

OPTIONS EVALUATION REPORT (OER)



Asbestos Paint on Towers in Various Loc

OER- 00000001164 revision 0.0

Ellipse project no(s):

TRIM file: [TRIM No]

Project reason: Capability - Improved Asset Management

Project category: Prescribed - Network-Other

Approvals

Author	Deeksha Sumanth	Asset Engineer
Endorsed	Charles Kurniawan	Transmission Lines and Cables Asset Manager
	Edward Luk	Asset Work Programme Strategy Manager
	Debashis Dutta	Asset Analytics and Insights Manager
Approved	Andrew McAlpine	Acting/ Head of Asset Management
Date submitted for approval	1 November 2021	

Change history

Revision	Date	Amendment
0	1 st November 2021	Initial Issue

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

Executive summary

Several TransGrid transmission line structures have coatings containing asbestos. TransGrid has a duty of care to inspect, register, monitor and control asbestos in the workplace under Work Health and Safety rules. This extends to transmission line assets in TransGrid's electricity network.

TransGrid has commissioned GHD Pty Ltd (GHD) to assess paint coatings on transmission tower legs suspected of containing asbestos per TransGrid's Asbestos Management Plan. An inspection of structures has been undertaken to determine the paint condition across all towers, ranging from good to poor condition.

The third stage of the asbestos remediation program conducted in 2019 involved testing the remaining transmission line structures in the network which have not yet been tested. Those structures suspected of containing asbestos paint based on past inspections and other anecdotal evidence would be prioritised for identification and corrective works. The current stage of testing is being finalised with findings to be recorded in TransGrid's Asbestos Register.

TransGrid's Asbestos Register classifies the safety risk from asbestos affected structures into the categories of High, Medium, Low and Negligible. Given the assessments and advice provided by the asbestos subject matter experts, TransGrid will remediate structures containing asbestos as per the priority matrix highlighted in Table 1. This is understood to be in line with the asbestos health and safety legislative requirements, as set out by Safe Work NSW.

Table 1 Priority Matrix

Risk Rating	Risk Category	Remediation Priority
0-250	Low	Maintain in good condition or greater than 5 years
250-375	Medium	3-5 years
375-500	High	1-3 years
500-600	Very High	As soon as reasonably practicable (Less than 1 year)

TransGrid previously identified, recorded and removed asbestos in affected structures classified as very high risk and high risk over the 2019-2023 period. This Need addresses the remaining asbestos affected structures classified as medium risk and low risk. Structures classified with a risk rating of zero are excluded from this program as asbestos paint has not been detected on these towers.

TransGrid has multiple regulatory safety obligations that relate to the management of asbestos containing material. This need will manage and control the asbestos that TransGrid's workforce and the general public is exposed to for the remaining life of the transmission line structure.

The main driver for the need to remediate these issues is to manage network safety risk levels to 'As Low As Reasonably Practicable' under TransGrid's regulatory obligations and business risk appetite. Under the Electricity Supply (Safety and Network Management) Regulation 2014 Section 5, 'A network operator must take all reasonable steps to ensure the design, construction, commissioning, operation and decommissioning of its network (or any part of its network) are safe'. It follows that there is a compliance need for this project.

The assessment of the options considered to address the need/opportunity appears in Table 2

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

Table 2 Evaluated options

Option	Description	Direct capital cost (\$m)	Network and corporate overheads (\$m)	Total capital cost ¹ (\$m)	Weighted NPV (PV, \$m)	Rank
Option A	In the 2024-2028 regulatory period, remediate all asbestos affected structures which fall under the medium risk category, and structures that fall on the border of medium risk and low risk prioritisation category. Inspect all remaining structures identified as low risk. In the 2029-2033 regulatory period remediate the remaining structures prioritised as low risk.	30.82	1.21	32.04	119.74	2
Option B	Remediate all asbestos affected structures under medium risk and low risk prioritisation categories in 2024-2028.	28.43	3.48	31.91	120.74	1

Option B is the preferred option because it is technically and commercially feasible with the highest positive Net Present Value (NPV). Option B also meets the ALARP requirement. Option B will ensure:

- > Worker safety risk is managed to ALARP as required to satisfy work health and safety, and network safety regulatory obligations; and
- > The safety of TransGrid’s workforce is protected.

It is recommended that Option B be scoped in detail and progressed from DG1² to DG2.

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.

² DG stands for decision gate and refers to internal TransGrid processes.

1. Need/opportunity

Several TransGrid transmission line structures have coatings containing asbestos with inspections identifying a varied paint condition across all towers, ranging from good to poor condition.

TransGrid has duty of care to inspect, register, monitor and control asbestos in the workplace in line with work health and safety regulations, a variety of network codes and industry standards. This responsibility extends to the transmission line assets which operate as a part of TransGrid’s electricity network. It follows that there is a compliance need for this project.

TransGrid has commissioned an asbestos subject matter expert, GHD Pty Ltd (GHD), to undertake an assessment of paint coatings on transmission tower legs suspected of containing asbestos per the TransGrid’s Asbestos Management Plan.

Testing has been undertaken on paint samples on a number of suspected transmission lines in three stages:

- > Stage 1: Conducted early to mid-2016, testing covered Lines 8, 11, 16, 23, 27, 28 and 959/92Z, and sections of Lines 76/77 and 39.
- > Stage 2: Conducted in late 2016 to mid-2017, testing primarily covered sample towers on the large majority of lines constructed prior to 1980, based on historical and anecdotal evidence of the asbestos paint use.
- > Stage 3: Conducted in 2019 to mid 2021, testing covers the remaining transmission line towers on the network that have not been tested, with those suspected of containing asbestos paint based on inspection information and other anecdotal evidence prioritised. This stage of testing is being finalised.

Paint samples were taken at ground level below the climbing deterrent installation and were limited to assessing paint coatings of the tower legs. The samples were tested for asbestos where a proportion of the paint samples analysed were subsequently found to contain asbestos.

All required information dictated in TransGrid’s Asbestos Management Plan is recorded in TransGrid’s Asbestos Register. GHD has developed a remediation priority matrix and calculated the risk score for each affected structure. The score is a weighted sum of risk ratings given to material risk based on the condition of the paint and area covered, and the location and accessibility of the relevant structures. The remediation priority matrix is shown in Table 3 below.

Table 3 Remediation Priority Matrix

Risk Rating	Risk Category	Remediation Priority
0-250	Low	Maintain in good condition or greater than 5 years
250-375	Medium	3-5 years
375-500	High	1-3 years
500-600	Very High	As soon as reasonably practicable (Less than 1 year)

TransGrid identified, removed and recorded the asbestos affected structures classified as very high risk and high risk in the 2019-2023 period. This need addresses the remaining asbestos affected structures classified as medium and low.

Based on the advice of GHD, the asbestos subject matter expert, TransGrid proposes to undertake the following to address and manage the asbestos paint issue:

- > The very high and high risk category towers are to have the asbestos containing paint removed such that the condition of the asbestos containing material is improved within one to three years of being identified.

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

- > The medium risk towers are to have the asbestos containing paint removed such that the condition of the asbestos containing material is improved within three to five years of being identified, or have their accessibility reduced. TransGrid does not typically consider access reduction a feasible option, as this would prevent routine maintenance activities and other maintenance activities on the structure and easement. The expected required by dates of these structures range from 2023 to 2025.
- > The low risk towers are to have the asbestos containing paint removed such that the condition of the asbestos containing material is improved within five years of being identified or reassessed for condition with an associated review of its risk rating and risk category. Structures with a risk score of 250 are identified as low, when they are on the border of the two risk categories – Medium and Low. Consequently, structures with risk score of 250 will be prioritised first in the low category. The expected remediation dates for these structures are from 2025 onwards. This category does not include structures that have a risk rating of 0 as these structures do not contain asbestos paint.
- > No further action is required on negligible risk towers as there is no asbestos paint identified.

The prioritisation matrix outlined above is understood to satisfy current asbestos health and safety legislative requirements as set out by Safe Work NSW.

The number of structures classified as Medium and Low risk are summarised in Table 4 below. Detail of lines can be found in Appendix C.

Table 4 Remediation Priority Matrix

Risk category	No of Structures
Medium Category	1072
Low Category	532

TransGrid has multiple regulatory safety obligations that relate to the management of asbestos containing material. Primarily, TransGrid has the “primary duty of care” and “must eliminate risks arising from managing and controlling asbestos, or if that is not reasonably practicable, minimise the risks so far as is reasonably practicable”. This need will manage and control the asbestos that TransGrid’s workforce and the general public is exposed to for the remaining life of the transmission line structure.

A list of all regulatory safety obligations is stated in Table 5.

Table 5 List of regulatory safety obligations

Identified need	Regulatory Instruments
Regulatory compliance	<p>Network safety - Obligation for network operators to ensure safety of TransGrid workforce under:</p> <ul style="list-style-type: none"> > NSW Work Health Safety and Regulations 2017 > Safe Work Australia Code of Practice How to Manage and Control Asbestos in the Workplace 2020 > Electricity Supply (Safety and Network Management) Regulation 2014 (NSW) > Utilities (Technical Regulation) (Electricity Transmission Supply Code) Approval 2016 (No 1) (ACT) > Australian Standard AS5577-2013: Electricity Network Safety Management Systems <p>NSW Work Health Safety and Regulations 2017</p> <p>35 Managing risks to health and safety</p> <p>A duty holder, in managing risks to health and safety, must—</p> <ul style="list-style-type: none"> (a) eliminate risks to health and safety so far as is reasonably practicable, and (b) if it is not reasonably practicable to eliminate risks to health and safety—minimise those risks so far as is reasonably practicable.

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

Identified need	Regulatory Instruments
	<p>Safe Work Australia Code of Practice How to Manage and Control Asbestos in the Workplace 2020</p> <p>Section 1.2: Who has health and safety duties in relation to managing and controlling asbestos or ACM?</p> <p>A PCBU must eliminate risks arising from managing and controlling asbestos, or if that is not reasonably practicable, minimise the risks so far as is reasonably practicable.</p> <p>Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)</p> <p>Section 5: 'A network operator must take all reasonable steps to ensure that the design, construction, commissioning, operation and decommissioning of its network (or any part of its network) is safe.</p> <p>Utilities (Technical Regulation) (Electricity Transmission Supply Code) Approval 2016 (No 1) (ACT)</p> <p>2.2 (3): Ensure the safe management of the electricity transmission network to avoid injury to any person or damage to property and the environment.</p> <p>Australian Standard AS5577-2013: Electricity Network Safety Management Systems</p> <p>1.2 (e) Hazards associated with the design, construction , commissioning, operation, maintenance and decommissioning of electrical networks are identified, recorded, assessed and managed by eliminating safety risks so far as is reasonably practicable, and if it is not reasonably practicable to do so, by reducing those risks to as low as reasonably practicable.</p>

2. Related needs/opportunities

The relevant needs that contain structures that overlap with the scope of this need is provided in Table 6.

Table 6 Overlap with existing needs

Related Needs	Transmission Line	Overlap - Medium Structures	Overlap - Medium Legs	Overlap - Low Structures	Overlap - Low Legs
1600	11	5	12	12	16
1272	13	5	11	0	0
1353	16	17	40	26	42
2525	26/29	1	1	1	3
TOTAL		28	64	39	61

The cost to remediate the asbestos are included on the above need.

3. Options

3.1 Base case

The base case is to 'do nothing', that is not to remove asbestos on the affected structures. The probability of failure is determined as the probability that an asbestos paint material is dislodged or become air-borne once disturbed.

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

The base case is not acceptable in managing the worker safety risk to as low as reasonably practicable when an option is available to reduce the risk. TransGrid has a “very low” tolerance for safety risks. That is, TransGrid’s management is expected to establish the appropriate controls and take actions to reduce the likelihood of a negative outcome as much as reasonably practicable.

3.2 Options evaluated

Option A — Remediate all asbestos affected structures which fall under the medium risk prioritisation category in 2024-2028, and structures that fall on the border of medium and low risk prioritisation categories. Inspect all remaining structures identified as low risk. In 2029-2033, remediate the remaining structures prioritised as low risk. [\[NOSA N1164, OFS 1164A\]](#)

The scope of this option is:

1. Removal of contaminated legs on all medium risk structures in 2024-2028 regulatory period (1072 structures).
2. Removal of contaminated legs on structures on the borderline of medium risk and low risk categories in 2024-2028 regulatory period (43 structures).
3. Inspection on contaminated legs on remaining low risk structures in 2024-2028 regulatory period (489 structures).
4. Removal of contaminated legs on remaining low risk structures in 2029-2032 regulatory period (489 structures).

Detail of scope can be found in Appendix C.

Total capital cost is \$32.04 million ± 25% (\$2020-21). Table 7 illustrates the timing and costs of delivering Option A.

Table 7 Option A – Timing and Costs (\$m)

2024-2028 Regulatory Period	2029-2033 Regulatory Period	Total
21.77	10.27	32.04

Option B — Remediate all asbestos affected structures in medium risk and low risk prioritisation categories in 2024-2028. [\[NOSA N1164, OFS 1164B\]](#).

The scope of this option is:

1. Removal of contaminated legs on all medium risk structures in 2024-2028 regulatory period (1072 structures).
2. Removal of contaminated legs on all low risk structures in 2024-2028 regulatory period (532 structures).

Total capital cost is \$31.91 million ± 25% (\$2020-21). Detail of scope can be found in Appendix C.

3.3 Options considered and not progressed

An alternate option is to restrict access to general public by installing a fence round the towers instead of removing the paint. This option is not feasible as this does not eliminate the risk to TransGrid staff, restricts access required for maintenance works on the towers, and creates other safety risk to members of the public. As a result, there are no other technically feasible options considered.

4. Evaluation

4.1 Commercial evaluation methodology

The economic assessment undertaken for this project includes three scenarios that reflect:

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

- > A central set of 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 8 Scenarios

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

Parameters used in this commercial evaluation.

Table 9 Parameters used in the NPV evaluation

Parameter	Parameter Description	Value used for this evaluation
Discount year	The 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	The number of years included in economic analysis with remaining capital value included as terminal value at the end of the analysis period.	8 years
Life of asset	Estimated life of asbestos paint on the structure	8 years ³
ALARP disproportionality (repex only)	The multiplier of the environmental and safety related risk cost included in NPV analysis to demonstrate implementation of the obligation to reduce 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 feasible options is set out in Table 10. Details provided in Appendix A and Appendix B.

³ 8 years is taken as the average of manufacturer minimum (5 years) and maximum (10 years) years of warranty for paint on structures.

Table 10 Commercial evaluation (PV, \$ million)

Option	Capital Cost PV	Central scenario NPV	Lower bound scenario NPV	Higher bound scenario NPV	Weighted NPV	Ranking
Option A	25.1	112.7	53.7	199.8	119.7 ⁴	2
Option B	25.3	113.7	54.0	201.6	120.7 ⁴	1

4.3 ALARP evaluation (REPEX Only)

TransGrid manages and mitigates bushfire and safety risks to ensure they are below risk tolerance levels or 'As Low As Reasonably Practicable' ('ALARP'), per the regulatory obligations and TransGrid's business risk appetite. Under the Electricity Supply (Safety and Network Management) Regulation 2014 Section 5 'A network operator must take all reasonable steps to ensure the design, construction, commissioning, operation and decommissioning of its network (or any part of its network) are safe.' TransGrid maintains an Electricity Network Safety Management System (ENSMS) to meet this obligation.⁵

In its Network Risk Assessment Methodology, under the ALARP test with the application of a gross disproportionate factor⁶, the weighted benefits are expected to exceed the cost. It should also be noted that AS 5577 requires that the option that provides safety risk reduction benefit should be progressed irrespective of cost until an acceptable level of residual risk is achieved. TransGrid's analysis concludes that the costs are less than the weighted benefits from mitigating bushfire and safety risks. The proposed investment will enable TransGrid to continue managing and operating this part of the network to a safety and risk mitigation level of ALARP.

Evaluation of the above options has been completed in accordance with As Low As Reasonably Practicable (ALARP) obligations. The Network Safety Risk Reduction is calculated as 6 x Bushfire Risk Reduction + 6 x Safety Risk Reduction + 0.1 x Reliability Risk Reduction.

Results of the ALARP evaluation are set out in Table 11.

Table 11 Reasonably practicable test (\$ million)

Option	Network Safety Risk Reduction	Annualised Capex	Reasonably Practicable? ⁷
A	21.5	4.92	Yes
B	21.5	4.90	Yes

The result of the ALARP evaluation is that Option A and B meet the ALARP.

4.4 Preferred option

⁴ Figures may not add due to rounding.

⁵ TransGrid's ENSMS follows the International Organization for Standardization's ISO31007 risk management framework which requires following hierarchy of hazard mitigation approach

⁶ In accordance with the framework for applying the ALARP principle, a disproportionality factor of 6 has been applied to risk cost figures. The values of the disproportionality factors were determined through a review of practises and legal interpretations across multiple industries, with particular reference to the works of the UK Health and Safety Executive. The methodology used to determine the disproportionality factors in this document is in line with the principles and examples presented in the AER Replacement Planning Guidelines and is consistent with TransGrid's Revised Revenue Proposal 2023/24- 2027/28.

⁷ Reasonably practicable is defined as whether the annualised CAPEX is less than the Network Safety Risk Reduction.

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

The preferred option is Option B, as it has the highest weighted NPV result of all the technically and commercially feasible options considered as part of this need. Option B also meets the ALARP threshold.

Capital and Operating Expenditure

The required capital expenditure is \$31.91 million (\$2020-21).

Regulatory Investment Test

The program and estimate allows for the appropriate regulatory approvals as required.

5. Optimal Timing

As per the remediation priority matrix, the required by date to address the medium and low priority asbestos ranges from 2023 to 2025. This project is expected to be completed in the 2024-2028 regulatory period.

6. Recommendation

TransGrid has a duty of care to inspect, register, monitor and control asbestos on transmission line assets in TransGrid's electricity network under Work Health and Safety rules. This need will manage and control the asbestos that TransGrid's workforce and the general public is exposed to for the remaining life of the transmission line structure.

Option B - Remediate all asbestos affected structures in medium risk and low risk prioritisation categories in 2024-2028 Regulatory Period, is selected as it ensures the following are satisfied:

- > Worker and public safety risk is managed to ALARP as required to satisfy work health safety and network safety regulatory obligations.
- > Demonstrates due diligence in ensuring the safety of TransGrid's workforce is protected.

It is recommended that Option B be scoped in detail, so that it can progress from DG1 to DG2. The total project cost is \$31.91 million including \$0.1 million to progress the project from DG1 to DG2.

The Asbestos Register to be reviewed and updated with accurate information during the project to ensure all Medium and Low asbestos affected structures are remediated.

Appendix A - Option A Summary⁴

Project Description	Transmission Line Asbestos Paint		
Option Description	Option A - Remediate all asbestos affected structures which fall under the Medium prioritisation category, and structures that fall on the border of Medium and Low prioritisation category. Inspect all remaining structures identified as Low.		
Project Summary			
Option Rank	2	Investment Assessment Period	8
Asset Life	8	NPV Year	2021
Economic Evaluation			
NPV @ Central Benefit Scenario (PV, \$m)	112.73	Annualised CAPEX @ Central Benefit Scenario (\$m)	Annualised Capex - Standard (Business Case) 4.92
NPV @ Lower Bound Scenario (PV, \$m)	53.73	Network Safety Risk Reduction (\$m)	Network Safety Risk Reduction 21.5
NPV @ Higher Bound Scenario (PV, \$m)	199.78	ALARP	ALARP Compliant? Yes
NPV Weighted (PV, \$m)	119.74	Optimal Timing	Optimal timing (Business Case) 2024
Cost (Central Scenario)			
Total Capex (\$m)	32.04	Cost Capex (PV,\$m)	25.09
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) 9.10	Financial Risk (Post) 4.24	Pre – Post 4.86
Operational/Compliance (PV,\$m)	Operational Risk (Pre) 0.00	Operational Risk (Post) 0.00	Pre – Post 0.00
Safety (PV,\$m)	Safety Risk (Pre) 248.13	Safety Risk (Post) 115.61	Pre – Post 132.52
Environmental (PV,\$m)	Environmental Risk (Pre) 0.00	Environmental Risk (Post) 0.00	Pre – Post 0.00
Reputational (\$m)	Reputational Risk (Pre) 0.83	Reputational Risk (Post) 0.39	Pre – Post 0.44
Total Risk (PV,\$m)	Total Risk (Pre) 258.05	Total Risk (Post) 120.23	Pre – Post 137.82
OPEX Benefit (PV,\$m)			OPEX Benefit 0.00
Other benefit (PV,\$m)			Incremental Net Benefit 0.00
Total Benefit (PV,\$m)			Business Case Total Benefit 137.82

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

Appendix B – Option B Summary⁴

Project Description		Transmission Line Asbestos Paint	
Option Description		Option B - Remediate all asbestos affected structures which fall under the Medium and Low prioritisation category.	
Project Summary			
Option Rank	1	Investment Assessment Period	8
Asset Life	8	NPV Year	2021
Economic Evaluation			
NPV @ Central Benefit Scenario (PV, \$m)	113.66	Annualised CAPEX @ Central Benefit Scenario (\$m)	Annualised Capex - Standard (Business Case) 4.90
NPV @ Lower Bound Scenario (PV, \$m)	54.00	Network Safety Risk Reduction (\$m)	Network Safety Risk Reduction 21.5
NPV @ Higher Bound Scenario (PV, \$m)	201.64	ALARP	ALARP Compliant? Yes
NPV Weighted (PV, \$m)	120.74	Optimal Timing	Optimal timing (Business Case) 2025
Cost (Central Scenario)			
Total Capex (\$m)	31.91	Cost Capex (PV,\$m)	25.30
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) 9.10	Financial Risk (Post) 4.20	Pre – Post 4.90
Operational/Compliance (PV,\$m)	Operational Risk (Pre) 0.00	Operational Risk (Post) 0.00	Pre – Post 0.00
Safety (PV,\$m)	Safety Risk (Pre) 248.13	Safety Risk (Post) 114.51	Pre – Post 133.62
Environmental (PV,\$m)	Environmental Risk (Pre) 0.00	Environmental Risk (Post) 0.00	Pre – Post 0.00
Reputational (\$m)	Reputational Risk (Pre) 0.83	Reputational Risk (Post) 0.38	Pre – Post 0.45
Total Risk (PV,\$m)	Total Risk (Pre) 258.05	Total Risk (Post) 119.09	Pre – Post 138.96
OPEX Benefit (PV,\$m)			OPEX Benefit 0.00
Other benefit (PV,\$m)			Incremental Net Benefit 0.00
Total Benefit (PV,\$m)			Business Case Total Benefit 138.96

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

Appendix C Lines in scope

Line	Medium	Low	Grand Total
1	5		5
2	63		63
3	21		21
4	1		1
5	4		4
6	8	2	10
8	15	21	36
9	18	2	20
10	6		6
11	2		2
12		1	1
13	3		3
14	13	1	14
16	5	15	20
17	4		4
18	1		1
20	2		2
21	3		3
22	5		5
24	10		10
25	2		2
26	2		2
27	9	17	26
28	13	10	23
29	1		1

Line	Medium	Low	Grand Total
30	7	12	19
32	1		1
34	4		4
37	10	2	12
38	2		2
39	10	1	11
51	22		22
60	1		1
61	2		2
62	144	83	227
63	26		26
64		1	1
66	5		5
70	2	1	3
71	2	1	3
72	76	103	179
76	7		7
77	3		3
78	4		4
79	14		14
81	5	11	16
82	11		11
83	2		2
84	1		1
87	55	39	94

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.

Line	Medium	Low	Grand Total
88	49	6	55
89	73	75	148
92		1	1
93	5		5
94		1	1
959	27	2	29
995	1		1
999	6		6
0X1	5		5
10/16	1		1
12/76	32		32
13/14		7	7
13/78	29		29
1C/1F	2	12	14
2/9	1		1
25/26	14	1	15
25/92	17	16	33
25/93	3		3
250/27	5	2	7
26/29	2		2
26/92	1	1	2
31/32	4	1	5
33/34	1	1	2
3J	3		3
3W	2	1	3
70/71	12	2	14
72/949	22	10	32

Line	Medium	Low	Grand Total
76/77	50	32	82
76/78	34		34
82/95	1	1	2
85/8E	1		1
86/968	4	7	11
90/92	1	7	8
92/93	7	14	21
94/96	11	8	19
96/9W	1		1
97K/97L	2		2
99W	2		2
99X	3		3
M11	5		5
U1		1	1
X5/1	1		1
Grand Total	1072	532	1604

Warning: A printed copy of this document may not be the current version. Please refer to the Wire to verify the current version.