Investment Evaluation Summary (IES)

Project Details:

Project Name:	Replace luminaires – minor (Bulk Replacement)
Project ID:	00604
Thread:	Public Lighting
CAPEX/OPEX:	CAPEX
Service Classification:	Alternative Control
Scope Type:	B
Work Category Code:	RLMIN
Work Category Description:	Replace Minor Road Lighting
Preferred Option Description:	4 year replacement of minor lights Advantages: - Carry our replacement with bulk lamp replacement program - planned work, less cost per light. - Efficiency gains - Lower NPV to replace lights compared to option 1 Disadvantage: Higher NPV than option 3 This preferred option is not the lowest NPV, however, it is chosen as the high volume of lights is likely to provide opportunity for lower pricing in procurement and is also driven by customer demand for energy efficient lighting to reduce customer energy bills.
Preferred Option Estimate (Nominal Dollars):	$13,483,184

	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27
Unit ($)	$572	$572	$572	$572	$572	$572	$572	$572	$572	$572
Volume	4,000	4,000	2,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Estimate ($)	$2,288,000	$2,288,000	$1,144,000	$572,000	$572,000	$572,000	$572,000	$572,000	$572,000	$572,000
Total ($)	$2,288,000	$2,288,000	$1,144,000	$572,000	$572,000	$572,000	$572,000	$572,000	$572,000	$572,000

Governance:

Project Initiator:	Gerard Martindill	**Date:**	25/03/2015
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
SDW.UMS_130315	http://reclink/R204663

NPV RLMIN	http://reclink/R126228

Section 1 (Gated Investment Step 1)

1. Background

This program may have a project initiated by a Road Lighting Authority (RLA) due to changes to roads or other infrastructure or be initiated by TasNetworks.

When initiated by TasNetworks this program targets the replacement of Category P luminaires that are generally in poor condition because of the following reasons:

- Fittings that are found to be damaged fittings beyond reasonable repair due to vandalism, accidents or other external events;
- The diffusers on luminaires have shown deterioration from exposure to weather, repeated handling and / or ultra violet degradation;
- Luminaires that have shown evidence of water and insect entry because the seals have deteriorated; or
- The luminaire type has an unacceptable / increasing number of repairs being performed during fault response calls.

Information and guidance on which fitting to maintain or exchange are provided in the Public Light Maintenance Area Rule Base

1.1 Investment Need

The investment required for this program of work is for the luminare fitting and associated installations costs. The main drivers for the investment:

- Increased light output from newer lighting technologies - which will result in greater public safety.
- Reduced Network tarrif (and Retail tariffs) costs due to new technolohgy having more cost effective maintenance requirements.
- Increased complence requirement with the Australian Standards.
- Better light spill control in streets
- Decreased fault call outs due to new technolgoies being employed and older fittings removed from the system.
- New Lights will be installed will be completed in line with timing around the exisitng Bulk Lamp Maintenance program. This will optimise the resoursing to install the new lights at the same time that other lights in a Maintenance area are completed concurrently.

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 • affordability, green, communicative, innovative, efficient and reliable services 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

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: (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

To provide for the non-demand bulk replacement of faulty/end of life Minor Road Lighting luminaries as required to maintain adequate public lighting.

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 • 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 TN's risk appetite. TN will not be able to carry out effective asset replacement of ageing/inefficent luminares, replace with more energy efficient fittings or apply OPEX savings in the fault budget POW.

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
Regulatory Compliance	To maintain lighting level to required Australian Standards.	Possible	Minor	Low
Reputation	Negative publicity resulting from faulty lights.	Possible	Minor	Low
Safety and People	Reduced public safety resulting from inadequate lighting levels.	Possible	Minor	Low

Section 1 Approvals (Gated Investment Step 1)

Project Initiator:	Gerard Martindill	**Date:**	25/03/2015
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:

To provide for the non-demand bulk replacement of faulty or end of life Minor Road Lighting luminaries as required to maintain adequate public lighting.

5.1 Scope

1 Work to be undertaken:

The work to be undertaken shall be the bulk replacement of Major Road Lighting Luminaries where design and/or alterations to the supply is required to facilitate the installation of the light. The replacements will be sourced by the following methods:

a) Assets generated

i) The Fault Centre will issue all despatches for faulty luminaires.

ii) Bulk replacement of Major Road Lighting will be issued by individual scope document listing specific work required. This will be issued by Assets direct to Works Delivery Management Team.

iii) Incorporated in with the Bulk Lamp Replacement Program iv) Design only for next year's POW (2016/2017) will be undertaken. Individual scope will be issued by document listing specific work required.

b) Works Delivery generated

i) Works Delivery may attend individual faulty luminaries under their own direction; however such attendances are to be made known to the Fault Centre or entered into the database as soon as it is practicable to do so.

ii) Works Delivery may make recommendations for bulk replacement detailing Pole ID, Address, Location, Lamp Size and total costs. The Assets Metering Assets Manager prior to issuing the work must approve this recommendation in writing. Note: Where replacement is required immediately it should be allocated to Fault and Emergency POW Refer to 2

2 Particular methodology to undertake the work:

a) Replacement philosophy for bulk replacement is to replace old Mercury or Sodium Vapour fittings with Sodium Vapour. Unless otherwise requested by the customer or nominated by Metering Assets Strategy from TasNetworks standard list of light sources.

b) Design only projects will undertake all tasks including customer negotiation and package work ready for construction.

c) The data registered in the service order should detail the Pole ID, Address, Location, Lamp Size and Type of the new fitting in the form of a streetlighting schedule. This is important to enable correct records to be kept that will enable TasNetworks to undertake bulk lamp and PE cell replacement and maintenance in future years. Refer to client for further information as required.

e) Undertake an appropriate level of lighting design as specified in AS/NZS 1158 Part 1.1 on the roadway in accordance with the category specified by the roadway authority. In the event that the roadway authority is in agreement for a direct one for one fitting replacement, a lower level of design may be undertaken. This lower level of design should include a desktop design and site visit in order to highlight obvious lighting deficiencies. Extra attention should be given to intersections and corners. Please ensure that a sufficient level of discussion and negotiation is entered into with the relevant municipal authority or road authority to ensure that the final lighting configuration meets their requirements and agreement is received.

f) All correspondence with the customer to be stored in WASP. Lighting Design Proposal letter to be sent to the customer from TasNetworks must outline the lighting standard achieved as part of the design process to the specific road category. Any areas of non-conformity with the standard to be highlighted including the process to be able to achieve compliance. A letter must be received from customer prior to project commencing accepting the lighting standard as outlined in the design proposal and accepting any non-conformances.

g) In accordance with the requirements of TasNetworks Operating Procedures and under the direction of Operations Department:

i) Provide adequate levels of response to streetlight upgrade activities as agreed with Asset Planning Group.

ii) Take appropriate actions to ensure the safety of the public, employees, network assets and the environment.

iii) Handling and disposal of hazardous materials including Asbestos, PCBs and Streetlight globes components contained within the light fittings or control boxes shall be in accordance with the work procedures developed by Network Services as listed below:

JSA No. 001 – REMOVAL AND DISPOSAL OF ASBESTOS CONTAMINATED STREET LIGHT FITTINGS

JSA No. 002 - REMOVAL AND DISPOSAL OF A CHOKE BOX THAT MAY CONTAIN AN ASBESTOS SEAL AND A PCB CONTAMINATED CAPACITOR

JSA No. 003 - REMOVAL AND DISPOSAL OF A PCB CONTAMINATED CHOKE BOX

JSA No. 004 - REMOVAL AND DISPOSAL OF A PCB CONTAMINATED CONTROL UNIT IN A STREET LIGHT STANDARD

JSA No. 005 - REPLACEMENT AND DISPOSAL OF MERCURY AND SODIUM STREET LIGHT GLOBES -

JSA No 006 - REMOVAL AND DISPOSAL OF ASBESTOS CONTAMINATED STREET LIGHT FITTINGS THAT HAVE BEEN DAMAGED IN A FAULT SITUATION (Car Hit Pole etc.)

In addition to the Works Delivery JSA documents the following shall be noted and disposed of in an approved manner: - All separate control boxes or panels in the base of Street lighting steel standards may contain capacitors that have PCBs. - Panels in the base of Street lighting steel standards may be constructed from materials containing Asbestos. iii) Identify, record and report to Metering Asset Strategy all defects and findings that require either further specific design and/or construction work and will result in further expenditure of a capital nature. 2. Definitions: Streetlight Upgrade General Replacement versus Fault and Emergency Repair. i) Streetlight Upgrade General Replacement is:Replacement of aged major Mercury Vapour or Sodium Vapour Road light fittings with new Sodium Vapour fittings is the default strategy. Other light sources may be used as replacement such as Metal Halide as requested by the council. New Technologies may be considered by Network once an assessment and feasibility had been performed by installing trial sites. ii) Fault & Emergency Repair is: (1) Restoration of System Stability (as requested by Distribution Operations Group) (2) Defects that are required to be repaired immediately i.e. that night or prior to next nightfall are to be done under this work category. (3) Making safe unsafe situations e.g. electrical, physical and environmental

5.2 Expected outcomes and benefits

This capital program is required to:

- Maintain a safe and reliable network.
- Replace assets according to condition and risk based assessment criteria.
- Maintain adequate lighting levels to improve public safety.

5.3 Regulatory Test

6. Options Analysis

6.1 Option Summary

Option description	
Option 0	do nothing - Run to failure and replace lights under fault Advantage: Nil Disadvantages: - Lights fail in service - More expensive to replace lights under fault compared to planned proactive replacement Most expensive NPV
Option 1	2 year replacement of minor lights Advantages: - Carry our replacement with bulk lamp replacement program - planned work, less cost per light. - Efficiency gains Disadvantages: - Highest NPV option to proactively replace lights
Option 2 (preferred)	4 year replacement of minor lights Advantages: - Carry our replacement with bulk lamp replacement program - planned work, less cost per light. - Efficiency gains - Lower NPV to replace lights compared to option 1 Disadvantage: Higher NPV than option 3 This preferred option is not the lowest NPV, however, it is chosen as the high volume of lights is likely to provide opportunity for lower pricing in procurement and is also driven by customer demand for energy efficient lighting to reduce customer energy bills.
Option 3	Business as usual Advantages: - Lowest NPV to replace lights Disadvantages: - Inefficient use of field resources - Increase failure of ageing luminaires resulting in higher fault call out rates

	to replace

6.2 Summary of Drivers

Option	
Option 0	• Maintain a safe and reliable network. No • Replace assets according to condition and risk based assessment criteria. No • Maintain adequate lighting levels to improve public safety No
Option 1	• Maintain a safe and reliable network. Yes • Replace assets according to condition and risk based assessment criteria. Yes • Maintain adequate lighting levels to improve public safety Yes
Option 2 (preferred)	• Maintain a safe and reliable network. Yes • Replace assets according to condition and risk based assessment criteria. Yes • Maintain adequate lighting levels to improve public safety Yes
Option 3	• Maintain a safe and reliable network. Yes • Replace assets according to condition and risk based assessment criteria. Yes • Maintain adequate lighting levels to improve public safety Yes

6.3 Summary of Costs

Option	Total Cost ($)
Option 0	$13,950,580
Option 1	$13,483,184
Option 2 (preferred)	$13,483,184
Option 3	$12,123,300

6.4 Summary of Risk

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

Option	Risk Assessment
Option 0	Medium
Option 1	Medium
Option 2 (prefered)	Low
Option 3	Medium

6.5 Economic analysis

Option	Description	NPV
Option 0	do nothing - Run to failure and replace lights under fault Advantage: Nil Disadvantages: - Lights fail in service - More expensive to replace lights under fault compared to planned proactive replacement Most expensive NPV	-$16,585,844
Option 1	2 year replacement of minor lights Advantages: - Carry our replacement with bulk lamp replacement program - planned work, less cost per light. - Efficiency gains Disadvantages: - Highest NPV option to proactively replace lights	-$13,335,530

Option 2 (preferred)	4 year replacement of minor lights Advantages: - Carry our replacement with bulk lamp replacement program - planned work, less cost per light. - Efficiency gains - Lower NPV to replace lights compared to option 1 Disadvantage: Higher NPV than option 3 This preferred option is not the lowest NPV, however, it is chosen as the high volume of lights is likely to provide opportunity for lower pricing in procurement and is also driven by customer demand for energy efficient lighting to reduce customer energy bills.	-$12,426,539
Option 3	Business as usual Advantages: - Lowest NPV to replace lights Disadvantages: - Inefficient use of field resources - Increase failure of ageing luminaires resulting in higher fault call out rates to replace	-$12,133,633

6.5.1 Quantitative Risk Analysis

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

6.5.2 Benchmarking

Benchmarking has not been completed for this project.

6.5.3 Expert findings

There are no expert findings to report on this project.

6.5.4 Assumptions

Capital inputs for the NPV calcualtion for options 1 and 2 assume a reduced unit rate for labour based on efficiency gains resulting from increased volumes as evidenced by the installed units rates from the HCC and GCC accelerated light replacement project.

Section 2 Approvals (Gated Investment Step 2)

Project Initiator:	Gerard Martindill	**Date:**	25/03/2015
Project Manager:		**Date:**	

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