

OPTIONS EVALUATION REPORT (OER)



Physical Security of Comms Equipment

OER- 000000001583 revision 1.0

Ellipse project no.: P0009382

TRIM file: [TRIM No]

Project reason: Capability - Improved Asset Management

Project category: Prescribed - Security/Compliance

Approvals

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Date submitted for approval	13 December 2016	

Change history

Revision	Date	Amendment
0	1 November 2016	Initial issue
1	13 December 2016	Update to format

1. Need/opportunity

TransGrid runs its infrastructure without the Need for a constant presence at all of its sites. Access is provided to staff and contractors to perform their duties at these sites.

Access into a substation or a radio repeater site provides access to data networks and associated equipment that are critical for managing TransGrid's operations. Interference with these systems, whether unintentional or malicious, could have widespread effects to TransGrid's Corporate Data or Operational Systems.

TransGrid can install locked doors on the cabinets housing this equipment to provide greater certainty of the security of this equipment.

2. Related Needs/opportunities

Nil.

3. Options

All dollar values in this document are expressed in un-escalated 2016/17 dollars.

Base Case

The Base Case for this Need is to do nothing. This approach does not address the reliability risk of a Service Failure caused by an inadvertent action due to unrestricted access to communications equipment. The risk cost associated with this is \$400k per annum.

Increasing maintenance is unlikely to reduce the likelihood of a hazardous event occurring due to an inadvertent action caused by unrestricted access.

Option A — Cabinet/Rack Locks [[OFR 1583A](#), [OFS 1583A](#)]

This option covers the installation of lockable doors on all cabinets and racks housing communications equipment or ancillary devices such as power supplies.

The expected total capital cost to implement this option is \$1.14m. This costing is estimated using TransGrid's "Success" estimating system.

The residual risk associated with this option upon completion of the project amounts to \$40k per annum (base case risk cost = \$400k). The risk reduction is realised through the reduction in the probability of an inadvertent or malicious action on the communications system due to unrestricted access to communications equipment.

4. Evaluation

Evaluation of the proposed options has been completed using the ALARP (As Low as Reasonably Practicable) regulatory requirements and economic considerations. The results of this evaluation are outlined below.

4.1 Commercial evaluation

The result of commercial evaluation the technically feasible options is summarised in the Table 1.

Table 1 – Commercial evaluation (\$ million)

Option	Description	Total capex	Annual opex	Annual post project risk cost	Economic NPV @10%	Financial NPV @10%	Rank
Base Case	Do nothing	N/A	-	0.40	N/A	N/A	2
A	Cabinet/Rack Locks	1.14	-	0.04	0.78	(0.88)	1

The commercial evaluation is based on:

- > Economic life of the assets is assumed 10 years, hence this assessment period has been applied
- > Write-offs have not been estimated
- > Capital cost is not escalated and it does not include capitalised interest

Sensitivities on economic NPV for the option with changing discount rates are shown in Table 2.

Table 2 – Discount rate sensitivities (\$ million)

Option	Description	Economic NPV @13%	Economic NPV @6.75%
A	Cabinet/Rack Locks	6.24	15.0

4.2 SFAIRP/ALARP evaluation

Options to reduce the network safety risk as per the risk treatment hierarchy have been considered in other lifecycle stages of the asset, and it has been determined that no reasonably practicable options exist to reduce the risk further than those capital investment options listed in the Commercial Evaluation table.

Evaluation of the proposed options has been completed against the SFAIRP (So Far As Is Reasonably Practicable)/ALARP (As Low As Reasonably Practical) obligation, as required by the Electricity Supply (Safety and Network Management) Regulation 2014 and the Work Health and Safety Act 2011. The Key Hazardous Events and the disproportionality multipliers considered in the evaluation are as follows:

- > Unplanned outage of High Voltage (HV) equipment - 10% of the reliability risk (applicable to safety).

The results of this evaluation are summarised in the tables below.

Table 3 – Feasible options (\$ thousand)

Option	Description	CAPEX	Expected Life	Annualised CAPEX
Base	Do nothing	N/A	N/A	N/A
A	Cabinet/Rack Locks	1,140	10 years	114

Table 4 – Annual risk calculations (\$ thousand)

Option	Annual Residual Risk			Annual Risk Savings		
	Safety Risk	Reliability Risk	Bushfire Risk	Safety Risk	Reliability Risk	Bushfire Risk
Base	0	400	0	N/A	N/A	N/A

Option	Annual Residual Risk			Annual Risk Savings		
	Safety Risk	Reliability Risk	Bushfire Risk	Safety Risk	Reliability Risk	Bushfire Risk
A	0	40	0	0	360	0

Table 5 – Reasonably practicable test (\$ thousand)

Option	Network Safety Risk Reduction ¹	Annualised CAPEX	Reasonably practicable ² ?
A	36	114	No

Option A is not reasonably practicable.

4.3 Preferred option

The outcome of the SFAIRP/ALARP evaluation is that Option A is not reasonably practicable, and therefore not required to satisfy the organisation's SFAIRP/ALARP obligations.

The option to address the condition of the identified assets, Option A – Cabinet/Rack Locks is the preferred option based on the commercial evaluation.

This option has been selected due to its technical viability and reduction in financial risk. This option provides significant technical benefits and provides a positive Net Present Value (NPV).

Capital and operating expenditure

There is negligible difference in predicted ongoing operational expenditure between the option and Base Case.

Regulatory Investment Test

A Regulatory Investment Test for Transmission (RIT-T) is not required as this is an asset replacement project with no augmentation component.

5. Recommendation

It is the recommendation that Option A – Cabinet/Rack Locks be scoped in detail.

¹ The Network Safety Risk Reduction is calculated as 6 x Bushfire Risk Reduction + 3 x Safety Risk Reduction + 0.1 x Reliability Risk Reduction

² Reasonably practicable is defined as whether the annualised CAPEX is less than the Network Safety Risk Reduction

Attachment 1 – Commercial evaluation report

Project_Option Name

Option A - Cabinet/Rack Locks

1. Financial Evaluation (excludes VCR benefits)

NPV @ standard discount rate	10.00%	-\$0.88m	NPV / Capital (Ratio)	-0.77
NPV @ upper bound rate	13.00%	-\$0.82m	Pay Back Period (Yrs)	Not measurable
NPV @ lower bound rate (WACC)	6.75%	-\$0.95m	IRR%	Not measurable

2. Economic Evaluation (includes VCR benefits but excludes tax benefits from non-cash transactions, ENS penalty and overall tax cost)

NPV @ standard discount rate	10.00%	\$0.78m	NPV / Capital (Ratio)	0.69
NPV @ upper bound rate	13.00%	\$0.54m	Pay Back Period (Yrs)	3.17 Yrs
NPV @ lower bound rate (WACC)	6.75%	\$1.15m	IRR%	26.64%

Benefits

Risk cost	As Is	To Be	Benefit	VCR Benefit	\$0.36m
Systems (reliability)	\$0.40m	\$0.04m	\$0.36m	ENS Penalty	\$0.00m
Financial	\$0.00m	\$0.00m	\$0.00m	All other risk benefits	\$0.00m
Operational/compliance	\$0.00m	\$0.00m	\$0.00m	Total Risk benefits	\$0.36m
People (safety)	\$0.00m	\$0.00m	\$0.00m	Benefits in the financial NPV*	\$0.00m
Environment	\$0.00m	\$0.00m	\$0.00m	*excludes VCR benefits	
Reputation	\$0.00m	\$0.00m	\$0.00m	Benefits in the economic NPV**	\$0.36m
Total Risk benefits	\$0.40m	\$0.04m	\$0.36m	**excludes ENS penalty	
Cost savings and other benefits			\$0.00m		
Total Benefits			\$0.36m		

Other Financial Drivers

Incremental opex cost pa (no depreciation)	\$0.00m	Write-off cost	\$0.00m
Capital - initial \$m	-\$1.14m	Major Asset Life (Yrs)	10.00 Yrs
Residual Value - initial investment	\$0.00m	Re-investment capital	\$0.00m
Capitalisation period	3.00 Yrs	Start of the re-investment period	0.00 Yrs