Investment Evaluation Summary (IES)

Project Details:

Project Name:	Replace Underground Furniture - LV Fibreglass Pillars
Project ID:	00514
Thread:	Underground System
CAPEX/OPEX:	CAPEX
Service Classification:	Standard Control
Scope Type:	A
Work Category Code:	REUGF
Work Category Description:	Replace UG furniture
Preferred Option Description:	Option 1: Replace LV Underground Furniture [Preferred Option] Replace poor condition cabinets and pillars with a focus on: frequently operated units and units located in high risk areas Advantages: • Minimises likelihood of exposure to the public Disadvantages: • CAPEX needed This option reduces the business risks to manageable.
Preferred Option Estimate (Nominal Dollars):	$4,436,083

	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27
Unit ($)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volume	8	8	8	8	8	8	8	8	8	8
Estimate ($)										
Total ($)	$443,608	$443,608	$443,608	$443,608	$443,608	$443,608	$443,608	$443,608	$443,608	$443,608

Governance:

Project Initiator:	Jarad Hughes	**Date:**	20/03/2015
Thread Approved:	David Ellis	**Date:**	02/11/2015
Project Approver:	David Ellis	**Date:**	02/11/2015

Document Details:

Version Number:	1

Related Documents:

Description	URL
Replace Underground Furniture - LV Fibreglass Pillars - IES	http://projectzone.tnad.tasnetworks.com.au/business-projects/nis-program/DD17SAM/Deliverables/Underground%20Systems/DRAFT%20REUGF%20-%20Replace%20Underground%20Cabinets%20and%20Pillars%20IES.docx

Section 1 (Gated Investment Step 1)

1. Background

Underground cables are joined or terminated in various above and below ground enclosures collectively known as underground furniture. Underground furniture (HV and LV) is designed to provide a safe, secure and weatherproof environment for cable terminations, joints and associated equipment. The majority of LV enclosures contain LV switching devices or service fuses for customer installations.

As of March 2015 TasNetwork's owns and maintains 193 low voltage fibreglass pillars.

1.1 Investment Need

The low voltage fiberglass pillars are of an older design which contains exposed energized bus bars. These are mounted on metal frames which are prone to rust. The fiberglass enclosures are also prone to weathering as these degrade and become brittle in the sun. There is furniture considered to have a higher safety risk located in areas around schools and parks, as well as the ones in cities that are visited regularly for switching are proposed for replacement. These sites will be monitored more frequently and replacements having a higher priority.

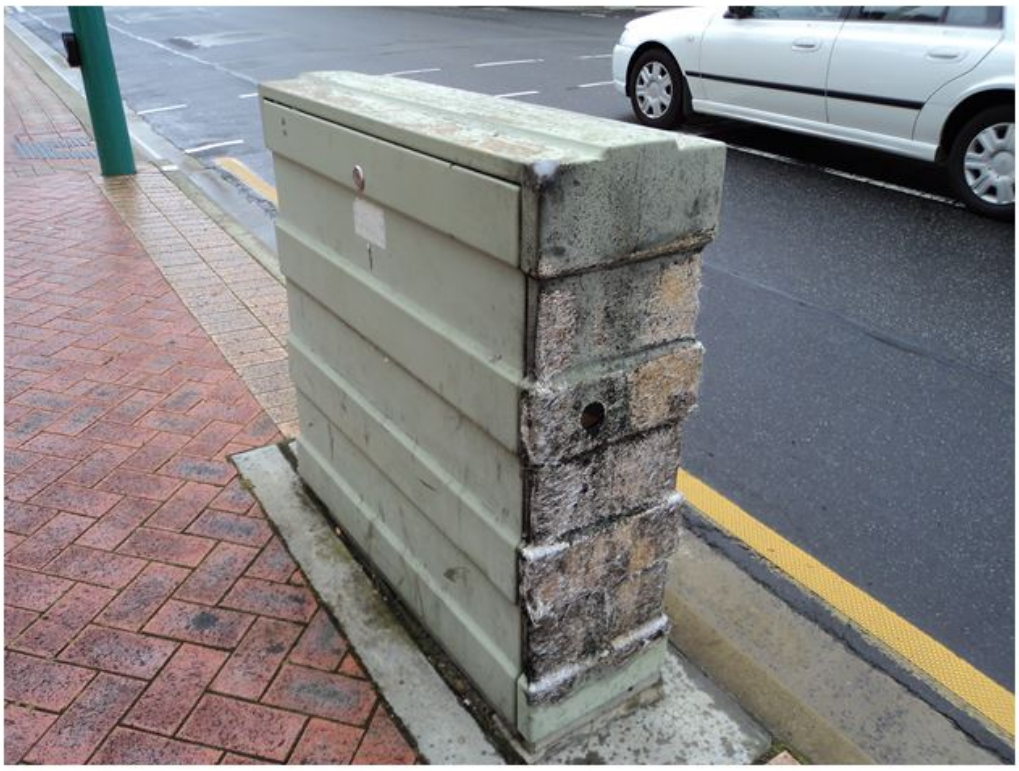

Figure 1 - Fibreglass Pillar with external damage

1.2 Customer Needs or Impact

TasNetworks continues to undertake a consumer engagement as part of business as usual and through the voice of the customer program. This engagement seeks in depth feedback on specific issues relating to:

- how it prices impact on its services
- current and future consumer energy use
- outage experiences (frequency and duration) and expectations
- communication expectations
- STPIS expectations (reliability standards and incentive payments)
- Increase understanding of the electricity industry and TasNetworks

Consumers have identified safety, restoration of faults/emergencies and supply reliability as the highest performing services offered by TasNetworks.

Consumers also identified that into the future they believe that affordability, green, communicative, innovative, efficient and reliable services must be provided by TasNetworks.

This project specifically addresses the requirements of consumers in the areas of;

- safety, restoration of faults/emergencies and supply reliability

Customers will continue to be consulted through routine TasNetworks processes, including the Voice of the customer program, the Annual Planning Review and ongoing regular customer liaison meetings.

1.3 Regulatory Considerations

This project is required to achieve the following capital and operational expenditure objectives as described by the National Electricity Rules section 6.5.7(a).

6.5.7 (a) Forecast capital expenditure

(3) to the extent that there is no applicable regulatory obligation or requirement in relation to:

(i) the quality, reliability or security of supply of standard control services; or

(ii) the reliability or security of the distribution system through the supply of standard control services, to the relevant extent:

(iii) maintain the quality, reliability and security of supply of standard control services; and

(iv) maintain the reliability and security of the distribution system through the supply of standard control services; and

(4) maintain the safety of the distribution system through the supply of standard control services.

2. Project Objectives

The objectives for this work program are to replace poor condition fibreglass pillars and those that are in high risk areas

3. Strategic Alignment

3.1 Business Objectives

Strategic and operational performance objectives relevant to this project are derived from TasNetworks 2014 Corporate Plan, approved by the board in 2014. This project is relevant to the following areas of the corporate plan:

- We understand our customers by making them central to all we do.
- We enable our people to deliver value.
- We care for our assets, delivering safe and reliable networks services while transforming our business.

3.2 Business Initiatives

The business initiatives that relate to this project are as follows:

- Safety of our people and the community, while reliably providing network services, is fundamental to the TasNetworks business and remains our immediate priority
- We care for our assets to ensure they deliver safe and reliable network services

The strategic key performance indicators that will be impacted through undertaking this project are as follows:

- Zero harm – significant and reportable incidents

4. Current Risk Evaluation

Poor condition enclosures expose the public to live bus work. The deterioration of the enclosures will increase the safety risk. External condition is not the only concern as the buses are fastened to the ground, as the connections and structure weaken due to rust, the force applied to introduce fuses/links by operators flexes the structure. The movement of the structure can close the air insulation gap and it has potential for flashover with metal clad enclosures.

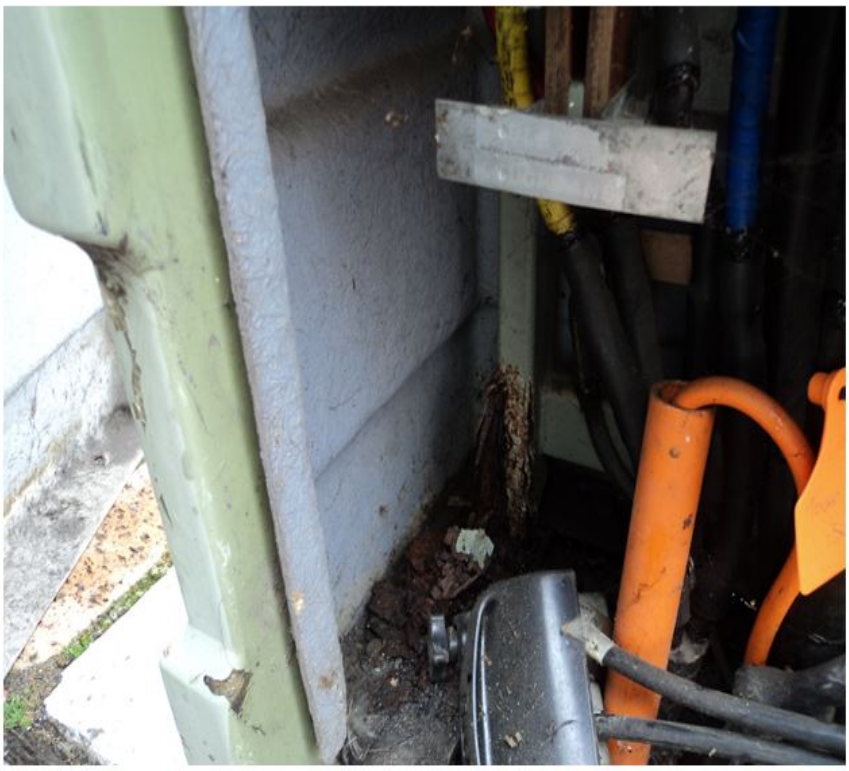

Figure 2 - Low voltage pillar with significant structural corrosion

The business risk associated with these assets has been evaluated by using the TasNetworks risk framework.

4.1 5x5 Risk Matrix

TasNetworks business risks are analysed utilising the 5x5 corporate risk matrix, as outlined in TasNetworks Risk Management Framework.

Relevant strategic business risk factors that apply are follows:

Risk Category	Risk	Likelihood	Consequence	Risk Rating
Safety and People	Safety (death or serious injury from contact with energised equipment)	Unlikely	Major	Medium

Section 1 Approvals (Gated Investment Step 1)

Project Initiator:	Jarad Hughes	**Date:**	20/03/2015
Line Manager:		**Date:**	
Manager (Network Projects) or Group/Business Manager (Non-network projects):		**Date:**	
[Send this signed and endorsed summary to the Capital Works Program Coordinator.]			

Actions			
CWP Project Manager commenced initiation:		**Assigned CW Project Manager:**	
PI notified project initiation commenced:		**Actioned by:**	

Section 2 (Gated Investment Step 2)

5. Preferred Option:

The preferred solution is to replace poor condition pillars and those in high risk areas.

5.1 Scope

Fibreglass pillars are physically larger than metal cabinets and can house a greater number of circuits and fuses. As a result the majority of these are located in built up underground areas and are frequently visited for operation. 119 fibreglass pillars are deemed to be in high risk areas and are proposed for replacement. Approximately 3 per year are identified as poor condition and require replacement, on top of this it is proposed that 5 pillars in high risk areas are replaced per year.

5.2 Expected outcomes and benefits

It is expected that following the implementation of this program no significant incidents are raised in regards to LV underground furniture.

5.3 Regulatory Test

Not applicable.

6. Options Analysis

6.1 Option Summary

Option description	
Option 0	Option 0: Do Nothing Replace only LV underground furniture when it has had significant damage, e.g. being hit by a vehicle, vandalism etc. Advantages: • Lowest cost solution Disadvantages: • Does not reduce the likelihood of exposure of the public to energised electrical equipment Does not address risks previously identified in Section 4.
Option 1 (preferred)	Option 1: Replace LV Underground Furniture [Preferred Option] Replace poor condition cabinets and pillars with a focus on: frequently operated units and units located in high risk areas Advantages: • Minimises likelihood of exposure to the public Disadvantages: • CAPEX needed This option reduces the business risks to manageable.

6.2 Summary of Drivers

Option	
Option 0	Does not address safety risk of poor fibreglass pillars allowing unauthorised access to energised equipment, or live front board risk for operators.
Option 1 (preferred)	This addresses the safety risks associated with LV fibreglass pillars.

6.3 Summary of Costs

Option	Total Cost ($)
Option 0	$0
Option 1 (preferred)	$4,436,083

6.4 Summary of Risk

TasNetworks business risks as described below are analysed utilising the 5x5 corporate risk matrix, as outlined in TasNetworks Risk Management Framework.

Option 0: Do Nothing

The risk of death or serious injury to a member of the public is still maintained as a 'Medium' if do nothing is chosen as the preferred outcome.

Option 1: Replace LV Underground Furniture – Condition and Risk [Preferred Option]

Replacement of poor condition underground furniture will ensure that any enclosures that contain holes from weathering are replaced so that the public cannot gain access, eliminating the safety risk. The replacement of fibreglass pillars in high risk areas will significantly reduce the likelihood of injury to a member of public from coming into contact with live busbars.

6.5 Economic analysis

Option	Description	NPV
Option 0	Option 0: Do Nothing Replace only LV underground furniture when it has had significant damage, e.g. being hit by a vehicle, vandalism etc. Advantages: • Lowest cost solution Disadvantages: • Does not reduce the likelihood of exposure of the public to energised electrical equipment Does not address risks previously identified in Section 4.	$0
Option 1 (preferred)	Option 1: Replace LV Underground Furniture [Preferred Option] Replace poor condition cabinets and pillars with a focus on: frequently operated units and units located in high risk areas Advantages: • Minimises likelihood of exposure to the public Disadvantages: • CAPEX needed	$0

	This option reduces the business risks to manageable.	

6.5.1 Quantitative Risk Analysis

Not applicable.

6.5.2 Benchmarking

Maintaining security to substations is considered a high priority to both TNSPs and DNSPs around Australia. Similar work is completed by other utilities to ensure no unauthorised access occurs.

6.5.3 Expert findings

Not applicable.

6.5.4 Assumptions

It has been assumed that between 2014/2015 and the start of the regulatory period (2017/2018) no pillars will have been replaced or removed from the system.

Section 2 Approvals (Gated Investment Step 2)

Project Initiator:	Jarad Hughes	**Date:**	20/03/2015
Project Manager:		**Date:**	

Actions			
Submitted for CIRT review:		**Actioned by:**	
CIRT outcome:			