

# Investment Evaluation Summary (IES)



## Project Details:

<b>Project Name:</b>	Augment HV Feeder for Capacity (Other)
<b>Project ID:</b>	00824
<b>Thread:</b>	System Development
<b>CAPEX/OPEX:</b>	CAPEX
<b>Service Classification:</b>	Standard Control
<b>Scope Type:</b>	A
<b>Work Category Code:</b>	CAHVF
<b>Work Category Description:</b>	HV Feeder Upgrade - Capacity
<b>Preferred Option Description:</b>	Establish 11-22 kV interconnection between feeder 40002 and 41516
<b>Preferred Option Estimate (Nominal Dollars):</b>	\$340,000

	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27
<b>Unit (\$)</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Volume</b>	4	0	0	0	0	0	0	0	0	0
<b>Estimate (\$)</b>										
<b>Total (\$)</b>	\$110,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

## Governance:

<b>Project Initiator:</b>	Ewan Sherman	<b>Date:</b>	30/03/2015
<b>Thread Approved:</b>	Stephen Jarvis	<b>Date:</b>	19/10/2015
<b>Project Approver:</b>	Stephen Jarvis	<b>Date:</b>	19/10/2015

## Document Details:

<b>Version Number:</b>	1
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## Related Documents:

Description	URL
Network Development Management Plan	-
Summary Report - Voltage Regulator Assessment	-

# Section 1 (Gated Investment Step 1)

## 1. Background

Reinforcement works on the High Voltage (HV) feeder network include elements operating at 6.6 kV, 11 kV, 22 kV, 33 kV or 44 kV (including SWER). The main components of HV network includes:

- Overhead conductor
- Underground cable
- Voltage regulators
- Overhead switchgear (Reclosers, Gas Switches, ABS, Fuses, Links)
- Ground mounted switchgear (generally components of Distribution Substations)

This program covers management of network risks associated with HV elements operating at asset loading levels in excess of manufacturers ratings.

In particular this program addresses HV assets associated with the management of Richmond Zone Feeder 40002, including Colebrook regulator T580156.

### 1.1 Investment Need

Network elements exposed to excessive loading pose a significant risk in terms of:

- public safety,
- environmental (bushfire start),
- operability of network elements;
- power quality;
- damage to third party equipment;
- premature asset failure, and
- reliability performance.

The management of the above risks supports TasNetworks to deliver the following outcomes:

- Compliance with regulatory obligations; and
- Safety, reliability and security of supply outcomes that meet customers' needs, by maintaining asset utilisation rates at appropriate levels at the lowest whole of life cost.

### 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. Consumers have identified safety, restoration of faults/emergencies and supply reliability as the highest performing services offered 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 expenditure objectives as described by the National Electricity Rules section 6.5.7(a) 6.5.7 (a).

## Forecast capital expenditure

1. meet or manage the expected demand for standard control services over that period;
2. comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;
3. to the extent that there is no applicable regulatory obligation or requirement in relation to:
  - o the quality, reliability or security of supply of standard control services; or
  - o the reliability or security of the distribution system through the supply of standard control services, to the relevant extent:
    - o maintain the quality, reliability and security of supply of standard control services; and
    - o 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 manage network risks associated with HV elements exposed to asset loading levels in excess of nominal manufacturers ratings and other operational limitations in the HV network.

## 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 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: - an appropriate approach to the management and allocation of risk The strategic key performance indicators that will be impacted through undertaking this project are as follows:
  - o Customer engagement and service – customer net promoter score
  - o Price for customers – lowest sustainable prices
  - o Network service performance – meet network planning standards

## 4. Current Risk Evaluation

The current risk evaluation is Medium.

#### 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	<p>Material Supply Interruption, and contribution towards:</p> <ul style="list-style-type: none"> <li>• substandard performance (SAIFI and SAIDI)</li> <li>• unavailability of network services</li> <li>• negative impact on community values and expectations</li> <li>• Increased customer complaints</li> <li>• Reputation damage</li> </ul>	Possible	Minor	Low
Environment and Community	<p>Significant localised environmental impact with short-term effects where there is an Increased risk of conductor clashing or failure leading to interruptions and fire ignition and explosion and expulsion of oil, particular in regards to:</p> <ul style="list-style-type: none"> <li>• High bushfire risk areas;</li> <li>• Area's of environmental significance</li> </ul>	Possible	Minor	Low
Financial	<p>Higher cost associated with repairing equipment under fault, compensation payments, under regulatory regime - STPIS outcomes;</p>	Possible	Negligible	Low
Network Performance	<p>Running the system in an insecure state or above its capability that may lead to consequential failures</p> <p>Protection operation initiated interruptions to supply</p> <p>Rotational interruptions to supply to manage equipment loading and downed networks</p>	Possible	Minor	Low

Regulatory Compliance	<p>Non-compliance with obligations, resulting in:</p> <ul style="list-style-type: none"> <li>• Minor fine, or</li> <li>• breach of code and standard or licence for TEC, NER, connection agreements, legislation and regulation;</li> </ul>	Possible	Negligible	Low
Reputation	<p>Non-sustained state press coverage including wider social media coverage, particularly in regards to:</p> <ul style="list-style-type: none"> <li>• High bushfire risk areas;</li> <li>• Area's of environmental significance</li> </ul>	Rare	Negligible	Low
Safety and People	<p>Explosion, or decreased operating clearances resulting in:</p> <ul style="list-style-type: none"> <li>• Increasing risk of third party contact</li> <li>• Electric shock or electrocution</li> <li>• Physical damage or harm.</li> </ul>	Likely	Minor	Medium

## Section 1 Approvals (Gated Investment Step 1)

<b>Project Initiator:</b>	Ewan Sherman	<b>Date:</b>	30/03/2015
<b>Line Manager:</b>		<b>Date:</b>	
<b>Manager (Network Projects) or Group/Business Manager (Non-network projects):</b>		<b>Date:</b>	
[Send this signed and endorsed summary to the Capital Works Program Coordinator.]			

<b>Actions</b>			
<b>CWP Project Manager commenced initiation:</b>		<b>Assigned CW Project Manager:</b>	
<b>PI notified project initiation commenced:</b>		<b>Actioned by:</b>	

## Section 2 (Gated Investment Step 2)

### 5. Preferred Option:

In many cases the most prudent solution is to

- augment under rated feeder elements (including associated connection loops and clamps) to suitably rated alternatives from the standard available asset types used by TasNetworks; or
- re-rate HV feeder sections where possible to appropriate rating and/or configuration of HV network.

This is generally undertaken where alternative options are not economical, or do not prudently manage the risk.

In this project TasNetworks is establishing a 22-11 kV interconnection to the northern end of a radial 11 kV feeder to transfer load during seasonal peak periods.

#### 5.1 Scope

This project includes the establishment of a 11-22 kV interconnection (HV transformer and switchgear) at the northern radial end of feeder 40002.

#### 5.2 Expected outcomes and benefits

The outcome of augmenting and/or re-rating the network elements that are currently operating outside acceptable asset loading levels is:

- the safer operation of the network; and
- the reduction of risk associated with public safety, asset operation or failure, and community reliability.

This will avoid upgrading an existing voltage regulator site at Colebrook, by transferring load from 40002 to 41516 during seasonal peak periods.

In addition, this project will reduce the risks associated with the Richmond Rural Zone renewal that is proposed in 19/20, in particular allow the radial 11 kV load to be supported from a neighbouring network.

#### 5.3 Regulatory Test

Not applicable.

## 6. Options Analysis

The following tables provide a brief summary of the options considered as part of a desk top assessment and in accordance with the Network Development Management plan.

### 6.1 Option Summary



Option description	
Option 0	Do nothing
Option 1 (preferred)	Establish 11-22 kV interconnection between feeder 40002 and 41516
Option 2	Augment existing regulator to a higher capacity alternative

## 6.2 Summary of Drivers

Option	
Option 0	Continued exposure of network elements to excessive loading or continued management of the HV feeder network with limited operational flexibility resulting in business risks described in Section 1.1.
Option 1 (preferred)	Managed exposure of the network elements to excessive loading and removal of operational limitations; resulting in management of business risks described in Section 1.1.  Defers premature upgrade of existing HV network asset (Colebrook Regulator)  Supports network operations to manage major network renewal project (Richmond Rural Zone) in 19/20
Option 2	Managed exposure of the network elements to excessive loading and removal of operational limitations; resulting in management of business risks described in Section 1.1.

## 6.3 Summary of Costs

Option	Total Cost (\$)
Option 0	\$0
Option 1 (preferred)	\$340,000
Option 2	\$170,994

## 6.4 Summary of Risk

As a result of the project the target risk assessment will be Low.

## 6.5 Economic analysis

Option	Description	NPV
Option 0	Do nothing	\$0
Option 1 (preferred)	Establish 11-22 kV interconnection between feeder 40002 and 41516	\$0
Option 2	Augment existing regulator to a higher capacity alternative	\$0

### **6.5.1 Quantitative Risk Analysis**

Not applicable.

### **6.5.2 Benchmarking**

Not applicable.

### **6.5.3 Expert findings**

Not applicable.

### **6.5.4 Assumptions**

Not applicable.

## Section 2 Approvals (Gated Investment Step 2)

<b>Project Initiator:</b>	Ewan Sherman	<b>Date:</b>	30/03/2015
<b>Project Manager:</b>		<b>Date:</b>	

<b>Actions</b>			
<b>Submitted for CIRT review:</b>		<b>Actioned by:</b>	
<b>CIRT outcome:</b>			