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## Project description

Condition assessment reports identified issues with the selected assets. Significant consequences of failure to personnel and network exist in the event of insulator failure, if it were not replaced. Primarily the consequences relate to network availability and safety, but also include: reputation, environment and financial. This project is required to refurbish insulator systems on selected lines to achieve a life extension of the overall asset. The project is to be completed in the 2018-23 regulatory period. The feeder identified for insulator replacement is F1829 SOUTH EAST - MOUNT GAMBIER 132kV Line - 40 structure.

## Project options

|                  |  |
|------------------|--|
| <b>Base case</b> | Business as usual with no capital expenditure. |
| <b>Option 1</b>  | Replacement in 2018-2023                       |
| <b>Option 2</b>  | Replacement in 2023-2028                       |

## 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 center  |
| Useful life            | Length of time capital investments are expected to provide service | Useful life estimated from original economic justification on project center                       |
| Routine maintenance    | Annual amount of estimated routine maintenance in real terms       | See Detailed Opex Assessment   |
| Corrective maintenance | Annual amount of estimated corrective maintenance in real terms    | See Detailed Opex Assessment   |
| Risk                   | Annual cost of risk if the unit is not replaced                    | See Detailed Risk Assessment   |

**10 Inputs**

User provided parameters and inputs to the model

**Inputs**

**General parameter inputs**

| Parameter                                  | Unit       | Value | Source                 | Sensitivities |        |       |
|--|------------|-------|------------------------|---------------|--------|-------|
|  |            |       |                        | Low           | Medium | High  |
| Inflation rate                             | Percentage | 2.00% | RBA                    | 1.50%         | 2.00%  | 3.00% |
| Discount rate (real, pre-tax): estimate    | Percentage | 6.00% | ElectraNet estimate    | 4.50%         | 6.00%  | 8.50% |
| Discount rate (real, pre-tax): lower bound | Percentage | 4.50% | ElectraNet estimate    |               |        |       |
| First year of analysis                     | Year       | 2018  | Current financial year |               |        |       |
| Base financial year for analysis           | Year       | 2018  | Base year              |               |        |       |
| Time horizon                               | Years      | 20    | ElectraNet             |               |        |       |

**Capital cost**

| Sensitivities | Comment                     |
|---------------|-----------------------------|
| Low           |                             |
| Medium        |                             |
| High          |                             |
| 70%           | Standard sensitivities used |
| 100%          |                             |
| 130%          |                             |

| Option   | Asset          | Amount    | Start year | End year | Commission year | Asset life |
|----------|----------------|-----------|------------|----------|-----------------|------------|
| Option 1 | Line Insulator | 1,816,876 | 2018       | 2022     | 2023            | 27         |
| Option 2 | Line Insulator | 1,816,876 | 2023       | 2027     | 2028            | 27         |

**Costs inputs**

| Cost type           | Cash/Non-cash | Low | Medium | High | Comment                     |
|---------------------|---------------|-----|--------|------|-----------------------------|
| Routine Maintenance | Cash          | 70% | 100%   | 130% | Standard sensitivities used |

| Financial year             | Units   | 2018   | 2019   | 2020   | 2021   | 2022   | 2023   | 2024   | 2025   | 2026   | 2027   | 2028   | 2029   | 2030   | 2031   | 2032   | 2033   | 2034   | 2035   | 2036   | 2037   |
|----------------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>Routine Maintenance</b> |         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Base case                  | 2018 \$ | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 |
| Option 1                   | 2018 \$ | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    |
| Option 2                   | 2018 \$ | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 64,067 | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    | 996    |

**Benefit inputs**

| Benefit type        | Cash/Non-cash | Low | Medium | High | Comment             |
|---------------------|---------------|-----|--------|------|---------------------|
| Risk Cost Reduction | Cash          | 50% | 80%    | 100% | Lower sensitivities |

| Financial year             | Units   | 2018 | 2019 | 2020 | 2021 | 2022 | 2023    | 2024    | 2025    | 2026    | 2027    | 2028    | 2029    | 2030    | 2031    | 2032    | 2033    | 2034    | 2035    | 2036    | 2037    |
|----------------------------|---------|------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>Risk Cost Reduction</b> |         |      |      |      |      |      |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Base case                  | 2018 \$ | 0    | 0    | 0    | 0    | 0    | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| Option 1                   | 2018 \$ | 0    | 0    | 0    | 0    | 0    | 452,635 | 464,581 | 476,790 | 489,236 | 501,896 | 514,754 | 527,795 | 541,007 | 554,380 | 567,904 | 581,571 | 595,374 | 609,307 | 623,364 | 637,540 |
| Option 2                   | 2018 \$ | 0    | 0    | 0    | 0    | 0    | 0       | 0       | 0       | 0       | 0       | 514,754 | 527,795 | 541,007 | 554,380 | 567,904 | 581,571 | 595,374 | 609,307 | 623,364 | 637,540 |

## R0 CBA Results

Sensitivities, results and rankings

### Input Summary

#### Parameter selection for sensitivity analysis

Capital cost

| Scenario parameters        |                 | Capital cost scenario |        |       |
|----------------------------|-----------------|-----------------------|--------|-------|
|                            | Units           | Low                   | Medium | High  |
| Assumed scenario weighting | % weighting     | 33%                   | 33%    | 33%   |
| Discount rate              | % real, pre-tax | 6.00%                 | 6.00%  | 6.00% |
| Capital cost               | % of estimate   | 70%                   | 100%   | 130%  |

#### Cost selection for sensitivity analysis

Routine Maintenance

| Scenario cost inputs |               | Routine Maintenance scenario |        |        |
|----------------------|---------------|------------------------------|--------|--------|
|                      | Units         | Low                          | Medium | High   |
| Routine Maintenance  | % of estimate | 70.0%                        | 100.0% | 130.0% |

#### Benefit selection for sensitivity analysis

Benefit 2

| Scenario benefit inputs |               | Benefit 2 scenario |        |       |
|-------------------------|---------------|--------------------|--------|-------|
|                         | Units         | Low                | Medium | High  |
| Risk Cost Reduction     | % of estimate | 80.0%              | 80.0%  | 80.0% |

### Cost Benefit Analysis Results (Quantitative)

#### Output summary Net present value of benefits

| NPV results |         | Scenario  |           |           | Weighted  |
|-------------|---------|-----------|-----------|-----------|-----------|
| Option      | Units   | Low       | Medium    | High      | NPV       |
| Option 1    | 2018 \$ | 2,642,480 | 2,381,355 | 2,120,229 | 2,381,355 |
| Option 2    | 2018 \$ | 1,590,578 | 1,422,704 | 1,254,831 | 1,422,704 |

#### Output summary Ranking of options

| Ranking of options |         | Scenario |        |      | Weighted |
|--------------------|---------|----------|--------|------|----------|
| Option             | Units   | Low      | Medium | High | ranking  |
| Option 1           | 2018 \$ | 1        | 1      | 1    | 1        |
| Option 2           | 2018 \$ | 2        | 2      | 2    | 2        |