

2324 Solomon Power OPGW Detailed Design for Lungga - Honiara

ENTURA-24716E Fibre optic cable specification

ENTURA-24716E

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Prepared by Hydro-Electric Corporation ABN48 072 377 158

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Document information

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	ENTURA-24716E Fibre optic cable specification
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Revision 0.1

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1. General

1.1 Purpose

This specification covers the technical requirements for the supply of the fibre optic cables for Lungga – Honiara OPGW upgrade.

It is not the intent of this specification to completely specify all details of supply of the equipment and it is expected that the equipment shall conform in all respects to high standards of engineering, design and workmanship, to all Solomon Islands standards and regulatory requirements.

1.2 Scope

This specification details the requirements for the supply of all relevant documentation (drawings, manual, warranties etc.), secured packaging, supply, transportation, and delivery to site.

The supply will include the procurement and delivery to site of communications cables to meet the following specification and project requirements.

1.3 Relevant design drawings

- SP-LH-LY-011 OPUC route layout T0new-Lungga
- SP-LH-LY-012 OPUC route layout T23-Kola'a
- SP-LH-LY-013 OPUC route layout T43-Honiara
- SP-LH-LY-014 Typical OPGW-OPUC joint arrangement

1.4 Procurement /delivery interfacing

The supplier is required to interface with the client to coordinate the delivery schedule and requirements of the different configurations.

1.5 Precedence

Any conflict between the requirements of the codes, specifications, drawings, rules, regulations and statutory requirements or various sections of this standard and other associated documents must be brought to the attention of the Purchaser for resolution.

1.6 Deviation

A deviation to this specification may only be accorded if it does not reduce the quality of workmanship, does not deviate from the objective of this document or from the intent of the specification. Deviations, if any, must be specifically identified and acceptance is at the complete discretion of the Purchaser during the evaluation of offers.

1.7 Licences

Supplier must have all relevant licences, accreditations and permits for the supply of equipment.

1.8 References

The fibre optic cables to be supplied under this Contract shall be designed, manufactured and tested in accordance with the requirements of all relevant Statutory Authorities and Acts and the latest revision of all relevant Australian or Solomon Islands/IEC Standards and Codes of Practice, in particular:

Table 1.1: Standards

Standard	Title
ANSI TIA-598C	Optical Fibre Colour Coding
AS/CA S008:2020	Requirements for customer cabling products
AS/NZS 3080:2013	Information technology—Generic cabling for customer premises
ISO 9002:2016	Quality systems - Model for quality assurance in production, installation and servicing
IEC 60794-1-2:2021	Optical fibre cables - Part 1-2: Generic specification - Basic optical cable test procedures - General guidance
IEC 60811	Electric and optical fibre cables - Test methods for non-metallic materials
ITU-T G.652 - Including annexes.	Characteristics of a single-mode optical fibre cable – (G.652.D)

2. Specifications for Fibre Optic Cables

2.1.1 Single Mode Optical Fibre cables

The following cable requirements are to be met for Single Mode Optical Fibre cables (SMOF):

Table 2.1: General specifications for SMOF

Specification	Range
Cable application	Conduit / duct / cable tray installation
Type	9 μm /125 μm SMOF (OS2)
Attenuation	At 1550nm, attenuation $\leq 0.25\text{dB/Km}$ At 1310 nm attenuation $\leq 0.35\text{dB/Km}$
Transmission wavelength	1310 nm and suitable for 1550 nm
Number of fibre cores	96
Maximum crush resistance	Min 2kN/100mm
Impact	Min 1kg/m
Maximum pulling tension of conductor	Min 2kN
Temperature range	-20 to 60 °C
Fibre identification	Colour coded - the individual cores must be consistent and correspond to the applicable standard.
Cable protection	Fully sealed against longitudinal and lateral water ingress.
Cable protection	Non-metallic, armoured, vermin protection / UV protection
Strain relief mechanism	Non-metallic
Minimum bending radius	210 mm

2.1.2 Cable run details

The supplier shall supply enough cable to satisfy the installation & termination of the following cables.

Table 2.2: Cable Routes

Station site	ROUTE		FIBRE		APPROX CABLE LENGTH
	FROM	TO	TYPE	CATEGORY	METRES
Lungga	33kV lattice tower T0 SB*	Data centre, server room, FO patch panel	96c SMOF	OS2	247m
Kola	33kV pole T23 SB*	Control building, SCADA panel, FO patch panel	96c SMOF	OS2	242m
Honiara	33kV lattice tower T43 SB*	Backup SCADA control room, FO patch panel	96c SMOF	OS2	126m
MINIMUM TOTAL LENGTH					615m
SUGGESTED LENGTH FOR PROCUREMENT					1000m

*SB = Fibre splice box

Notes:

- Cable route lengths are based on a 2D flat measure of point-to-point route lengths along nominated routes shown on design drawings.
- Excludes construction allowance and wastage.

3. Inspection and Test requirements

The Supplier shall carry out factory cable testing to meet the requirements of the relevant standards and supply test results and certificate to the purchaser.

4. Design information and compliance and departures

Ref.	Description	Units	Particulars	Supplier's Responses Conformance, departure details or information are to be indicated against each reference as applicable
Section 2.1.1	Cable application		Conduit/duct/cable tray	
Section 2.1.1	Type		9 μ m /125 μ m SMOF (OS2)	
Section 2.1.1	Attenuation	dB/km	At 1550nm, attenuation \leq 0.25dB/km At 1310 nm attenuation \leq 0.35db/km	
Section 2.1.1	Transmission wavelength		1310 nm and suitable for 1550 nm	
Section 2.1.1	Number of fibre cores		96	
Section 2.1.1	Maximum crush resistance	kN/100mm	Min 2 kN/100mm	
Section 2.1.1	Impact	kg/m	Min 1 kg/m	
Section 2.1.1	Maximum pulling tension of conductor	kN	Min 2kN	
Section 2.1.1	Temperature range	°C	-20 to 60 °C	
Section 2.1.1	Fibre identification		Colour coded - the individual cores must be consistent and correspond to the applicable standard.	
Section 2.1.1	Cable protection		Fully sealed against longitudinal and lateral water ingress	
Section 2.1.1	Cable protection		Non-metallic vermin protection / UV protection	
Section 2.1.1	Strain relief mechanism		Non-metallic	

Ref.	Description	Units	Particulars	Supplier's Responses Conformance, departure details or information are to be indicated against each reference as applicable
Section 2.1.1	Minimum bending radius	mm	210mm	
Section 2.1.2	General Specifications met		Table 2.2, Recommended lengths	
Section 3	Inspection and test plan		Test certificates and performance	

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