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Project description

SA Power Networks is in the process of establishing a new substation at Gawler East to supply a new residential development. SA Power Networks identified a solution which supplies its 11 kV distribution network directly from ElectraNet's 132 kV transmission network between Para and Roseworthy, as a potential alternative to a more expensive 66 kV sub-transmission network solution. RIT-D for this project will be carried out by SA Power Networks.

Project options

Base case	Business as usual with no capital expenditure.
Option 1	Construct a new 132/11kV Connection Point Zone Substation. ElectraNet owns transformer: T-off ElectraNet's Para – Roseworthy 132 kV transmission line and establish an 11 kV connection point. ElectraNet to purchase two 132/11 kV transformers; one to be installed at connection point and another to be kept as a spare.
Option 2	SAPN extends 66 kV network: Construct a new 66/11kV Zone Substation in the Gawler East region with 66kV line extension, new 11kV feeders into the development area and new 11kV feeder ties to the Evanston Zone Substation.
Option 3	Upgrade the existing 33kV line to 508ACSR from Templers to Gawler Belt Tee. Construct approximately 6km of new 33kV line from Gawler Belt Tee and construct a new 33/11kV zone substation in the Gawler East region, new 11kV feeders into the development area and new 11kV feeder ties to the Evanston Zone Substation.

Key modelling assumptions

Financial year runs from 1 July to 30 June.

Real 2018 \$ are used for all monetary values unless otherwise stated.

Inputs to the model

Parameter/Input	Description	Source
Discount rate	Real pre-tax discount rate	ElectraNet estimate
Current financial year	Year to start analysis	When the capital investment is due to occur for the project
Time horizon	Length of time under consideration	Total project life including useful life and if the project occurred in the next regulatory period
Capital costs	Amount of capital investment in real terms for each project option	Estimated capital costs in the estimate from project centre
Useful life	Length of time capital investments are expected to provide service	Useful life estimated from original economic justification on project centre
Maintenance	Annual amount of estimated maintenance in real terms	See Cals sheet
Unserviced Energy	Annual cost of unserved energy	See Cals sheet

R0 CBA Results

Sensitivities, results and rankings

Input Summary

Parameter selection for sensitivity analysis

Discount rate

Scenario parameters

	Units	Discount rate scenario		
		Low	Medium	High
Assumed scenario weighting	% weighting	33%	33%	33%
Discount rate	% real, pre-tax	4.50%	6.00%	8.50%
Capital cost	% of estimate	100%	100%	100%

Cost selection for sensitivity analysis

Routine Maintenance

Scenario cost inputs

	Units	Routine Maintenance scenario		
		Low	Medium	High
Maintenance Cost	% of estimate	100.0%	100.0%	100.0%
Unserviced Energy	% of estimate	100.0%	100.0%	100.0%

Benefit selection for sensitivity analysis

Reduced Constraints

Scenario benefit inputs

	Units	Reduced Constraints scenario		
		Low	Medium	High
Benefit 1	% of estimate	80.0%	80.0%	80.0%

Cost Benefit Analysis Results (Quantitative)

Output summary Net present value of benefits

NPV results

Option	Units	Low	Scenario Medium	High	Weighted NPV
Option 1	2018 \$	44,203,818	33,662,416	20,932,439	32,932,891
Option 2	2018 \$	41,976,919	31,384,691	18,642,218	30,667,943
Option 3	2018 \$	30,842,422	19,996,065	7,191,118	19,343,201

Output summary Ranking of options

Ranking of options

Option	Units	Low	Scenario Medium	High	Weighted ranking
Option 1	2018 \$	1	1	1	1
Option 2	2018 \$	2	2	2	2
Option 3	2018 \$	3	3	3	3