

# Investment Evaluation Summary (IES)



## Project Details:

<b>Project Name:</b>	Substation Building Refurbishments
<b>Project ID:</b>	00792
<b>Thread:</b>	Ground Mounted Substations
<b>CAPEX/OPEX:</b>	CAPEX
<b>Service Classification:</b>	Standard Control
<b>Scope Type:</b>	A
<b>Work Category Code:</b>	REGMS
<b>Work Category Description:</b>	Replace Ground Mtd Sub
<b>Preferred Option Description:</b>	Refurbish substation building
<b>Preferred Option Estimate (Nominal Dollars):</b>	\$52,000

	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27
<b>Unit (\$)</b>	\$52,000	\$52,000	\$52,000	\$52,000	\$52,000	\$52,000	\$52,000	\$52,000	\$52,000	\$52,000
<b>Volume</b>	2	2	2	2	2	2	2	2	2	2
<b>Estimate (\$)</b>	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000
<b>Total (\$)</b>	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000

## Governance:

<b>Project Initiator:</b>	Jarad Hughes	<b>Date:</b>	30/03/2015
<b>Thread Approved:</b>	David Ellis	<b>Date:</b>	02/11/2015
<b>Project Approver:</b>	David Ellis	<b>Date:</b>	02/11/2015

## Document Details:

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

Description	URL
IES - REGMS Substation Building Refurbishment	<a href="http://projectzone.tnad.tasnetworks.com.au/business-projects/nis-program/DD17SAM/Deliverables/Ground%20Mounted%20Substations/DRAFT%20IES%20REGMS%20Substation%20Building%20Refurbishments.docx">http://projectzone.tnad.tasnetworks.com.au/business-projects/nis-program/DD17SAM/Deliverables/Ground%20Mounted%20Substations/DRAFT%20IES%20REGMS%20Substation%20Building%20Refurbishments.docx</a>

# Section 1 (Gated Investment Step 1)

## 1. Background

Throughout the 60's and 70's 131 building type substations were built and now their condition is deteriorating, the age profile of these substations can be seen in Figure 1. The deterioration has started to cause roofs to become compromised and let water ingress, resulting in some cases of partial roof collapse. These incidents have caused performance issues as well as increased cost due to removal of asbestos in most cases.



Figure 1 - Typical building type substation - Exterior view

There have been interruptions to supply across multiple areas and substantial quality of supply issues. An example of this occurred at the Franklin Square Substation where a leaking roof caused part of the ceiling to fall on to a transformer gas relay - tripping off the transformer resulting in a loss of supply to a large area of the Hobart CBD. Condition was such that a complete roof replacement was required.

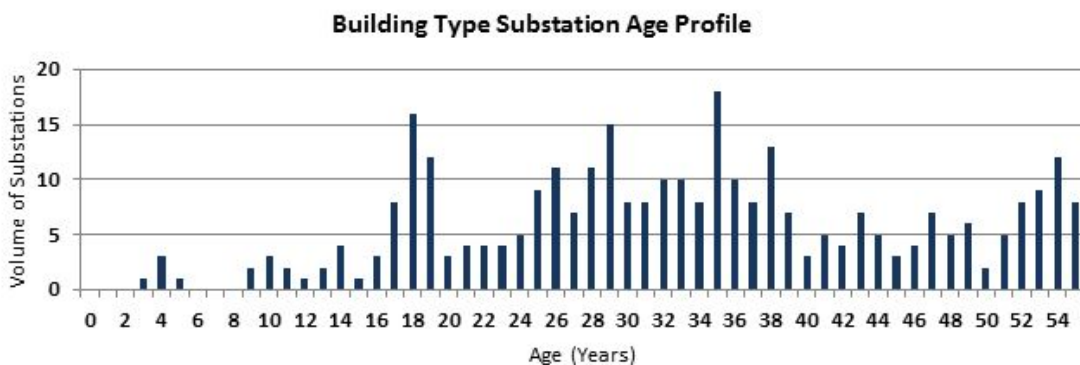


Figure 2 - Building type ground mounted substation age profile

### 1.1 Investment Need

TasNetworks own and maintain 69 substations where the enclosure is an isolated building. A 20 of these buildings

are greater than 50 years old and have had little to no refurbishment or building maintenance work in their lifetime. There have been two sites this financial year (Franklin Square Substation and Brooker nr Edwards Substation) that have been identified as poor condition and require significant refurbishment work. To ensure that the condition of the building substations do not create an increase in performance issues, there needs to be refurbishments of 2 sites per year, at the average cost of \$52 000 a site to maintain the current condition level.

## 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

## 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

(1) meet or manage the expected demand for standard control services over that period;

(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

## 2. Project Objectives

The objective of this work is to refurbish poor condition building substation enclosures. This work will help prevent incidents regarding poor condition infrastructure (e.g. water leaks, friable asbestos, poor drainage etc.)

## 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 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:

- 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:

- Network service performance – meet network planning standards
- Network service performance – outcomes under service target performance incentive schemes

## 4. Current Risk Evaluation

If refurbishment of poor condition building type substations did not occur there would be a decline in performance due to water ingress, drainage issues and fallen debris over time. A number of these types of substations are also in critical areas in CBD's, so unplanned outages would have a large impact.

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

The level of risk identified was such that a treatment plan is required to reduce the risk down to a manageable level.

### 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
Network Performance	Interruption to supply across multiple areas or substantial quality of supply issues. An example like this occurred at the Franklin Square Substation where a leaking roof caused part of the ceiling to fall on to a transformer gas relay - tripping off the transformer resulting in a loss of supply to a large area of the Hobart CBD	Unlikely	Moderate	Medium
Safety and People	The presence of asbestos in the substation buildings presents risks to personnel working on or within the substations	Rare	Major	Medium

## Section 1 Approvals (Gated Investment Step 1)

<b>Project Initiator:</b>	Jarad Hughes	<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:

The preferred solution for this work is to refurbish poor condition substation buildings. TasNetworks own and maintain approximately 70 substations where the enclosure is an isolated building. A large number of these buildings are greater than 50 years old and have had little to no refurbishment or building maintenance work in their lifetime. There has been two sites in the 2014/2015 financial year (Franklin Square Substation and Brooker nr Edwards Substation) that have been identified as poor condition and require significant refurbishment work. It is expected that going forward two sites per year will be identified that require significant work.

#### 5.1 Scope

This work will include refurbishment of sites, replacements or repair of poor condition infrastructure and removal of asbestos

#### 5.2 Expected outcomes and benefits

It is expected that with this work the building isolated substations enclosures will be fit for service for another 10-20 years.

#### 5.3 Regulatory Test

Not applicable

## 6. Options Analysis

### 6.1 Option Summary

Option description	
Option 0	Do nothing
Option 1 (preferred)	Refurbish substation building

### 6.2 Summary of Drivers

Option	
Option 0	This work will not address poor condition enclosures and may lead to loss of supply, further damage to assets or incidents regarding asbestos
Option 1 (preferred)	This is the preferred solution which adequately addresses the risks associated with poor condition sites at sustainable costs

### 6.3 Summary of Costs

Option	Total Cost (\$)
Option 0	\$0
Option 1 (preferred)	\$52,000

### 6.4 Summary of Risk

### Option 0: Do Nothing

The performance of the network will decline with the likelihood of partial disconnection of the network increasing to likely as the condition of the substations decline.

### Option 1: Refurbish substation building

Refurbishing the substation should maintain the reliability and security of the substation for the life of the asset.

## 6.5 Economic analysis

Option	Description	NPV
Option 0	Do nothing	\$0
Option 1 (preferred)	Refurbish substation building	\$0

### 6.5.1 Quantitative Risk Analysis

Not applicable

### 6.5.2 Benchmarking

Routine maintenance and refurbishment of ground mounted substations to maintain their condition and security is an activity that is also undertaken by other distribution utilities across Australia.

### 6.5.3 Expert findings

Not applicable

### 6.5.4 Assumptions

It is assumed that 2 substation buildings per year will be identified as poor condition requiring significant refurbishment work

## Section 2 Approvals (Gated Investment Step 2)

<b>Project Initiator:</b>	Jarad Hughes	<b>Date:</b>	30/03/2015
<b>Project Manager:</b>		<b>Date:</b>	

### Actions

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