OPTIONS EVALUATION REPORT (OER)

FY24-28 Fire Extinguisher Renewal

OER- N2546 revision 0.0

Ellipse project no(s):
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Project reason: Capability - Asset Replacement for end of life condition
Project category: Prescribed - Asset Renewal Strategies

Approvals

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Change history

Revision	Date	Amendment
0	12/10/2021	First Issue

Executive summary

All of TransGrid's buildings contain portable fire extinguishers which are available to staff for use to suppress small fires. It is a statutory requirement for fire extinguishers installed in buildings to be maintained such that they are fully operational in the event of fire.

There is a need to address the requirement to renew portable fire extinguishers in accordance with AS 1852 – Routine Service of Fire Protection Systems and Equipment (Standard). The Standard stipulates a five yearly cycle for the renewal of fire extinguishers. This effectively requires that all deployed portable fire extinguishers are addressed every Regulatory Control Period.

Moreover, portable fire extinguishers are a key health and safety risk control and must be adequately managed to meet our responsibilities under the WHS Act 2011 as a Person Conducting a Business or Undertaking (PCBU).

Either the replacement or refurbishment of portable fire extinguishers has been considered to address this need. However, feasibility studies undertaken have shown that the refurbishment option is technically infeasible. The assessment of the options considered to address the need appears in Table 1.

Table 1 - Evaluated options

Option	Description	Direct capital cost ($m)	Overheads ($m)	Total capital cost[1] ($m)	Weighted NPV (PV, $m)	Rank
Option A	Replace fire extinguishers	0.72	0.09	0.81	0.06	1
Option B	Refurbish fire extinguishers	Option is not technically feasible				

It is the recommendation that Option A – Replace fire extinguishers be scoped in detail.

The preferred option is Option A as it is meets the requirements of the need, and is the only technically and commercially feasible option that enables TransGrid to continue to meet statutory requirements as well as its obligations in work health and safety for personnel.

[1] Total capital cost is the sum of the direct capital cost and network and corporate overheads. Total capital cost is used in this OER for all analysis.

1. Need/opportunity

All of TransGrid's buildings contain portable fire extinguishers which are available to staff for use to suppress small fires. The National Construction Code (ex Building Code of Australia) 2019 stipulates that:

"*Fire extinguishers must be installed to the degree necessary to allow occupants to undertake initial attack on a fire appropriate to-*

a. *The function or use of the building; and*
b. *Any other fire safety systems installed in the building; and*
c. *The fire hazard*"

There is a need to address the requirement to renew portable fire extinguishers in accordance with AS 1852 – Routine Service of Fire Protection Systems and Equipment (Standard). The Standard stipulates a five yearly cycle for the renewal of fire extinguishers. This effectively requires that all deployed portable fire extinguishers are addressed every Regulatory Control Period. The current estimate of portable fire extinguishers requiring renewal between 2023/24 and 2027/28 is 1,360 across 170 sites (i.e. all portable fire extinguishers in TransGrid operational buildings).

Moreover, portable fire extinguishers are a key health and safety risk control and must be adequately managed to meet our responsibilities under the WHS Act 2011 as a Person Conducting a Business or Undertaking (PCBU). The key risks controlled through the use of fire extinguishers are both safety and operational related. Failure to effectively suppress a small fire can affect the health and safety of staff working on site, and allowing it to spread could result in impacts to operational components.

2. Related needs/opportunities

- Need N2482 – FY24-28 Fire Systems (Electronic) Renewal
- Need N2560 – FY24-28 Fire Systems (Mechanical) Renewal
- Need N2553 – FY24-28 Building Refurbishment

3. Options

3.1 Base case

The Base Case for this Need is to continue with TransGrid's business as usual operations and maintenance (O&M) for fire extinguishers. This involves replacing the fire extinguishers under corrective maintenance when they are identified as due for replacement as part of routine inspections. This approach does not address the following issues:

- Potential non-compliances due to reliance on inspections and corrective maintenance to manage expired extinguishers.
- Delivery inefficiencies due to replacing the fire extinguishers at each site in multiple visits (as a result of varying ages of equipment across the site)

3.2 Options evaluated

Option A — Replace fire extinguishers [NOSA N2546, OFS N2546A]

This option involves like-for-like replacement of fire extinguishers (including new signage and support brackets) across all Network sites.

Refer to Appendix B for forecasted replacement quantities.

This option will deliver benefits by achieving the following:

- Reducing delivery costs by minimising the amount of site visits required to replace all the fire extinguishers on site.
- Minimising risk of non-compliance by ensuring that all fire extinguishers are replaced in a planned and coordinated program rather than through corrective maintenance.

It is anticipated that the works will commence in 2024/25 and completed in 2027/28.

Option B — Refurbish fire extinguishers [NOSA N2546, OFS N2546B]

This option involves refurbishment of fire extinguishers across all Network sites.

Note: The feasibility study for this option has determined that refurbishment of fire extinguishers is not technically feasible.

3.3 Options considered and not progressed

Table 2 - Option considered but not progressed

Option	Reason for not progressing
Asset Retirement	This can only be achieved through retirement of fire extinguishers at all identified sites, which is not feasible as it will not comply with statutory requirements.

4. Evaluation

4.1 Commercial evaluation methodology

The economic assessment undertaken for this project includes three scenarios that reflect a central set assumptions based on current information that is most likely to eventuate (central scenario), a set of assumptions that give rise to a lower bound for net benefits (lower bound scenario), and a set of assumptions that give rise to an upper bound on benefits (higher bound scenario).

Assumptions for each scenario are set out in the table below.

Table 3 - Scenarios

Parameter	Central scenario	Lower bound scenario	Higher bound scenario
Discount rate	4.8%	7.37%	2.23%
Capital cost	100%	125%	75%
Operating expenditure benefit	100%	75%	125%
Risk costs benefit	100%	75%	125%
Other benefit	100%	75%	125%
Scenario weighting	**50%**	**25%**	**25%**

Parameters used in this commercial evaluation:

Table 4 - Parameters used in commercial evaluation

Parameter	Parameter Description	Value used for this evaluation
Discount year	Year that dollar values are discounted to	2020/21
Base year	The year that dollar value outputs are expressed in real terms	2020/21 dollars
Period of analysis	Number of years included in economic analysis with remaining capital value included as terminal value at the end of the analysis period.	5 years
Safety disproportionality	Multiplier of the safety risk cost included in NPV analysis to demonstrate implementation of obligation to reduce safety to ALARP.	Refer to section 4.3 for details.

The capex figures in this OER do not include any real cost escalation.

4.2 Commercial evaluation results

The commercial evaluation of the technically and commercially feasible options is set out in Table 5. Details appear in Appendix A.

Table 5 - Commercial evaluation (PV, $ million)

Option	Capital Cost PV	Central scenario NPV	Lower bound scenario NPV	Higher bound scenario NPV	Weighted NPV	Ranking
Option A	0.64	0.04	-0.27	0.44	0.06	1
Option B	Option is not technically feasible					

Note: The feasibility study for Option B has determined that refurbishment of fire extinguishers is not technically feasible. Hence Option B, has not been commercially evaluated.

The evaluation focuses on the cost benefits achieved by replacing the fire extinguishers efficiently on a whole site basis and in a coordinated manner, rather than replacing the assets individually as required on separate occasions. The risk of non-compliance with applicable standards and safety risk to personnel has not been quantified. However, addressing this Need would deliver additional benefits by minimising these unquantified risks.

4.3 ALARP evaluation

TransGrid manages and mitigates bushfire and safety risk to ensure they are below risk tolerance levels or 'As Low As Reasonably Practicable' ('ALARP'), in accordance with the regulation obligations and TransGrid's business risk appetite. Although a network safety risk reduction is expected through addressing this need, the safety and bushfire risks have not been quantified. Hence, an ALARP evaluation has not been carried out in this case.

5. Optimal Timing

The test for optimal timing of the preferred option has been undertaken. The approach taken is to identify the optimal commissioning year for the preferred option where net benefits (including avoided costs and safety disproportionality tests) of the preferred option exceeds the annualised costs of the option. The commencement

year is determined based on the required project disbursement to the meet the commissioning year based on the OFS.

The results of optimal timing analysis is:

- Optimal commissioning year: 2027/28
- Commissioning year annual benefit: $0.18 million
- Annualised cost: $0.19 million

Based on the optimal timing, the project is expected to commence in the 2023/24-2027/28 Regulatory Period.

6. Recommendation

It is the recommendation that Option A – Renewal of Individual Assets be scoped in detail.

The total project cost is $0.81 million including an amount of $150,000 to progress the project from DG1 to DG2.

Appendix A – Option Summaries

Project Description	FY24-28 Fire Extinguisher Renewal		
Option Description	Option A - Replace Fire Extinguishers		
Project Summary			
Option Rank	*1*	Investment Assessment Period	*5*
Asset Life	*5*	NPV Year	2020/21
Economic Evaluation			
NPV @ Central Benefit Scenario (PV, $m)	0.03	Annualised CAPEX @ Central Benefit Scenario ($m)	Annualised Capex - Standard (Business Case) 0.19
NPV @ Lower Bound Scenario (PV, $m)	-0.27	Network Safety Risk Reduction ($m)	Network Safety Risk Reduction 0.00
NPV @ Higher Bound Scenario (PV, $m)	0.44	ALARP	ALARP Compliant? N/A
NPV Weighted (PV, $m)	0.06	Optimal Timing	Optimal timing (Business Case) 2023/24
Cost (Central Scenario)			
Total Capex ($m)	0.82	Cost Capex (PV,$m)	0.65
Terminal Value ($m)	0.00	Terminal Value (PV,$m)	0.00
Risk (Central Scenario)	**Pre**	**Post**	**Benefit**
Reliability (PV,$m)	Reliability Risk (Pre) 0.00	Reliability Risk (Post) 0.00	Pre – Post 0.00
Financial (PV,$m)	Financial Risk (Pre) 0.00	Financial Risk (Post) 0.00	Pre – Post 0.00
Operational/Compliance (PV,$m)	Operational Risk (Pre) 0.00	Operational Risk (Post) 0.00	Pre – Post 0.00
Safety (PV,$m)	Safety Risk (Pre) 0.00	Safety Risk (Post) 0.00	Pre – Post 0.00
Environmental (PV,$m)	Environmental Risk (Pre) 0.00	Environmental Risk (Post) 0.00	Pre – Post 0.00
Reputational ($m)	Reputational Risk (Pre) 0.00	Reputational Risk (Post) 0.00	Pre – Post 0.00
Total Risk (PV,$m)	Total Risk (Pre) 0.00	Total Risk (Post) 0.00	Pre – Post 0.00
OPEX Benefit (PV,$m)			OPEX Benefit 0.68
Other benefit (PV,$m)			Incremental Net Benefit 0.00
Total Benefit (PV,$m)			Business Case Total Benefit 0.68

Appendix B – Forecasted Replacement Quantities

The tables below summarise the forecasted fire extinguisher replacement quantities. Note that replacement costs and travel costs have been separated.

Table 6 – Forecast fire extinguisher replacement costs (excluding travel)

Fire Extinguisher Type	Unit Cost – Replacement	Total Forecast Quantity	Total Cost
Carbon Dioxide – 5kg	$385	1,086	$418,100
Powder (ie ABE) – 9kg	$280	213	$59,600
Water – 9L	$280	61	$17,000
Total replacement cost (excluding travel)			$494,800

Table 7 – Forecast travel cost

Site Category	Unit Cost – Location Allowance	Total Forecast Quantity	Total Cost
Metro	$150	32	$4,800
Inner Regional	$462	67	$30,900
Outer Regional	$620	67	$41,500
Remote and Very Remote	$1900	4	$7,600
Total travel cost			$84,800