Meeting Date	Location
26 October 2022	Hybrid – Powerlink Offices/Teams meeting

Attendees

Name	Organisation
Bev Hughson	Darach Energy Consulting Services
Chris Hazzard	St Vincent de Paul
Andrew Broadbent	CS Energy
Albert Tong	AER
Mark Grenning	Energy Users Association Australia
Nathaniel Dunnett	Powerlink
Jenny Harris	Powerlink
Gerard Reilly	Powerlink
David Gibbs	Powerlink
Lutfiye Manli (absent)	Powerlink
Roger Smith	Powerlink
Paul Reynolds	Powerlink
Paul Ascione	Powerlink
Jules Taylor	Powerlink

Meeting Minutes & Actions

Comments (C), questions (Q) and response (R)

Meeting commenced with overview of agenda.

Agenda items:

- Recap/background
- Case study assumptions
- Asset definition
- Definition of intervention scenarios
- Derivation of fixed cost/unit rates
- Results of modelling
- Observations/ preliminary outcomes
- Next steps and actions.

Recap/background

Current approach consists of refit work that is expected to achieve a life extension of 15 years* across an entire built section bundled in single up-front intervention.

- Combination of condition driven works and compliance driven works
- Adopts a hybrid risk/deterministic approach

Review concerned with considering whether there is an alternative approach to defining assets and/or bundling works that drives a materially better outcome for customers.

The working group was keen to consider the outcome (NPV and capex/opex trade-offs) of alternative asset definitions and bundling approaches.

- Disaggregate built section into components
- Unbundle works, such that works only undertaken in year that condition trigger expected.

**This is a 'typical' timeframe, based on a range of considerations such as work necessary to achieve the extended life and the condition/expected deterioration of other elements of the built section.*

Case study assumptions

- The Ross to Chalumbin refit project is representative of wider network (& extensive condition data available)
- The refit work is proposed to be undertaken from 2026 and extend the useful life of the asset for 15 years
- Costs that extend the useful life of an asset are capitalised
- Returns calculated over 30 years – based on current regulatory life for 'refit assets
- No allowance included for update of business systems and processes to implement change in asset definition
- Options compared based on the net present value (NPV)* of the total return – both capex and opex.

**Later in meeting it was decided that NPV should be amended to Net Present Cost which is more reflective of the circumstances.*

Q. You're extending the useful life of the aggregate asset by 15 years but your return calculation for that incremental expenditure is 30 years, does that mean there is 15 years of residual life at the end of the asset's life?

R. It's the difference between the financial accounts and the regulatory accounts. The regulatory accounts assume a standard asset life for the different asset classes, which sets revenues over that depreciation period. This is different to the actual technical life of the asset used in financial accounting to determine the actual depreciation, because you are required to depreciate an asset over its useful life. When determining the transmission line refit work, we will look at what the appropriate life extension is based on knowledge of future needs. There are several other things we look at to assess whether 15 years is an appropriate time. Such as condition of other elements of the built section and their expected residual life and localised impacts of climate zones.

In terms of the modelling, we chose 30 years to avoid any residual value arising from that, as this aligns with the standard asset life for the transmission line refit asset class.

C. They are separate issues. The standard lives is simply the timing of revenue recovery. At the end of the day, the technical lives should be what is driving investments. If these two lives are not too far out, it doesn't really matter too much.

Q. Is that 30 years for the total asset or for the part that you're refitting?

R. It's the value of works that you have done as refit although you've extended the life of the whole built section. The original cost of the built section will depreciate along its original path. The additional refit costs will depreciate over its own path, which in regulatory terms is 30 years. so, you're depreciating the additional spend you do, which is just on the select few towers, but you're extending the whole life of the asset.

We've had to simplify some of our assumptions for the modelling, for instance we've made no allowance for the updated business systems and processes for any change to our current process. Depending on what those changes are it will be a different impact. If we break down into multiple assets for each built section, there is a cost to systems and processes in order to enable this approach. How you forecast that really depends on the level of detail, and we haven't gone into that now. An example would be IT systems and training.

The options have been compared based on the Net Present Value (NPV) of the total return which includes the capex and opex. We have looked into the capex/opex trade-off in different definitions of built section and how that works in relation to the Ross - Chalumbin case study.

Q. How are benefits measured?

R. We've only reviewed the NPV of the revenues for the total return. Capex, opex and looking at the depreciation and return - all of that sort of thing.

C. It doesn't seem to be value measurement but the cost of different streams. It seems to be a Net Present Cost comparison rather than an NPV comparison.

R. That's technically true. The benefits would be based upon cost of unsupplied load if you didn't have that transmission line because something fails - it's an unrealistic measure and disproportionate to the cost of works. It would muddy the assessment, whereas if you were to look at the actual impact on charges of this approach compared to the alternative approach that is easier to see the impacts.

Asset Definition

Two alternative approaches considered for the definition of assets

- Current approach
    - Asset defined as an entire built section, i.e., all structures, conductors, insulators and overhead earth wire (OHEW) elements within a built section defined as a single asset.

- Alternative approaches to disaggregate asset definitions
    - Each asset type within a built section is one asset, i.e., structures, conductors, insulators and OHEW elements within a built section defined as a separate asset (4 assets in a built section)
    - Each individual asset component within a built section is one asset, i.e., every structure, conductor span, insulator string and OHEW span defined as a separate asset (around 3,000 assets in our case study).

C. This last point where you are disaggregating your assets to much larger numbers is where the cost to your systems and processes kicks in. Modelling one asset compared to four assets, there's incremental costs associated. To move to 3,000 assets there are likely to be significant costs involved.

Q. Which is the closest approach to the PTRM modelling?

R. I'll need to take that one away and we can report back to you.

C. They are separate issues. The RFM/PTRM is a revenue recovery tool, so it makes sense to group similar live assets together. While it might be true that NSPs have done certain things in the past and the AER might even approve them in the past, we should recognise that asset management practices have 'moved on' and improved from 10-20 years ago and there is an expectation for NSPs to align with the AER application note on asset replacement planning.

Definition of intervention scenarios

We've looked at the total number of elements in the built section for Ross - Chalumbin. We've then modelled how many of those individual elements reach a Health Index (HI) of eight in each of the years 2023 – 2040. The Health Index (HI) is the deterministic side of the approach - it doesn't prescribe what work you do, just that you need to go and have a look at the asset and do something. That might be dust off grease by cleaning the insulators.

Once we have broken down when each element is expected to reach HI8, we've looked at four different intervention scenarios based on that specific expected condition.

- Consider four intervention scenarios over 15-year period.
    - Scenario 1: single upfront bundled intervention
    - Scenario 2: two bundled interventions (observed structure condition)
    - Scenario 3: three bundled interventions (nominal 5 years)
    - Scenario 4: annual interventions based upon expected condition.

Q. What data do you rely on for any of the elements to make the decision we are going to do a bundle and replace all the elements. We won't look at each individual one on average they are all like that so it's efficient to go and replace them all?

R. In the case of Ross - Chalumbin, because of the high initial project value based on a sampling approach, we went and inspected every tower. So, the condition information is informed by an inspection of every tower. The figures in the table are derived from the number of units expected to reach HI eight in that year.

C. Whenever we do any refit project, we will do an inspection of all the towers - that is part of the normal scope so that you're not basing your actual investment commitment on assumed condition. For modelling, the tower is considered the driver of all other works.

C. This takes us back to the original guidelines by the AER in that the first thing we need to establish is that there is an enduring need for that line before we do an investment on it - if there is an enduring need for that line for a period then we look at the condition and what are the options for doing a reinvestment.

C. How much of what we are discussing today is going to be influenced by the government's policy around transmission going forward. Happy for that topic to be discussed at the next meeting.

C. Under each of scenarios 1-3: it equates to 150 towers included in scenario 1; 44 and 106 towers for the two respective interventions under scenario 2; and 21, 25 and 52 towers for the three respective interventions under scenario 3.

Derivation of fixed cost/unit rates

Estimated costs broken down and assessed

- Allocated between fixed costs (establishment/flag fall) and variable costs (unit rates)
- Allocated between components of asset (disaggregated assets)

Detailed cost components then collated to derive unit rates for model input.

Results of the modelling

This is basically using the four different scenario approaches and the Net Present Cost under each of them.

The annual interventions involved a significantly higher Net Present Cost compared to the other scenarios. What is driving that is the establishment costs associated with mobilising and demobilising people and equipment on such a regular basis. You're constantly moving this heavy machinery in and out and you also need to fund some sort of management of that work which all increases costs.

Interestingly going back to the single bundle scenario – because of the way the work is done there is no material difference in the approach to asset class definition because we've bundled all the work together in the first year. The fact that you're doing all the work up front and there is no variation in life expectancy over time you get the same Net Present Costs for all the single interventions. There is some difference in the two-bundled intervention and the Quinquennial which is five yearly interventions.

An important fact to consider is that we don't have all these other refit asset classes - so the question would be if you're refitting overhead earth wire, does that have a 30-year life in regulatory terms. For the purposes of this exercise we've adopted that 30-year life. Hence, the actual asset definitions don't drive any change in the outcomes - reason being the common refit life extension, the regulatory period 30 years across all those elements contributes to that outcome.

The other piece is that the capex/opex allocation is similar when you break it down into four assets versus three thousand assets. The smaller the asset is the more likely to capitalise so there's less opex over 30 years in respect of comparing refit projects, where our current approach is to bundle and capitalise the costs.

Q. So there was no real benefit in breaking it down to four asset types or breaking it down to 3,000.

R. Or a single bundle intervention. There are slight variations but no material difference between one bundle, three or five bundles.

C. I'm really surprised that there is no real difference between having four assets versus 3,000 assets are the same.

R. Well that's because the work being carried out is the same it's just the processes behind them back in the office that are changed.

Q. if you had to add the costs (to effect the process and systems changes) would you add 2% or 5%?

R. It would be difficult to quantify. Currently we have one person in finance that does the data across our network. If we were to move to say the 3000 assets approach, we would have to undertake a significant step change in the way we produce and manage that data.

Q. To what extent are supply chain issues going to influence the timetable? You have got a lot of work to do now in the single bundle intervention to 2026. Is there any benefit to spreading that out because of the supply chain issues in the next five years?

R. There are two sides to that coin - the one side is yes you would reduce the amount of work you need to do in the next five years, but you will still need to go back in five years to do work again. Whether resource wise that fits in with contractor availability or not we have not included that in the modelling. There may be another side to that.

C. That's not mutually exclusive, we could say that we are going to base it off the single bundled approach, but if we see a project management benefit to bundle the work into various parts then there is nothing to stop us doing that.

C. While the devil will be in the details, if I am to accept these numbers to be correct for now, we are still looking at a potentially lower capex upfront cost in the five-year period. This has at least one key benefit. It is that by deferring some of the non-urgent asset replacement/refurbishment further out, there is an opportunity to better review the condition of these assets closer to its intervention date. Flexibility/accuracy of investment has benefits.

C. We have also not factored in that deferment of work also has the potential to impact social license to operate. If you defer work, you need to access landowners' properties repeatedly over time which can create land access issues.

C. Another factor is the work itself which is the least attractive option for contractors. They prefer the clean and shiny new build options as opposed to refits. Consequently, the work and contract for the work needs to be structured in a way that is appealing for contractors to bid for the work otherwise refit work will be impossible to lock in.

C. While important and is a factor in portfolio planning, I am anxious that we are attempting to solve a resource problem at a project level rather than at a portfolio level.

C. I would like to go back to what was the original AER concern in terms of them applying their standard model to your situation which they said would affect lower costs. To come to a decision, we need to go back to the original question or issue. So, two things – one is about the external factors plus or minus around the original model and do we still come to grips with the AERs original concern which we have tried to understand as well – why is there a difference and is it a valid difference that the AERs comfortable with and that customers would be comfortable with.

Observations/preliminary outcomes

- There appears no material benefit to customers with the alternative options modelled
    - Positive NPC outcomes under two scenarios, but (unmodelled) cost to implement may reduce
    - Alternative bundling approaches will have additional (unmodelled) impacts upon resource and outage requirements
    - On a portfolio wide basis, there would be an increase in capex and a reduction in opex due to the accounting treatment of insulators (outside of refit projects)
- Assumed need for compliance works (climbing bolts, etc) on structure not requiring condition intervention under review – expected to reduce costs across portfolio of refit works.

C. I would like for us to include some details on the qualitative measures that have been considered and have not been considered. Also, can we define what is the definition of materiality is 5% or 10% for Powerlink to make a change in approach.

Actions from meeting

Action	Responsible	Timing
Teams Meeting discussion with Alberts input overview qualitative measures that have not been considered	Powerlink	November 2022
Cancel existing 8 December meeting	Powerlink	November 2022
Schedule January meeting and extend modelling to portfolio for discussion	Powerlink	November 2022

Finalise monthly calendar dates to June 2023.	Powerlink	November 2022
Report back to the working on which approach is closest to the PTRM modelling.	Powerlink	February 2023
Provide materiality definition	Powerlink	November 2022
Working Group inputs on key areas for the draft report	Powerlink	December 2022
Independent review	TBA	December 2022