2018-22
POWERLINK QUEENSLAND REVENUE PROPOSAL

Project Pack - PUBLIC

CP.02269
DWDM Replacement

Delivering better value

ID&TS - Reset 2017/18-2021/22 Project Proposal for CP.02269 DWDM Replacement

Document Approval		
	Name	Position
Prepared by		Project Manager
Reviewed by		Team Leader Projects
Approved by		Group Manager Infrastructure Delivery

Contents

1. Executive Summary

The telecommunications network is a critical supporting system for the transmission network, providing protection signalling, control and monitoring functionality and other data and voice communications. The increasing demands for data communications in support of the transmission network resulted in new dense wavelength division multiplexing (DWDM) equipment being installed across the network during the late 2000s to increase the capacity of the installed fibre network.

Based upon assessments of the expected useful life, the DWDM equipment installed to effect roll out of the high capacity telecommunications network is expected to reach end of its life by 2020. At this time, the equipment will become increasingly obsolete with little or no manufacturer support. Maintaining the equipment in service beyond its useful life will result in loss of services on the telecommunications network, impacting the reliability of the transmission network and it must therefore be replaced.

The objective of this project is to replace obsolete DWDM multiplexors at forty one (41) sites across the transmission and telecommunications network by December 2020.

2. Project Definition

2.1 Project Scope

The following scope presents a functional overview of the desired outcomes of the project. The proposed solution presented in the estimate has been developed with reference to the remaining sections of the Project Scope Report.

Briefly, the project consists of replacing existing DWDM multiplexers on a like for like basis with Powerlink's current standard multiplexer, details as follows:

- replace all [redacted] DWDM multiplexors on a like for like basis with [redacted] DWDM multiplexers, at the forty one (41) sites listed in the following table:

Functional Location	Site	Functional Location	Site
T141	Pioneer Valley	T034	Moranbah
H035	Strathmore	H018	Tarong
H020	Broadsound	H024	Calvale
H029	Stanwell	DURR	Durong Repeater
H032	Chalumbin	H015	Lilyvale
H036	Blackwall	H049	Auburn River
H063	Teebar Creek	H011	Nebo
H002	South Pine	H005	Woolooga
H006	Gin Gin	H007	Gladstone Ps
H013	Ross	H014	Middle Ridge
HOMS	Mary Street	H009	Palmwoods
T051	Cairns	T035	Dysart
T046	Garbutt	T048	Tully
T032	Blackwater	T056	Townsville South
T069	Newlands	T157	Ingham South
T050	Innisfail	RAWR	Rawbelle Repeater

T193	Clare South	MFXR	Mount Fox Repeater
PLVC	Virginia Complex	R002	Braemar
R004	Millmerran	RECC	Rockhampton Control Centre
S003	Greenbank	T031	Baralaba
R003	Bulli Creek		

- where necessary, install a new telecommunications demountable building to accommodate the additional equipment;

  Note: New buildings have been allowed for at fifteen sites and it is assumed that there is sufficient space available at the remainder of sites in the existing comms or control rooms;

  Note: it is assumed that installed DC systems are adequate, and no allowance is to be made for their upgrading under this project;

- transfer all communications services to the new multiplexers;
- decommission and recover legacy multiplexers and associated equipment; and
- update all documentation and drawings, including [redacted] neXus and SAP, etc. to cater for new equipment.

2.1.1 Transmission Line Works

Not applicable.

2.1.2 Substation works

Not applicable.

2.2 Major Scope Assumptions

At the timing of writing this proposal the cost of the [redacted] has not been set. All equipment cost are based on the costs of the existing [redacted] DWDM suite of equipment.

It is assumed that there will be sufficient spare optical fibre cores of suitable quality between every site to allow the new system to be commissioned and optimised in parallel with the existing system.

It is assume that the topography of the network will not change and all required OPGW will be available for use.

2.3 Scope Exclusions

Testing of all required optical fibre cores between sites. This is recommended before installation of the new system begins.

The repair to any fibre cores that are unsuitable for use is also excluded from this scope.

3. Project Execution

3.1 Project Dependencies & Interactions

Project No.	Project Description	Planned Comm Date	Comment
Pre-requisite Projects			
Co-requisite Projects			
Other Related Projects			
CP.02650	SDH Replacement Central Region	2020	Project Proposal

3.2 Site Specific Issues

3.3 Project Delivery Strategy

Powerlink is expected to perform the design and Pantel contractors installing equipment with the Maintenance Service Provider performing the testing and commissioning and cutover of traffic. It would also be possible for the Vender to be involved in the design and commissioning of the new network.

Project Delivery Strategy Matrix		
Design	Earthworks Design	N/A
	Civil Design	Powerlink
	Electrical Design (Primary)	N/A
	Electrical Design (Secondary) – Protection	N/A
	Electrical Design (Secondary) – Automation	Powerlink
	Transmission Line Design	N/A
	Telecommunication Design	Powerlink & Vendor of Equipment
Construction	Earthworks Construction	N/A

	Civil Construction	SPA
	Electrical Construction / Installation	N/A
	Transmission Line Construction	N/A
Testing	Substation Testing – FAT	N/A
	Substation Testing – SAT	N/A
	Substation Testing – Cut-Over	N/A
	Telecommunication Testing	MSP's / Vendor

3.4 Proposed Sequence of Works

3.4.1 Project Schedule

To meet the required commissioning date of December 2020 full project approval will be required by 2nd January 2017.

High Level Schedule

- Project Approval: January 2017
- Design : January 2017 - December 2017
- Procurement July 2017 – December 2017
- Pan Tel Contractors Install new equipment : January 2018 – December 2018
- MSP SAT new equipment: January 2019 – December 2019
- TNOC Commission new equipment: January 2019 – December 2019
- MSP cut over from old system to new: January 2020 – June 2020
- MSP Recovers Redundant Equipment: July 2020 - 31st December 2020
- Project Completion: 31st December 2020

3.4.2 Project Staging

Major project stages of the project are considered to be:

Stage	Description/Tasks
1	Design by Powerlink / Vendor
2	RFQ to engage MSP
3	Equipment and Buildings Ordered
4	Install new building on site
5	ITT Issued for contractor to install new equipment.
6	ITT Accepted.

7	Contractor install and FAT new equipment.
8	MSP's / Contractor/vendor SAT new equipment.
9	TNOC build new circuits.
10	MSP/TNOC cutover traffic onto new system.
11	MSP's or Contractor recover redundant equipment.
12	Project Completion.

3.4.3 Network Impacts and Outage Planning

There will be no impacts to the HV network. The rearrangements to the communication and commercial networks will be handled through the AFW process.

3.5 Project Health & Safety

The implications of relevant workplace health & safety legislation in delivering the proposed solution have been considered in preparing this estimate. In particular, this estimate includes an allowance for typical safety related activities required in the delivery phase of the.

3.6 Project Environmental Management

No specific environmental management implications for the delivery of this project have been identified.

4. Project Risk Management

Some allowances have been allowed in the estimate. Please see estimate for details.
Please refer to the assumptions and exclusion as these items have implications for the overall project risk.

5. Project Estimate

5.1 Estimate Summary

Quote Summary :CP.02269 - DWDM replacement - 41 sites

The quotation at current cost levels and escalated for completion by 31 October 2018 at 4.1% per year, for - DWDM replacement - 41 sites

OR.02059 Quotation in $,000 AUD	Base Cost Levels	Escalated to Compln.	Comment (Costs @ Base Cost Levels)
Telecommunications - DWDM replacement	[redacted]	[redacted]	**DWDM replacement - 41 sites**
	[redacted]	[redacted]	Telecoms Works - Design and Procurement
	[redacted]	[redacted]	Telecommunications- New Buildings (15 Sites)
	[redacted]	[redacted]	Telecommunications Construction
	[redacted]	[redacted]	Telecommunications Recovery
	[redacted]	[redacted]	Safety and Environmental Compliance
	[redacted]	[redacted]	Telecommunications Commissioning
	[redacted]	[redacted]	Project Concept/Investment & Planning, Statutory Costs, Project Management and O&FS -Network Ops
TOTAL QUOTE (EXCL RISKS & Offsets)	**29,852**	**33,995**	
Offsets	**0**	**0**	
Risk Estimate	**1,779**	**1,779**	
Climate Construction Design	[redacted]	[redacted]	
TOTAL QUOTE (INCL RISKS)	**31,631**	**35,774**	

5.2 Asset Disposal Table

The Asset Disposal Table is too large to be included in the Project Proposal. The total value of asset write–off is $15,745,657.74. The table has been included in Section 6 References.

6. References

Document name and hyperlink (as entered into Objective)	Version	Date
Project Scope Report	1	28/08/2015
Estimate Detail	1	10/09/2015
Asset Write-Off Table	1	10/09/2015