

2018-22

POWERLINK QUEENSLAND REVENUE PROPOSAL

Project Pack - PUBLIC

CP.02553

Wide Area Network Deployment Stage 2

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ID&TS - Reset 2017/18-2021/22 Project Proposal for CP.02553 Wide Area Network Deployment Stage 2

Document Approval

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Contents

1.	EXECUTIVE SUMMARY	3
2.	PROJECT DEFINITION	3
2.1	Project Scope.....	3
2.2	Major Scope Assumptions.....	4
2.3	Scope Exclusions.....	4
3.	PROJECT EXECUTION	5
3.1	Project Dependencies & Interactions.....	5
3.2	Site Specific Issues	5
3.3	Project Delivery Strategy.....	5
3.4	Proposed Sequence of Works.....	6
3.4.1	Project Schedule	6
3.4.2	Project Staging	7
3.4.3	Network Impacts and Outage Planning	7
3.5	Project Health & Safety	7
3.6	Project Environmental Management.....	7
4.	PROJECT RISK MANAGEMENT	7
5.	PROJECT ESTIMATE	8
5.1	Estimate Summary.....	8
5.2	Asset Disposal Table.....	8
6.	REFERENCES	9

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.

Developments in both the transmission and telecommunications networks are imposing changes that require Powerlink to adapt to emerging technologies. As the system monitoring and control functions evolve to an IP based delivery model, then it is necessary for Powerlink to position itself to ensure its capabilities can continue to meet the demands of the future. Consequently, Powerlink commenced implementation of an MPLS (Multi Protocol Label Switching) network in 2012 to provide for these requirements both in the short and long term.

The objective of this project is to extend the MPLS capability to a further 34 sites across the network by October 2018.

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 all sections of this Project Scope Report, including *Section 1.7 Matters to Consider*.

Briefly, the project consists of providing MPLS capability at a further 34 sites across the network, details as follows:

- Design, procure, install and commission a fully diverse and equipment redundant MPLS WAN at the following thirty four (34) sites:

Functional Location	Site	Functional Location	Site
H021	Murarrie	T150	Alan Sherriff
H031	Molendinar	T155	West Darra
H038	Goodna	T157	Ingham South
H039	Woree	T160	Sumner
H051	Swanbank E	T161	Algester
R004	Millmerran Switch Yard	T172	QR Mindi
S003	Greenbank	T175	QR Bolingbroke
T026	Biloela	T178	Stony Creek
T054	Barron Gorge PS	T182	QAL South
T065	Alligator Creek	T189	Oakey
T094	Townsville East	T192	QR Mackay Ports
T129	Edmonton	T199	Yarwun
T139	Burton Downs	T209	Bluff
T140	Townsville Zinc	T210	Duaringa
T143	Stuart GT	T211	Wycarbah
T146	Oakey GT PS	T212	Goonyella Riverside
T147	Tangkam	T215	Eagle Downs



- ensure that common hardware is utilised across the network;
- the MPLS WAN shall be built on the Powerlink private SDH and DWDM infrastructure which is to provide 1Gbps Ethernet access to the MPLS nodes in the substation;
- MPLS direct over fibre will be considered where distance permits;
- throughput of the core routers to the substation LAN is to be a minimum of 100Mbps with the availability to achieve 1Gbps;
- where necessary, a new telecommunications demountable building to accommodate the additional equipment will be installed;

Note: for the purposes of this estimate it is assumed that ten(10) new buildings will be required and that there is sufficient space available at the remainder of sites in the existing telecommunications or control rooms;

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

- all documentation and drawings will be updated, including [REDACTED] neXus and SAP, etc. to cater for new equipment.

2.1.1 Transmission Line Works

Not applicable.

2.2 Major Scope Assumptions

It has been assumed that:

- procurement agreements will be in place for the supply of MPLS equipment at commencement of the project;
- the existing Network Management System is suitable for management of the new MPLS equipment; and
- sufficient DC capacity is available at all sites.
- FAT testing will be done in Brisbane or on site and excludes any string testing.

2.3 Scope Exclusions

Network Management System licencing costs have been excluded.

3. Project Execution

3.1 Project Dependencies & Interactions

Large telecommunication projects in execution during the execution of this project could affect the cost and duration to complete this project.

Project No.	Project Description	Planned Comm Date	Comment
Pre-requisite Projects			
	Nil		
Co-requisite Projects			
	Nil		
Other Related Projects			
CP.02296	PDH Mux Replacement	June 2019	
CP.02269	DWDM Replacement	December 2020	

3.2 Site Specific Issues

The project involves work at multiple sites. Individual site assessments will be required to identify issues prior to commencing work.

3.3 Project Delivery Strategy

It is expected that civil works and buildings installation will be completed by a SPA contractor.

Design of all telecommunications equipment will be done by Powerlink, constructed by a PanTel contractor and tested and commissioned by the Maintenance Service Providers.

Project Delivery Strategy Matrix		
Design	Earthworks Design	N/A
	Civil Design	Powerlink / SPA Contractor
	Electrical Design (Primary)	N/A
	Electrical Design (Secondary) – Protection	N/A
	Electrical Design (Secondary) – Automation	Powerlink
	Transmission Line Design	N/A



	Telecommunication Design	Powerlink
Construction	Earthworks Construction	N/A
	Civil Construction (Buildings)	SPA Contractor
	Construction (Panels)	PanTel Contractor
	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 FAT Testing	Ergon and Powerlink (O&FS)

3.4 Proposed Sequence of Works

3.4.1 Project Schedule

Multiple staging would allow design, construction and commissioning activities to run concurrently, reducing the overall project duration. Based on this approach, to meet the required commissioning date of October 2018 full project approval will be required by September 2016.

High Level Schedule

- Project Approval : September 2016
- Design Complete : June 2017
- Telecom Buildings Commissioned : February 2018
- MPLS Equipment Constructed : June 2018
- MPLS Equipment Commissioned : October 2018
- Project Completion : 31st October 2018



3.4.2 Project Staging

Major project stages are considered to be:

Stage	Description/Tasks
1	Design
2	Procurement of Buildings.
3	Procurement of Equipment
3	Building construction on site
4	Building commissioning on site
5	MPLS equipment construction on site
5	Commissioning of MPLS equipment.

3.4.3 Network Impacts and Outage Planning

No primary plant outages will be required. Impacts will be limited to operational and commercial telecommunications circuits only and will be managed and planned 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 project.

3.6 Project Environmental Management

Environmental management implications for the delivery of this project will need to be assessed on a site by site basis depending on the specific site requirements.

4. Project Risk Management

Some allowances have been included 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.02553 - Wide Area Network Deployment Stage 2			
The quotation at current cost levels and escalated for completion by 31 October 2018 at 2.5% per year plus labour rate revisions,			
OR.02553 Quotation in \$,000 AUD	Base Cost Levels	Escalated to Compln.	Comment (Costs @ Base Cost Levels)
Telecommunications - Wide Area Network Deployment Stage 2			CP.02553 - Wide Area Network Deployment Stage 2 - 34 sites
			Telecommunication Design
			Telecommunications Procurement
			Telecommunications- New Buildings (10 Sites)
			Telecommunications Construction
			Telecommunications Commissioning (MSP)
			Safety and Environmental Compliance
			Project Concept/Investment & Planning, Statutory Costs, Project Management and O&FS - Network Ops
TOTAL QUOTE (EXCL RISKS & Offsets)	9,819	10,398	
Offsets	0	0	
Risk Estimate	589	589	
Climate			
Construction			
Design			
TOTAL QUOTE (INCL RISKS)	10,409	10,987	

5.2 Asset Disposal Table

No assets have been identified for recovery or disposal for this project.



6. References

Document name and hyperlink (as entered into Objective)	Version	Date
Project Scope Report	1	28/08/15
Estimate Detail	3	13/01/16