

NEED/OPPORTUNITY STATEMENT (NOS)



132kV TL Wood Pole Replacement

NOS- 000000001558 revision 5.0

Ellipse project description: P0009107

TRIM file: [TRIM No]

Project reason: Capability - Asset Replacement for end of life condition

Project category: Prescribed - Asset Renewal Strategies

Approvals

Author	Robert Alcaro	Asset Strategist
Endorsed	Steve Stavropoulos	Transmission Lines and Cables Asset Manager
Approved	Lance Wee	Manager/Asset Strategy
Date submitted for approval	28 November 2016	

Change history

Revision	Date	Amendment
0	15 July 2016	Initial issue
1	27 July 2016	Update to 2016/17 dollars
2	10 August 2016	Minor change
3	17 October 2016	Minor change
4	26 October 2016	Minor change
5	28 November	Update to format

1. Background

Several wood pole 132kV transmission lines have or will soon exceed their nominal service life. There are also wood pole transmission lines which have not reached end of life but are exhibiting high defect rates. Analysis into defects associated with wood pole decay has been performed on these transmission lines to identify the expected wood pole replacement works required to extend the life of the assets and ensure safe operation for the next 10 years.

2. Need/opportunity

A summary of the defect analysis on each of the 132kV wood pole lines is provided in Table 1. The yearly defect rate has been calculated using defect data from June 2011 to June 2016. The forecast number of poles for replacement represents the poles requiring replacement to extend the asset life by 10 years with the expectation that the defect rate remains constant over the 10 year period.

Table 1 - 132kV Wood Pole Transmission Lines Defect Issues

Transmission Line	Year Commissioned	Yearly Pole Defect Rate	Number of Poles for Replacement
94X	1963	0.90%	42
99J	1960	1.63%	62
948	1963	0.74%	24
966	1963	0.16%	20
993	1963	2.18%	108
995	1957	0.53%	4
9U3	1964	1.10%	72
976/2	1963	0.45%	16
97B	1969	2.67%	16
97A	1976	0.67%	2
99P	1963	0.58%	4
97L	1957	7.82%	20
97G/3	1960	0.33%	8
96L	1972	0.76%	74
96F	1974	2.57%	86
94K	1986	1.33%	140
99A	1971	0.94%	158
99D	1983	2.33%	110
Total			966

Given the defects logged against each of the transmission lines above, it is expected that the wood pole structures have further evidence of varying decay, including some which may be significant. The risk cost associated with the issues identified in Table 1 is \$3.03m per annum (refer Attachment 1).

The benefit of addressing the wood pole defect issues across the entire 132kV network is to continue providing the service at a lower risk of failure.

3. Related needs/opportunities

No related needs/opportunities have been identified.

4. Recommendation

It is recommended that options be considered to address the identified need/opportunity by 2023.

Attachment 1 - Risk costs summary

Summary of results is attached below. Refer to supporting document in PDGS for full risk assessment.

Current Option Assessment - Risk Summary

Project Name: 132kV Transmission Line Wood Pole Replacement

Option Name: 1558 - Base Case

Option Assessment Name: 1558 - Option 1 - Assessment 1

Rev Reset Period: Next (2018-23)



Major Component	No.	Minor Component	Sel. Hazardous Event	LoC x CoF (\$M)	Failure Mechanism	NoxLoC xCoF (\$M)	PoF (Yr 1)	Total Risk (\$M)	Risk (\$M) (Rel)	Risk (\$M) (Op)	Risk (\$M) (Fin)	Risk (\$M) (Peo)	Risk (\$M) (Env)	Risk (\$M) (Rep)
Structure	966	Wooden Poles	Conductor / Earth Wire / OPGW Drop (Structure)	\$1.10	Structural Failure	\$1,057.93	0.27%	\$2.86	\$0.00	\$0.00	\$0.08	\$0.63	\$2.14	\$0.01
Structure	966	Wooden Poles	Unplanned Outage - HV (Structure)	\$0.06	Structural Failure	\$59.20	0.27%	\$0.16	\$0.15	\$0.01	\$0.01	\$0.09	\$0.63	\$2.14
								\$3.03	\$0.15	\$0.15	\$0.09	\$0.63	\$2.14	\$0.01

Total VCR Risk: \$0.15 Total ENS Risk: \$0.00

Number of Components

The number of components used in the Risk costs summary model has been derived as follows:

- > Wood Pole Structures: The number of wood pole structures per year expected to be decayed requiring replacement in Table 1 (966 to extend asset life by 10 years).

Probability of Failure

As per the Risk costs summary model.

Consequence of Failure

As per the Risk costs summary model.