Investment Evaluation Summary (IES)

Project Details:

Project Name:	Replace HV potheads
Project ID:	00674
Thread:	Underground System
CAPEX/OPEX:	CAPEX
Service Classification:	Standard Control
Scope Type:	B
Work Category Code:	REPOA
Work Category Description:	Replace Terminations - 11kV cast iron potheads
Preferred Option Description:	Option 1: Replacement of all high voltage cast iron cable terminations [Preferred Option] Replacement of all high voltage cast iron cable terminations with new PVC cable terminations. Advantages: • Eliminates exposure risk to public from failure of cast iron cable terminations. Disadvantages: • Capital expenditure required This is the lowest cost option to reduce the business risks to a manageable level.
Preferred Option Estimate (Nominal Dollars):	$1,705,000

	17/18	**18/19**
Unit ($)	$55,000	$55,000
Volume	16	15
Estimate ($)	$880,000	$825,000
Total ($)	$880,000	$825,000

Governance:

Project Initiator:	Michael Healy	**Date:**	26/03/2015
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 HV potheads - IES	http://projectzone.tnad.tasnetworks.com.au/business-projects/nis-program/DD17SAM/Deliverables/Underground%20Systems/DRAFT%20IES%20REPOA%20HV%20potheads.docx

Section 1 (Gated Investment Step 1)

1. Background

In the last few years there have been several instances where cast iron cable terminations have failed, and in some instances, catastrophically resulting in metal shards and pitch being disseminated around the point of failure. Although no harm to the public occurred as a result of these instances, as a consequence there use in public areas presents a notable business risk.

Figure 1 - High voltage cast iron cable termination

1.1 Investment Need

To eliminate the potential for injury or death from a catastrophic failure of cast iron cable termination.

Deteriorating health of high voltage cast iron terminations has resulted in internal faults, typically catastrophic failures annually. These faults have caused catastrophic failure in most cases; refer to photo 2 to see the effects of this type of failure mode; this failure occurred at Mt Barrow in 2015.

There are typically two high voltage pothead terminations failures on the network per annum.

Figure 2 - HV pothead catastrophic failure

Figure 3 – High voltage cast iron cable termination failure.

1.2 Customer Needs or Impact

TasNetworks continues to undertake 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); and
- Increasing 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 and affordability.

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).

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

2. Project Objectives

The objective of this project is to replace all the cast iron high voltage cable terminations on the distribution network to minimise the risk of a failure on the distribution network injuring a member of the public.

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; and

• 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; and

• 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:

• Price for customers – lowest sustainable prices;

• Zero harm – significant and reportable incidents; and

• Sustainable cost reduction – efficient operating and capital expenditure

4. Current Risk Evaluation

If TasNetworks does not replace all the cast iron cable terminations on the distribution network there is a risk that a failure could result in death or serious injury to a member of the public.

The business risk associated with these assets has been evaluated 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
Customer	Loss of supply	Possible	Minor	Low
Network Performance	Partial disconnection of network	Possible	Minor	Low
Reputation	Damage to reputation from harm to member of the public	Possible	Minor	Low
Safety and People	Personal injury or death to member of the public	Unlikely	Major	Medium

Section 1 Approvals (Gated Investment Step 1)

Project Initiator:	Michael Healy	**Date:**	26/03/2015
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 option is to replace all high voltage cast iron cable terminations with new PVC cable terminations.

5.1 Scope

As of February 2015 TasNetworks has 71 high voltage cast iron cable terminations across the distribution. Based on the current replacement rate it's expected that 31 will remain in service as of 1 July 2017. The scope of work entails replacement of the existing cast iron cable terminations with new cold shrink terminations.

5.2 Expected outcomes and benefits

Following the completion of this work the risk of a cast iron termination failure occurring will be eliminated. This will eliminate the risk of such a failure causing harm to a member of the public.

5.3 Regulatory Test

Not applicable.

6. Options Analysis

6.1 Option Summary

Option description	
Option 0	Option 0: Do Nothing All cast iron cable terminations remain in service until a failure occurs. The public safety risk increase over time as the assets deteriorate. Advantages: • Lowest cost solution. Disadvantages: • Does not reduce the likelihood of exposure of the public from failure of cast iron cable terminations. • Does not reduce the consequence from failure of cast iron cable terminations • Increase in OPEX expenditure as failure rates increase • Resourcing required to accommodate reactive events This option does not address the risks previously identified in Section 4.
Option 1 (preferred)	Option 1: Replacement of all high voltage cast iron cable terminations [Preferred Option] Replacement of all high voltage cast iron cable terminations with new PVC cable terminations. Advantages: • Eliminates exposure risk to public from failure of cast iron cable terminations. Disadvantages: • Capital expenditure required This is the lowest cost option to reduce the business risks to a manageable level.

6.2 Summary of Drivers

Option	
Option 0	• Customer impact from asset failures will increase over time. • Network impact from asset failures will increase over time. • Risk to reputation from failures occurring that causes personal harm. • Does not address safety risk
Option 1 (preferred)	• Eliminates the risk of customer impact from asset failures. • Eliminates the risk network impact from asset failures. • Eliminates the risk to reputation from failures occurring that causes personal harm. • Eliminates safety risk

6.3 Summary of Costs

Option	Total Cost ($)
Option 0	$0
Option 1 (preferred)	$1,705,000

6.4 Summary of Risk

Option 0: Do Nothing

Public safety risk remains at 'Medium' with the potential to increase further over time as the failure rate increases.

Option 1: Replacement of all high voltage cast iron cable terminations [Preferred Option]

The likelihood of a failure causing harm to a member of the public reduces over time, with it being completely eliminated in approximately two years.

6.5 Economic analysis

Option	Description	NPV
Option 0	Option 0: Do Nothing All cast iron cable terminations remain in service until a failure occurs. The public safety risk increase over time as the assets deteriorate. Advantages: • Lowest cost solution. Disadvantages: • Does not reduce the likelihood of exposure of the public from failure of cast iron cable terminations. • Does not reduce the consequence from failure of cast iron cable terminations • Increase in OPEX expenditure as failure rates increase • Resourcing required to accommodate reactive events This option does not address the risks previously identified in Section 4.	$0
Option 1 (preferred)	Option 1: Replacement of all high voltage cast iron cable terminations [Preferred Option] Replacement of all high voltage cast iron cable terminations with new PVC cable terminations. Advantages: • Eliminates exposure risk to public from failure of cast iron cable terminations. Disadvantages: • Capital expenditure required This is the lowest cost option to reduce the business risks to a manageable level.	$0

6.5.1 Quantitative Risk Analysis

Not applicable.

6.5.2 Benchmarking

Minimising the safety risk that the electrical distribution network presents to the public is also considered a high priority to other DNSPs around Australia.

6.5.3 Expert findings

Not applicable.

6.5.4 Assumptions

Not applicable.

Section 2 Approvals (Gated Investment Step 2)

Project Initiator:	Michael Healy	**Date:**	26/03/2015
Project Manager:		**Date:**	

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