Investment Evaluation Summary (IES)

Project Details:

Project Name:	CablePI Purchase new and replacement units
Project ID:	00765
Thread:	Connection Assets
CAPEX/OPEX:	CAPEX
Service Classification:	Standard Control
Scope Type:	C
Work Category Code:	SCMWA
Work Category Description:	Cable PI
Preferred Option Description:	Purchase CablePI devices
Preferred Option Estimate (Nominal Dollars):	$3,000,000

	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27
Unit ($)	$25	$25	$25	$25	$25	$25	$25	$25	$25	$25
Volume	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Estimate ($)	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000
Total ($)	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000

Governance:

Project Initiator:	Darryl Munro	**Date:**	30/03/2015
Thread Approved:	Darryl Munro	**Date:**	16/10/2015
Project Approver:	Darryl Munro	**Date:**	16/10/2015

Document Details:

Version Number:	1

Related Documents:

Description	URL
CablePI - Alarm and Inquiry data	http://reclink/R208128
CablePI - Neutral shocks data	http://reclink/R208127

Section 1 (Gated Investment Step 1)

1. Background

CablePI is a small device that plugs into a domestic power point and monitors the impedance of the neutral. The device acts to alert customers of a potentially hazardous situation before a shock occurs.

In 2009, TasNetworks distributed CablePI devices to all households in Tasmania as a strategy to manage the risk associated with broken neutrals.

The TasNetworks asset register does not record each individual CablePI. Each residential installation is provided a device free of charge, so it is assumed that there is one deployed for every tariff 31 and tariff 22 meter (approximately 210,000 devices).

A further 30,000 devices have been delivered to businesses.

Since it was distributed, CablePI has detected more than 3,400 faults, including some that could have resulted in an electric shock.

Of these, 190 were dangerous neutral faults, more than 1,080 were active conductor faults, and more than 789 voltage issues were found on TasNetworks' low voltage network.

1.1 Investment Need

This program is for the purchase of replacement and new Cable PI devices.

Neutral integrity is critical to ensure safety of the public and TasNetworks personnel. The CablePI device provides real time safety monitoring of neutral integrity providing for:

- public safety from electric shock or electrocution.
- condition monitoring of LV network indicating when assets are about to fail, thus enabling replacement before failure.

The Cable PI device has been utilised by TasNetworks for 6 years and has been designed specifically for the identification of a neutral fault. The product has identified an average of 36 neutral faults per annum since it was implemented.

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.

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 area 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). Specific areas section 6.5.7(a) that apply to this project are as follows:

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

To provide a neutral integrity monitoring program to ensure safety of the public and TasNetworks personnel in the event of a broken LV neutral.

a neutral integrity monitoring program is requird to provide real time monitoring of neutral integrity for:

- public safety from electric shock or electrocution.
- condition monitoring of LV network indicating when assets are about to fail, thus enabling replacement before failure.

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; 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
- We care for our assets to ensure they deliver safe and reliable network services
- We will transform our business with a focus on:
    - the customer, and a strong commitment to delivering services they value
    - an engaged workplace with strong cultural qualities and people who will be great ambassadors for TasNetworks
    - a high performing culture with clear accountabilities for deliverables
    - an appropriate approach to the management and allocation of risk - a well run, efficient business, that delivers sustainable returns to the Tasmanian community and is resilient to future challenges.

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

- Customer engagement and service – customer net promoter score
- Price for customers – lowest sustainable prices
- Zero harm – significant and reportable incidents
- Sustainable cost reduction – efficient operating and capital expenditure

4. Current Risk Evaluation

Do nothing is not an acceptable option to TasNetworks' risk appetite. The level of risk identified above is such that a treatment plan is required to reduce the risks to a tolerable level, in line with TasNetworks’ Risk Management

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
Financial	Litigation payments resulting from death or injury.	Unlikely	Moderate	Medium
Network Performance	Broken LV neutral resulting in voltage fluctuations and supply interruptions.	Possible	Minor	Low
Safety and People	Potential shock resulting in injury or death due to electrocution.	Likely	Severe	Very High

Section 1 Approvals (Gated Investment Step 1)

Project Initiator:	Darryl Munro	**Date:**	30/03/2015
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:

Purchase Cable PI devices to cover customer churn, new customer installations and failure of devices.

5.1 Scope

The purchase of Cable PI devices from Honeywell in order to provide appropriate monitoring of the neutral connections to all households and businesses, to adequately address the risks associated with neutral connections.

5.2 Expected outcomes and benefits

This capital expenditure is required to:

- Continue neutral integrity monitoring program;
- Purchase new CablePI devices in response to customer request for a new device; and
- Purchase replacement CablePI devices to replace failed devices upon notification from a customer of a faulty device.

5.3 Regulatory Test

6. Options Analysis

Option 0: Do nothing
Advantages

- Less expenditure than option 1

Disadvantages

- Will result in significant increase in risk of shock or electrocution to members of the public.
- Increased potential for power quality and supply interruptions due to broken neutrals.

Option 1: Purchase CablePI devices
Advantages

- Provides real time monitoring of neutral integrity improving public safety from electric shock or electrocution.
- Condition monitoring of LV network indicating when assets are about to fail, thus enabling replacement before failure.

Disadvantages

- More expensive than option 0.
- Relies on customers plugging devices in and turning on.
- Relies on customers responding to alarm and calling TasNetworks to respond.

Option 2: Provide neutral monitoring via smart meters
Advantages

- Provides real time monitoring of neutral integrity improving public safety from electric shock or electrocution.
- Condition monitoring of LV network indicating when assets are about to fail, thus enabling replacement before failure.
- Does not rely on customer actions to plug in device and respond to alarm.
- Can disconnect supply for safety upon detection of unsafe condition.
- Automatically contacts network call centre if communications enabled.

Disadvantages

- Unknown costs

- Unproven technology at this point in time (currently under valuation)

6.1 Option Summary

Option description	
Option 0	Do nothing
Option 1 (preferred)	Purchase CablePI devices
Option 2	Provide neutral monitoring via smart meters

6.2 Summary of Drivers

Option	
Option 0	• Continue neutral integrity monitoring program - No. • Purchase new CablePI devices in response to customer request for a new device - No • Purchase replacement CablePI devices to replace failed devices upon notification from a customer of a faulty device - No
Option 1 (preferred)	• Continue neutral integrity monitoring program - Yes. • Purchase new CablePI devices in response to customer request for a new device - Yes. • Purchase replacement CablePI devices to replace failed devices upon notification from a customer of a faulty device - Yes.
Option 2	• Continue neutral integrity monitoring program - Yes • Purchase new CablePI devices in response to customer request for a new device - No • Purchase replacement CablePI devices to replace failed devices upon notification from a customer of a faulty device - No

6.3 Summary of Costs

Option	Total Cost ($)
Option 0	$0
Option 1 (preferred)	$3,000,000
Option 2	$0

6.4 Summary of Risk

This section outlines an overall residual asset risk level, for each of the options.

Option	Risk Assessment
Option 0	Very High
Option 1	Medium

6.5 Economic analysis

Option	Description	NPV
Option 0	Do nothing	$0
Option 1 (preferred)	Purchase CablePI devices	$0

Option 2	Provide neutral monitoring via smart meters	$0

6.5.1 Quantitative Risk Analysis

A quantitative risk assessment has not been completed for this project.

6.5.2 Benchmarking

The Cable PI is a device developed by TasNetworks, specifically to address the risk associated with neutral integrity. Outside of Victoria, DNSPs within Australia do not install equipment that provides the same level of neutral integrity coverage as the Cable PI device. Victorian DNSPs provide various forms of neutral integrity monitoring via smart meters. TasNetworks understands that not all of the methods utilised in Victoria are suitable for implementation in Tasmania as the main neutral is wired differently within different jurisdictions. TasNetworks are currently evaluating neutral integrity via a smart meter, however, the evaluation is not completed at this time.

6.5.3 Expert findings

There are no expert findings to report on this project.

6.5.4 Assumptions

The following critical assumption has been made for this project:

Volumes of forecast devices based on historical volumes of purchased and installed devices.

Section 2 Approvals (Gated Investment Step 2)

Project Initiator:	Darryl Munro	**Date:**	30/03/2015
Project Manager:		**Date:**	

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