



Ergon Energy Corporation Limited

Technical Specification for XLPE Insulated Underground Residential Distribution Low Voltage Cables

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Technical Specification XLPE Insulated Underground Residential Distribution Low Voltage Cables



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1. Purpose and Scope

This specification sets out the technical requirements for the manufacture, testing at works, supply and delivery of:

- Four-core, XLPE insulated, low voltage distribution cables; and
- Four-core, XLPE insulated, low voltage service cables.

These cables are to be used in underground residential distribution systems in Queensland. Items covered by this specification are listed in the table below:

ITEM NO	DESCRIPTION	ERGON II NO
1	Cable, Power, Electrical, U/Ground, 0.6/1kV, 4C, 240mm ² Al, stranded Sector, XLPE Insulated/PVC Sheath, Metre Marked	1634155
2	Cable, Power, Electrical, U/Ground, 0.6/1kV, 4C, 240mm ² Al, Stranded Sector, XLPE Insulated/Nylon Jacket/Sacrificial PVC Sheath	2400272
3	Cable, Power, Electrical, U/Ground, 0.6/1kV, 4C, 50mm ² Cu, XLPE Insulated/Nylon Jacket/ Sacrificial PVC Sheath	2410371
4	Cable, Power, Electrical, U/Ground, 0.6/1kV, 4C, 16mm ² Cu, XLPE Insulated/PVC Sheath Black, Metre Marked	1632489
5	Cable, Power, Electrical, U/Ground, 0.6/1kV, 4C, 16mm ² Cu, XLPE Insulated/Nylon Jacket/Sacrificial PVC Sheath	2400273

2. References

2.1 Applicable Standards

The cables shall be designed, manufactured and tested in accordance with the relevant parts of the following Standards and all amendments issued from time to time except where varied by this specification.

STANDARD	TITLE
AS 1125	Conductors in insulated electric cables and flexible cords
AS 1660	Test methods for electric cables, cords and conductors
AS 2857 - 1986	Timber drums for insulated electric cables and bare conductors
AS/NZS 5000.1	Electric cables - Polymeric insulated - For working voltages up to and including 0.6/1 kV
AS 3983	Metal drums for insulated electric cables and bare conductors
AS /NZS4026	Electric cables - For underground residential distribution systems
AS/NZS ISO 9001	Quality Management System – Requirements
ASTM D1603	Standard Test Method for Carbon Black Content in Olefin Plastics

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3. Drawings

3.1 Drawings by the Purchaser

There are no drawings attached to this specification.

3.2 Drawings by the Tenderer

The Tenderer shall supply with the Tender, drawings, sketches or pamphlets, showing the cross sections of the various cables. The various components of the cable shall be labelled and have dimensions provided. The overall diameter of the cable shall also be given.

4. Service Conditions

4.1 The conditions under which the cables will be required to operate are:

DESCRIPTION	CONDITION
Installation	Installed, directly buried in fine grain bedding material, or, in PVC conduits at a nominal depth of up to 1000 mm, with cable ends rising up concrete or timber poles and exposed to direct sunlight.
Ambient Air Temperatures	Not exceeding 45°C as determined by a shaded thermometer
Ambient Ground Temperatures	Not exceeding 35°C
Altitude	Not exceeding 1000 metres above sea level
Humidity	90% high humidity combined with a high temperature (40°C) followed by a sudden drop in temperature of up to 10°C

4.2 Exposed sections of the cable will be subject to the following additional service conditions:

DESCRIPTION	CONDITION
Solar Radiation Level	1100 watts per square metre with high ultraviolet content
Precipitation	Tropical summer storms with gust wind speeds above 160km/h and an annual rainfall in excess of 1500mm
Atmospheric classifications	Areas of coastal salt spray and / or industrial pollution with equivalent salt deposit densities in the range of 2.0 – 3.0 g/m ²

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5. Design and Construction

5.1 Low Voltage Distribution Cables

5.1.1 General

The cables shall be designed and manufactured in accordance with Section 4 – “XLPE Insulated 0.6/1 (1.2) kV Distribution Cables” of AS/NZS4026.

During the contract period, the Tenderer shall not change the manufacturer, design, manufacturing process or compounding of the materials, without the written approval of the Purchaser.

5.1.2 Core Conductors

The conductors shall be in accordance with Section 3 - "Aluminium Conductors" of AS 1125. Conductor size is 240mm². The conductors shall be stranded sector.

5.1.3 Insect Protection

Insect protection layer consists of a continuous UV stabilised nylon jacket (polyamide 12) of radial thickness not less than 0.8mm, producing a smooth glossy surface free from defects or scratches. The jacket shall be extruded over the entire length of the cable to afford protection. Full details of nylon jacket shall be included with the tender. The jacket must be capable of being removed without damage to the sheath. The jacket colour shall be black. The nylon jacket shall be protected with a UV stabilised sacrificial PVC over-sheath. The colour of the over-sheath shall be black. **Double brass tapes will not be accepted as an alternative to the nylon jacket.**

5.2 Low Voltage Service Cables

5.2.1 General

The cables shall be designed and manufactured in accordance with Section 5 - "XLPE Insulated 0.6/1(1.2) kV Service Cables" of AS 4026.

5.2.2 Core Conductors

The conductors shall be circular stranded copper in accordance with Section 2 - "Copper Conductors" of AS 1125. The conductor sizes are 16mm² and 50mm².

5.2.3 Insect Protection

Insect protection shall comply with the requirements of clause 5.1.3.

5.3 Sealing of Cable Ends

- Cables shall be free of water or corrosion at the time of dispatch from the manufacturer's premises.
- All cable ends shall be sealed to prevent moisture ingress.
- Tenderers shall provide full details with the tender documents concerning the method used for sealing the cable ends.

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6. Performance and Testing

6.1 Current Carrying Capacity

The current carrying capacity shall be calculated in accordance with Clause A2, Appendix A of AS/NZS 4026.

6.2 Test Certificates

For all Low Voltage cables, Type Test Certificates to AS/NZS5000.1 are to be submitted with the tender.

The following Routine test shall be carried out, on each completed drum of cable, in addition to those required by Clause 17 of AS/NZS 5000.1

Insulation resistance tests between one core and the other cores joined with readings in MΩ. The test will be carried out at a voltage level of 1.0kV DC and the results recorded after 1 minute or when the reading settles whichever the sooner.

Test configurations:

A – B+C+N+E

B – A+C+N+E

C – A+B+N+E

N – A+B+C+E

Acceptance level for new cable is $\geq 100\text{M}\Omega$.

The Tenderer must advise Ergon Energy's responsible officer of any changes in the composition of the materials and processes used for manufacture of the cables and Ergon Energy's responsible officer will decide on the necessity for a new Type Test. If cables are supplied without changes being approved, the cable delivery will be treated as a non-conformance.

6.3 Sample and Routine Tests

A "Certificate of Compliance" is to be supplied with each cable delivery. Sample and Routine test certificates shall be held by the manufacturer and provided to the Purchaser within 1 working day upon request. In addition the Tenderer is required to submit all Sample and Routine test certificates relating to the cables supplied under the contract, including the Purchaser's Order Numbers and the associated cable types and lengths, recorded on a compact disc on an annual basis.

6.4 Carbon Black Test

Carbon black content of the outer sheath shall be tested in accordance with ASTM D1603. Test certificates are not required to be despatched with each delivery of cable but shall be made available to the purchaser when requested, within 1 working day.

7. Risk Assessment

There is no requirement for manufacturer provided safety risk assessments for the items covered by this specification.

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8. Quality Assurance

8.1 Purchasers Policy

It is the Purchaser's policy to procure goods, equipment and services from sources that demonstrate the ability to supply quality products.

8.2 Documentary Evidence

Documentary evidence shall be provided concerning the level of quality system certification associated with the Tenderer and/or manufacturer. This documentation shall include the Capability Statement associated with the Quality System Certification.

It is expected that the Tenderer and manufacturer will have a quality system certified to ISO 9001 in operation.

9. Samples

9.1 Production Samples

When requested, production sample(s) of each item shall be submitted to assist in the evaluation of the offer.

10. Packaging and Marking

10.1 Drum Types

Cable may be supplied on either timber drums complying with the requirements of AS 2857 or steel drums complying with the requirements of AS 3983.

Operational difficulties are anticipated with the use of timber drums manufactured in accordance with AS 2857-1996. Hence this specification is based on cables supplied on timber drums manufactured in accordance with the requirements of superseded standard AS 2857-1986.

10.2 Drum Durability

The cable drums shall be sufficiently robust to ensure that the cable is delivered undamaged, giving due consideration to the method of transportation and the distances involved.

All cable drums shall withstand a minimum of 24 months exposure to all types of weather conditions during outdoor storage, without deterioration.

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10.3 Drum Sizes and Cable Lengths

10.3.1 Low Voltage Distributor Mains Cables

Drum dimensions shall not exceed the following:

Parameter	Non-Insect Protected Cable	Insect Protected Cable
	Value	Value
Maximum Drum Diameter	2400 mm	2600 mm
Maximum Overall Width (excluding bolt projections)	1250 mm	1500 mm
Gross Mass	5000 kg	6500 kg

The spindle hole diameters shall be 108 mm.

10.3.2 Low Voltage Service Cables

Drum dimensions shall not exceed the following:-

Parameter	Value
Maximum Drum Diameter	1000mm
Maximum Overall Width (excluding bolt projections)	640mm

10.4 Nominal and Minimum Drum Lengths

10.4.1 Low Voltage Distributor Mains AND Service Cables

Unless otherwise specified by the Purchaser, the nominal and minimum drum lengths shall be 500 metres and 450 metres respectively, except for insect protected service cables which shall be supplied in drum lengths of 250 metres.

10.5 General

- The cable shall be of one length on each drum.
- The cable on the drum shall be protected by suitable external lagging to ensure that it is delivered undamaged giving due consideration to the methods and distance of transportation and handling. Sheet form wrapping alone is NOT acceptable.
- The Tenderer shall provide details concerning the method to be used.
- Drums must be of suitable quality to withstand without deterioration a minimum of twenty-four (24) months exposure to all types of weather conditions during outdoor storage.

10.6 Drum Marking

10.6.1 Legibly Marked

Each drum of cable shall be indelibly and legibly marked directly on both flanges with the information detailed below:

- a) The name Ergon Energy and the relevant stores stock code.
- b) Contract number.

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- c) Order release authority or purchasing order number.
- d) Name or registered trade mark of manufacturer
- e) The number of the AS to which the cable is manufactured
- f) The rated operating voltage expressed in the form '0.6/1/(1.2)kV'
- g) Number of cores, size of conductor and conductor material
- h) Wording to identify insulation and sheaths (including insect protection)
- i) Manufacturer's traceability number – derived from Manufacturer's first letter, hyphen, batch number, hyphen, drum number for this batch.
- j) Gross mass of drum and cable
- k) An arrow to indicate the direction for rolling
- l) The start and finish numbers of meter marking.

10.6.2 The following information shall also be provided:

The Purchaser's name
Contract Number
Order Number
Ergon Stock Number
Manufacturer's Drum No.

10.7 Quarantine Requirements

Should the cable be supplied from overseas manufacturers, then it is mandatory that all conditions and inspections required by the Australian Quarantine Act be met and that all these costs be included in the tendered price. In particular, timber drums must be fumigated with methyl bromide with a concentration of 48 grams per cubic metre for 24 hours at 21°C. The Tenderer shall ensure that the procedure does not produce any deleterious effects to the cable supplied on the drum.

11. Service Performance

Tenderers shall state:

- a) The period of service achieved by the items offered within Australian service conditions;
- b) Proposals to extend the service life of the items offered;
- c) Australian electricity supply authorities who have a service history of the items offered;
- d) Contact names and phone numbers of relevant employees of those supply authorities who can verify the service performance claimed.

12. Reliability

12.1 Service Life

Comments on the reliability and performance of the items offered for a service life of 35 years under the specified environmental conditions shall be submitted with the offer.

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12.2 Evidence in Support of Reliability

Such comments shall include evidence in support of the reliability and performance claimed including information on Failure Mode and Effect Analysis.

13. Training

Training material in the form of drawings, instructions and/or audio visuals shall be provided for the items accepted under the offer.

This material shall include, but is not limited to, the following topics:

- Handling
- Storage
- Application (particularly in areas of heavy coastal pollution)
- Installation
- Maintenance
- Environmental performance
- Electrical performance
- Mechanical performance
- Disposal
- Cable rating software

14. Environmental Considerations

Tenderers are required to comment on the environmental soundness of the design and the materials used in the manufacture of the items offered. In particular, comments should address such issues as recyclability and disposability at the end of service life.

15. Information to be Provided

15.1 Specific Technical Requirements

Technical details of the cables shall be in accordance with Tables A5 or A6 (as applicable) of AS/NZS 4026.

The specific technical requirements for the items offered shall be as stated in **Attachments 1 and 2** of this specification. The Tenderer shall fill in all data requested by these Attachments and shall guarantee such data.

15.2 Checklist of Supporting Documentation

Attachment 3 details a checklist of supporting technical documentation which is required to be submitted with the tender.

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16. Attachment 1 – Technical Details

The Tenderer shall complete this Attachment and guarantee the particulars set out therein.

PARTICULARS	0.6/1 kV MAINS CABLE	
	240mm ² (stranded) IINumber 1634155	
Nominal area of core conductors	(mm ²)	
Number of conductor strands		
Cross-sectional area of conductor strand	(mm ²)	
Average radial thickness of insulation	(mm)	
Minimum radial thickness of insulation	(mm)	
Non-metallic sheath material and grade		
Non-metallic sheath thickness - Average	(mm)	
Non-metallic sheath thickness - Minimum	(mm)	
Outer sheath colour		
Cable overall diameter	(mm)	
ID of recommended minimum duct size	(mm)	
Cable mass	(kg/m)	
Recommended maximum pulling tension - stocking grip on sheath	(kN)	
Recommended maximum pulling tension - pulling eye on conductors	(kN)	
Recommended minimum bending radius (a) during installation (times cable diameter) (b) setting (times cable diameter)		
Maximum continuous current rating (Soil temp 30 ⁰ C Soil Resistivity 1.2K.m/W) (a) Buried direct (A) (b) In ducts (A)		
Emergency two hour current rating factor cable at 70% load prior to emergency.(Soil temp. 30 ⁰ C and Soil resistivity 1.2K.m/W) (a) Buried direct (A) (b) In ducts (A)		
Design maximum conductor operating temperature (a) Normal (°C) (b) Emergency (2 hour) (°C) (c) Short Circuit (°C)		
Maximum D.C. resistance @ 20°C	(Ω/km)	

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PARTICULARS	0.6/1 kV MAINS CABLE	
	240mm ² (stranded) IINumber 1634155	
Maximum AC resistance of conductor of completed cable at 50Hz and 90°C (Ω/km)		
Positive and negative sequence impedance at 50 Hz of completed cable (resistive and reactive components) (a) At 20°C (Ω/km) (b) At max. operating temperature (Ω/km)		
Zero sequence impedance at 50 Hz of completed cable at 20°C (resistive and reactive components) (Ω/km)		
Voltage drop - 3 φ (mV/A/m)		
Three-phase symmetrical fault rating for 1 second (kA)		
Capacitance per phase in microfarads per 1000 metres at 20°C (mf/km)		
Power frequency withstand voltage five minutes (kV RMS)		
Insulation Megger readings 100 metre section tested with 2.5 kV Megger - Phase/Phase (a) Expected value (GΩ) (b) Minimum acceptable value (GΩ)		
Insulation Megger readings 100 metre section tested with 2.5 kV Megger - Phase/Earth (a) Expected value (GΩ) (b) Minimum acceptable value (GΩ)		
Type test copies attached (yes/no)		
Type Test Certificate Number		
Length of cable per drum (m)		
Drum mass complete with cable and lagging (kg)		
Australian Standard drum size	Flange Barrel Width	
Spindle Hole Diameter (mm)		
Manufacturer's Name and Address		

SIGNATURE OF TENDERER: _____

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17. Attachment 1 – Technical Details (cont'd)

PARTICULARS	0.6/1 kV MAINS CABLE with INSECT PROTECTION	
	240mm ² (stranded) IINumber 2400272	
Nominal area of core conductors	(mm ²)	
Number of conductor strands		
Cross-sectional area of conductor strand	(mm ²)	
Average radial thickness of insulation	(mm)	
Minimum radial thickness of insulation	(mm)	
Insect protection details (a) Material (b) Material thickness (c) Construction	(mm)	
Non-metallic sheath material and grade		
Non-metallic sheath thickness - Average	(mm)	
Non-metallic sheath thickness - Minimum	(mm)	
Outer sheath colour		
Cable overall diameter	(mm)	
ID of recommended minimum duct size	(mm)	
Cable mass	(kg/m)	
Recommended maximum pulling tension - stocking grip on sheath	(kN)	
Recommended maximum pulling tension - pulling eye on conductors	(kN)	
Recommended minimum bending radius (a) during installation (times cable diameter) (b) setting (times cable diameter)		
Maximum continuous current rating (Soil temp 30 ⁰ C, Soil resistivity 1.2K.m/W) (a) Buried direct (A) (b) In ducts (A)		
Emergency two hour current rating factor - cable at 70% load prior to emergency (Soil temp 30 ⁰ C, Soil resistivity 1.2K.m/W) (a) Buried direct (A) (b) In ducts (A)		

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PARTICULARS	0.6/1 kV MAINS CABLE with INSECT PROTECTION
	240mm ² (stranded) IINumber 2400272
Design maximum conductor operating temperature	
(a) Normal (°C)	
(b) Emergency (2 hour) (°C)	
(c) Short Circuit (°C)	
Maximum D.C. resistance @ 20°C (Ω/km)	
Maximum AC resistance of conductor of completed cable at 50Hz and 90°C (Ω/km)	
Positive and negative sequence impedance at 50Hz of completed cable (resistive and reactive components)	
(a) At 20°C (Ω/km)	
(b) At max. operating temperature (Ω/km)	
Zero sequence impedance at 50 Hz of completed cable at 20°C (resistive and reactive components) (Ω/km)	
Voltage drop - 3φ (mV/A/m)	
Three-phase symmetrical fault rating for 1 second (kA)	
Capacitance per phase in microfarads per 1000 metres at 20°C (mf/km)	
Power frequency withstand voltage five minutes (kV RMS)	
Insulation Megger readings 100 metre section tested with 2.5 kV Megger - Phase/Phase	
(a) Expected value (GΩ)	
(b) Minimum acceptable value (GΩ)	
Insulation Megger readings 100 metre section tested with 2.5 kV Megger - Phase/Earth	
(a) Expected value (GΩ)	
(b) Minimum acceptable value (GΩ)	
Type test copies attached (yes/no)	
Type Test Certificate Number	
Length of cable per drum (m)	
Drum mass complete with cable and lagging (kg)	

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PARTICULARS		0.6/1 kV MAINS CABLE with INSECT PROTECTION
		240mm ² (stranded) IINumber 2400272
Australian Standard drum size	Flange Barrel Width	
Spindle Hole Diameter	(mm)	
Manufacturer's Name and Address		

SIGNATURE OF TENDERER: _____

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18. Attachment 2 – Technical Details

The Tenderer shall complete this Attachment and guarantee the particulars set out therein.

PARTICULARS	0.6/1 kV SERVICE CABLE	
	16mm ² II Number 1632489	16mm ² with Insect Protection II Number 2400273
Nominal area of core conductors (mm ²)		
Number of conductor strands		
Cross-sectional area of conductor strand (mm ²)		
Average radial thickness of insulation (mm)		
Minimum radial thickness of insulation (mm)		
Insect protection details (a) Material (b) Material thickness (mm) (c) Construction	N/A	
Non-metallic sheath material and grade		
Non-metallic sheath thickness - Average (mm)		
Non-metallic sheath thickness - Minimum (mm)		
Outer sheath colour		
Cable overall diameter (mm)		
ID of recommended minimum duct size (mm)		
Cable mass (kg/m)		
Recommended maximum pulling tension - stocking grip on sheath (kN)		
Recommended maximum pulling tension - pulling eye on conductors (kN)		
Recommended minimum bending radius (a) during installation (times cable diameter) (b) setting (times cable diameter)		
Maximum continuous current rating (Soil Temp. 30°C, Resistivity 1.2K.m/W) (a) Buried direct (A) (b) In ducts (A)		

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PARTICULARS	0.6/1 kV SERVICE CABLE	
	16mm ² II Number 1632489	16mm ² with Insect Protection II Number 2400273
Emergency two hour current rating factor - cable at 70% load prior to emergency (Soil Temp. 30°C, Resistivity 1.2K.m/W) (a) Buried direct (A) (b) In ducts (A)		
Design maximum conductor operating temperature (a) Normal (°C) (b) Emergency (2 hour) (°C) (c) Short Circuit (°C)		
Maximum D.C. resistance @ 20°C (Ω/km)		
Maximum AC resistance of conductor of completed cable at 50Hz and 90°C (Ω/km)		
Positive and negative sequence impedance at 50Hz of completed cable (resistive and reactive components) (a) At 20°C (Ω/km) (b) At max. operating temperature (Ω/km)		
Zero sequence impedance at 50 Hz of completed cable at 20°C (resistive and reactive components) (Ω/km)		
Voltage drop - 3φ (mV/A/m)		
Three-phase symmetrical fault rating for 1 second (kA)		
Capacitance per phase in microfarads per 1000 metres at 20°C (mf/km)		
Power frequency withstand voltage five minutes (kV RMS)		
Insulation Megger readings 100 metre section tested with 2.5 kV Megger - Phase/Phase (a) Expected value (GΩ) (b) Minimum acceptable value (GΩ)		
Insulation Megger readings 100 metre section tested with 2.5 kV Megger - Phase/Earth (a) Expected value (GΩ) (b) Minimum acceptable value (GΩ)		
Type test copies attached (yes/no)		
Type Test Certificate Number		

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PARTICULARS	0.6/1 kV SERVICE CABLE	
	16mm ² II Number 1632489	16mm ² with Insect Protection II Number 2400273
Length of cable per drum (m)		
Drum mass complete with cable and lagging (kg)		
Australian Standard drum size Flange Barrel Width		
Spindle Hole Diameter (mm)		
Manufacturer's Name and Address		

SIGNATURE OF TENDERER:

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19. Attachment 2 – Technical Details (cont'd)

PARTICULARS	0.6/1 kV SERVICE CABLE	
	50mm ² with Insect Protection II Number 2410371	
Nominal area of core conductors	(mm ²)	
Number of conductor strands		
Cross-sectional area of conductor strand	(mm ²)	
Average radial thickness of insulation	(mm)	
Minimum radial thickness of insulation	(mm)	
Insect protection details		
(a) Material		
(b) Material thickness	(mm)	
(c) Construction		
Non-metallic sheath material and grade		
Non-metallic sheath thickness - Average	(mm)	
Non-metallic sheath thickness - Minimum	(mm)	
Outer sheath colour		
Cable overall diameter	(mm)	
ID of recommended minimum duct size	(mm)	
Cable mass	(kg/m)	
Recommended maximum pulling tension - stocking grip on sheath	(kN)	
Recommended maximum pulling tension - pulling eye on conductors	(kN)	
Recommended minimum bending radius		
(a) during installation	(times cable diameter)	
(b) setting	(times cable diameter)	
Maximum continuous current rating (Soil Temp. 30°C, Resistivity 1.2K.m/W)		
(a) Buried direct	(A)	
(b) In ducts	(A)	
Emergency two hour current rating factor -cable at 70% load prior to emergency (Soil Temp. 30°C ,Resistivity 1.2K.m/W)		
(a) Buried direct	(A)	
(b) In ducts	(A)	
Design maximum conductor operating temperature		
(a) Normal	(°C)	
(b) Emergency (2 hour)	(°C)	
(c) Short Circuit	(°C)	

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PARTICULARS	0.6/1 kV SERVICE CABLE	
	50mm ² with Insect Protection II Number 2410371	
Maximum D.C. resistance @ 20°C	(Ω/km)	
Maximum AC resistance of conductor of completed cable at 50Hz and 90°C	(Ω/km)	
Positive and negative sequence impedance at 50Hz of completed cable (resistive and reactive components)		
(a) At 20°C	(Ω/km)	
(b) At max. operating temperature	(Ω/km)	
Zero sequence impedance at 50 Hz of completed cable at 20°C (resistive and reactive components)	(Ω/km)	
Voltage drop - 3φ	(mV/A/m)	
Three-phase symmetrical fault rating for 1 second	(kA)	
Capacitance per phase in microfarads per 1000 metres at 20°C	(mf/km)	
Power frequency withstand voltage five minutes	(kV RMS)	
Insulation Megger readings 100 metre section tested with 2.5 kV Megger - Phase/Phase		
(a) Expected value	(GΩ)	
(b) Minimum acceptable value	(GΩ)	
Insulation Megger readings 100 metre section tested with 2.5 kV Megger - Phase/Earth		
(a) Expected value	(GΩ)	
(b) Minimum acceptable value	(GΩ)	
Type test copies attached	(yes/no)	
Type Test Certificate Number		
Length of cable per drum	(m)	
Drum mass complete with cable and lagging	(kg)	
Australian Standard drum size	Flange Barrel Width	
Spindle Hole Diameter	(mm)	
Manufacturer's Name and Address		

SIGNATURE OF TENDERER: _____

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20. Attachment 3 – Technical Documentation Checklist

CLAUSE Ref.	PARTICULARS	UNITS
Have full and comprehensive details been submitted WITH the tender documents associated with each of the following items?		
3.2	Dimensioned drawings showing the cross-section of the various cables offered	Yes/No
5.1.3	Evidence in support of insect protection for cables	Yes/No
5.3	Sealing of cable ends	Yes/No
6.2	Type test reports	Yes/No
8.2	Quality systems of BOTH the TENDERER and the MANUFACTURER	Yes/No
10.4	Method of cable protection on the drum	Yes/No
11	Service Performance including proposals to increase the service life of the items offered	Yes/No
12	Reliability	Yes/No
13	Training Materials	Yes/No
14	Environmental Considerations	Yes/No
15	Completed Attachments 1, 2, 3	

NAME OF TENDERER:

ADDRESS OF TENDERER: _____

SIGNATURE: _____ FOR AND ON BEHALF OF TENDERER

DATE: _____