTING

Should supplementary floodlighting be required at pedestrian crossings Ergon Energy will provide details.

## APPENDIX C: NON-STANDARD STREET LIGHTING INDEMNITY DEED

THIS DEED is made on [insert date].

FOR the benefit of

**Ergon Energy Corporation Limited** ABN 50 087 646 062, of 22 Walker Street, Townsville  
QLD 4810 (**Ergon Energy**)

BY

[Insert name of legal entity for the Council or other entity] ABN [insert], of [insert address]  
(**Council**)

[Note that if any other entity is to enter into this Deed, relevant references will need to be  
changed, including the Recitals.]

1. The Council has an obligation to construct, maintain and improve local roads in its area.
2. <Insert Name of Developer>[(the **Developer**) is reconfiguring <**Lot Number, Property description**>] (the **Lot**) within the Council's area, and has, as a condition of the reconfiguration, been required to construct a road, including providing street lighting for that road, to service the Lot.
3. Ergon Energy will own the street lighting which has been designed and will be constructed on the Lot in order to fulfil the Council's obligations.
4. The Council has approved the design specification of the street lighting.
5. The Council indemnifies and shall keep indemnified Ergon Energy against all actions, suits, proceedings, claims, demands, costs, losses, damages and expenses howsoever caused arising out of any deficiencies, deviations or differences between the design specification and AS/NZS 1158 (including for death, personal injury, property damage and the legal costs of enforcing this indemnity).

# Specification for UDC Design



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EXECUTED as a deed on the [insert] day of [insert month], [insert year].

SIGNED, SEALED AND DELIVERED by [legal name of Council] (ABN ):

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Signature of director

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Signature of director/secretary

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Name

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Name

Date: