2025-2030 Regulatory Proposal

Independent response to EMCa's "Review of Aspects of Proposed Expenditure" report

Ergon Energy

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Executive Summary

This report provides an independent assessment of the Energy Market Consulting Associates' (EMCa) review of Ergon Energy's Capex Proposal for the 2025-2030 regulatory period as published in their report[1]. The objective was to evaluate the validity, relevance, and fairness of EMCa's conclusions and provide recommendations and to support Ergon Energy in refining its revised proposal.

Aurecon's scope included an evaluation of EMCa's assertions regarding Ergon's proposed capital expenditure planning and governance framework as per the EMCa report through independent assessment and seeking further information from Ergon.

Following are our positional responses and conclusions against EMCa's assessment.

EMCa's position (paraphrased from their report):	Aurecon's position:
Poles Replacement Expenditure: EMCa believes Ergon overestimates the volume and risk of pole replacements, with insufficient justification for bundling consequential replacements like transformers and conductors.	Aurecon considers Ergon's pole replacement volumes approach defensible, informed by asset condition data and a structured, objective, analysis which ensures safe and efficient operation to meet its legislated requirements.
Grid Communications Augmentation: EMCa finds Ergon's grid communications and substation projects unjustified due to the lack of a strategic framework and insufficient consideration of competing options or optimal timing.	Ergon has an existing future grid roadmap to adapt its distribution network to meet future needs. Line of sight between the strategy and grid communications augex drivers needs to be improved.
Governance Framework: EMCa criticises Ergon's governance framework for leading to capex over-estimations and inconsistent forecasting, despite some alignment with Energy Queensland's strategic direction.	Ergon's existing governance process are well developed and applied in practice. There is an opportunity for these processes to be more consistently referenced in Ergon's revised proposal.
Cost and Benefit Assumptions: EMCa asserts Ergon's analysis favours preferred expenditure options, overstating benefits while failing to adequately explore non-network alternatives or provide evidence for safety risk assessments.	Aurecon concludes Ergon's options analysis considered multiple credible scenarios, including industry-standard alternatives, demonstrating no bias toward preferred expenditure. Safety benefits were based on established metrics and applied consistently across business cases.
Application of Counterfactuals: EMCa argues that Ergon's treatment of the counterfactual does not align with AER guidance, leading to unreliable net benefit assessments.	Ergon could model several credible options as counterfactuals and, in showing the relative outcomes, demonstrate that its preferred option remains the optimal choice regardless of the chosen baseline.
Portfolio Optimisation: EMCa claims Ergon fails to effectively optimise its replacement projects, with poor risk prioritisation, lack of optimal timing, and inefficiencies due to overlapping programs.	Ergon applies a portfolio optimisation and management process which considers cost, risk and performance to ensure minimum overlap and to prioritise work. Ergon is also in the process of maturing their approach future to align with industry best practices.
Use of Historical Data: EMCa criticises Ergon's reliance on historical replacement volumes and unit rates without sufficient justification for their application in future forecasts.	AER's own applied methods uses historical replacement volumes to calibrate their models and make top-down judgements on expenditure. Ergon can more clearly document how asset condition data is used in conjunction with real historical replacement volumes to attain their forecasts.

[1] Review of Aspects of Proposed Expenditure, Ergon Energy 2025/26 to 2029/30 Regulatory Proposal – EMCa for the AER (Aug 2024)

Provision of Information: EMCa highlights challenges in the review process due to Ergon's inadequate information provision, leading to assumptions being applied in the absence of clear data.	Ergon has effectively managed AER/EMCa's information requests during this RP submission, especially given the number of requests and tight timeframes for responses.
Consideration of Alternatives: EMCa notes insufficient analysis of lower cost alternatives, suggesting Ergon's forecast expenditure may not be prudent.	Ergon considers repair options in practice, however, did not include this in the preliminary proposal. Inclusion in the revised business cases would be appropriate and achievable.
Conductor Clearance Program: EMCa considers Ergon's reclassification of conductor clearance as augmentation expenditure inappropriate and unjustified, as peers typically classify it as replacement expenditure.	Ergon's classification of the conductor clearance program as augex algins with the NEL definition of augmentation and provides consistency between Ergon and Energex.

Recommendations:

Aurecon's identified opportunities to enhance Ergon's revised regulatory proposal include:

- **Pole Replacement**: Improve business case documentation linking drivers such as operating environment, extreme weather, legacy design practices etc to the increased replacement needs.
- **Grid Communication Augex**: Draw a clear connection between the Future Grid Roadmap[2] and the grid communication augex business cases.
- **Governance Framework**: Update investment strategy documents and consistently reference them in revised relevant business cases to better demonstrate alignment with AER's expectation for application of governance frameworks.
- **Cost and Benefit Assumptions**: Ergon should provide additional information on
  - Why options were considered or rejected.
  - The outcome of the options analysis (e.g. costs and benefits breakdown, NPV on all options, benefit-cost-ratios (BCR) for all options, etc).
  - Why BAU was or was not favoured, by demonstrating its net benefit or how an NPV of zero was derived.
- **Counterfactual Scenarios**: Compare preferred options to other credible alternate counterfactual scenarios.
- **Portfolio Optimisation**: Continue to implement tools such as Copperleaf. Improve communication of existing implementation of cross-portfolio optimisation to the AER in the revised submission.
- **Historical Forecasts**: Provide additional details on how future projections were derived from historical real replacement volumes. Additionally, Ergon should consider implementing risk-based forecasting methodology for future RP submissions to align with AER's expectations and industry best practices.
- **Information Provision**: Consider demonstrating their information tracking system to the AER. Ergon may also consider following up with AER/EMCa post response to ensure that all the expected information was provided.
- **Non-Replacement Alternatives**: Include considerations for non-replacement alternatives in the revised business cases.
- **Conductor Program Classification:** Provide additional documentation that justifies the reclassification of the expenditure to augex and demonstrates that it aligns with the NEL definition of augmentation.

[2] Our Future Grid Roadmap – EQL (Aug 2019)

Contents

1 Introduction

1.1 Purpose

The purpose of this report is to provide an independent assessment of the validity, relevance, and fairness of the Australian Energy Regulator (AER) consultant report titled "*Ergon Energy 2025/26 to 2029/30 Regulatory Proposal Review of Aspects of Proposed Expenditure"*, prepared by Energy Market Consulting Associates (EMCa) in August 2024, in response to Ergon Energy's 2025-2030 regulatory proposal.

Aurecon expects that this independent review will form a key part of Ergon Energy's revised regulatory proposal (RRP), which is scheduled for submission in December 2024.

1.2 Context

Ergon Energy submits a Regulatory Proposal (RP) to the Australian Energy Regulator (AER) every five years which proposes the amount of capital required to build, operate and maintain its electricity distribution network, and the revenue it intends to collect from customers through distribution charges. Ergon's next five-year regulatory control period (RCP) commences 1 July 2025 and ends on 30 June 2030. Ergon submitted its 2025-2030 Regulatory Proposal on 31st January 2024.

To support their draft determination, the AER engaged EMCa to undertake a review of both the 2025-2030 RP and the 2020-2025 ex post justification paper and provide economic advice of aspects of Ergon's proposed capital allowance, with primary focus on replacement (repex) and augmentation (augex) expenditure proposed for the next RCP and that incurred during the ex post period, as well as reviewing the governance, management and forecasting methods applied by Ergon relevant to their incurred and proposed expenditure.

The AER/EMCa report: *Ergon Energy 2025/26 to 2029/30 Regulatory Proposal Review of Aspects of Proposed Expenditure* was provided to Ergon September 2024. Information obtained and reviewed by EMCa throughout this period (up to 21st June 2024) includes Ergon's regulatory proposal submission and supporting documents, additional information specifically requested by EMCa and AER, and information obtained from workshops with Ergon throughout 2024.

1.3 Scope

Aurecon's scope was to provide an independent review of the appropriateness of EMCa's assertions, assumptions and statements. Primary items for review to effectively assess the appropriateness of EMCa's conclusions are:

- Review of key findings from EMCa's report "*Ergon Energy 2025/26 to 2029/30 Regulatory Proposal Review of Aspects of Proposed Expenditure"*
- Review of Ergon's various business cases submitted as part of the 2025-2030 regulatory proposal, including but not limited to items such as:
  - Poles Replacement Business Case
  - Distribution Transformer Replacements Business Case
  - Distribution Switches Replacements Business Case
  - Asset Management Plan by asset class
- Ergon's context, including items such as:
  - Asset management strategies, plans and practices
  - Additional work completed since draft regulatory proposal submission
  - Data analysis and forecasting
  - Governance and management practices

This report provides an objective viewpoint based on available facts, analysis, and information, while considering good industry practice. It also identifies opportunities for improvement for the revised proposal.

1.4 Objectives:

Aurecon's objectives for this report are to:

1. Summarise our interpretation of EMCa's identified issues with Ergon's approach ensuring that key concerns are presented fairly and clearly.
2. Evaluate the validity of criticisms towards Ergon's approach using the application of data, industry best practice and technical judgement, and in doing so identify presence of misconceptions.
3. Present well-supported counter arguments which where appropriate, defend the validity of Egon's approach.
4. Highlight the strengths of Ergon's approach while identifying opportunities for improvement while acknowledging areas where minor adjustments can enhance the effectiveness of Ergon's approach.
5. Support Ergon in making informed decisions by presenting a balanced analysis which provides defensive responses and potential concessions where appropriate.
6. Provide recommendations for Ergon to improve communication, adjust, or continue the current strategy.

The intention of this report is ultimately to be analytical and constructive while resolving major concerns in Ergon's preliminary proposal.

2 EMCa report summary

This section aims to summarise our interpretation of the primary issues with Ergons approach which were identified by EMCa. Our evaluation of the validity of EMCa conclusions follows in Section 3.

2.1 Poles replacement expenditure justification:

- EMCa believes Ergon's planned expenditure for poles replacement is higher than necessary based on historical performance and benchmarks with peers. The volume of required replacements and the risk is considered to be overestimated.
- Additionally, EMCa considers Ergon's consequential replacements (i.e. incidental transformer, crossarm, overhead conductor etc) bundled with pole replacements as lacking in sufficient evidence of need or economic justification.

2.2 Grid communications augex justification:

- EMCa concluded Ergon's augmentation expenditure for grid communications and substations projects were insufficiently justified. EMCa specifically mentioned the lack of an overarching strategy that provides guidance for specific technical issues which were driving the augmentation expenditure.
- EMCa's assessment of a sample of grid communications augex business cases also resulted in in concerns about lack of justification for some of the projects. EMCa's main concern relates to a general lack of competing options assessed in the reviewed business cases and a lack of optimal timing analysis. This led to EMCa to conclude it may be more prudent for Ergon to delay some of this augex to future RPs.

2.3 Governance framework application:

- EMCa concluded Ergon's governance framework does not reflect good industry practice and has led to systemic over-estimation of capex needs. Forecasting approaches were considered inconsistent and lacking in rigour.
- EMCa acknowledges that Ergon's governance process has evolved to align more with Energy Queensland's (EQ) strategic direction, however believe there is no strong evidence to suggest that the overall governance structure has significantly changed to support more efficient capital allocation decision making.

2.4 Cost and benefit assumption and option selection:

- EMCa concluded that Ergon's options analysis favoured its preferred expenditure option, leading to an overstatement of benefits versus costs and future replacement volumes (a continuation of historically elevated expenditure levels). Ergon did not sufficiently consider non-network alternatives or provide adequate evidence to support its assessments.
- Further, specific benefits associated with reduced safety risks were duplicated across different business cases, and concerns were raised about the extent of what were considered overstated benefits (avoided costs of serious injury) and the lack of supporting evidence for safety risk assessments.

2.5 Application of counterfactuals:

- EMCa consider the treatment of the counterfactual as inconsistent with AER guidance which emphasises a "business-as-usual" cost assessment that does not assume continued investment in asset replacement. Ergon's definition of the counterfactual was viewed as not representative of a level of replacement activity associated with this "business-as-usual" scenario.
- As described above in section 2.4, EMCa consider this approach as not supportive of an objective assessment of the net benefits associated with all options and questions the reliability of NPV outputs in confirming the need for proposed projects.

2.6 Portfolio optimisation practices:

- EMCa criticised Ergon as failing to appropriately optimise its portfolio of replacement projects effectively, and that Ergon's expenditure forecasts have not effectively optimised cost, risk and performance. Additionally, EMCa claimed Ergon's risk modelling was not leading to prioritisation or a reduction in risk for customers.
- EMCa had not found sufficient evidence to conclude that Ergon have considered the optimal timing for its asset replacement projects and programs, including the consistent bundling of works and consequential replacement activities. No consideration had been given to deferral options. Further, EMCa assert that Ergon have not sufficiently considered the inefficiencies with overlap between programs targeting similar benefits.

2.7 Use of historical data:

- EMCa has criticised Ergon's reliance on historical replacement volumes, as well as unit rates to inform future requirements. Ergon was considered to have not demonstrated past volumes and rates were justified into the future.

2.8 Provision of information:

- EMCa has claimed the review process was challenging due to lack of information or poor-quality information provided by Ergon. It was also claimed several requests for further information were made but ultimately assumptions had to be applied due to absence of clear data and insufficient documentation provided by Ergon.
- EMCa concluded that documentation was not sufficient to demonstrate that Ergon's capex decisions were prudent and efficient.

2.9 Consideration of non-replacement investment options

- EMCa considers there is insufficient analysis to justify that lower cost alternatives are not preferable, such that lower forecast expenditure would be prudent.

2.10 Conductor clearance program classification:

- EMCa considers Ergon's reclassification of conductor clearance from repex to augex is inappropriate as such expenditure is usually treated at repex by peers. The reclassification and associated increase in expenditure was considered not adequately justified.

3 Our Assessment of AER/EMCa Review Findings

This section expands on the issues raised in Section 2, and aims to evaluate the validity of criticisms towards Ergon's approach based on Aurecon's understanding of Ergon's methods, systems and processes, and in doing so, identify the presence of misconceptions or misunderstanding by EMCa.

3.1 Methodology

To complete our assessment, Aurecon did the following:

- Reviewed as assessed the EMCa report as provided by Ergon and considered the AER/EMCa's identified issues with the Ergon 2025-2030 regulatory proposal, with a focus on repex and augex.
- Consulted with Ergon's asset management, regulatory and portfolio optimisation teams to obtain further information and clarification regarding both Ergon's approach and our understanding of Ergon's modelling and analysis to date.
- Assessed Ergon's approach against a benchmark of industry good practice, with consideration to economic fundamentals, industry peers, AER guidelines etc.
- Completed independent analysis to validate EMCa's assertions, assumptions and statements and formulated our own conclusions on EMCa's findings.
- Tested with Ergon the practicality and assumptions relating to our proposed approaches to obtain feedback.
- Formed conclusions based on the above steps and provided recommendations to Ergon Energy on our findings.

3.2 Evaluation of EMCa criticisms and validity of Ergon's approach

3.2.1 Poles replacement expenditure justification

EMCa believes Ergon's planned expenditure for pole replacement is higher than necessary, with increased pole replacement volumes driven by an over-estimation of risk and consequential replacement volumes that lack sufficient evidence of need or economic justification.

Aurecon considers Ergon's pole replacement volumes approach defensible, informed by asset condition data and a structured, objective, analysis which ensures safe and efficient operation to meet its legislated requirements.

- Ergon's pole replacement forecast is developed based on periodic asset inspections and condition assessment data obtained through these inspections. As of October 2024, Aurecon understands Ergon has inspected every pole in its network over the last 5-year cycle. Condition based inspection data is advantageous as it provides direct, empirical and granular insights into the actual state of assets.
- As part of this process, pole condition is rated as either serviceable or unserviceable (P1 or P2 defect classification) based on the extent of sound wood and a measure of the residual strength of the pole. Ergon implemented a revised inspection criteria in 2019 which saw an increased assessment of unserviceable pole based on more stringent serviceability criteria.
- Ergon are subject to maintaining pole performance within legislated pole reliability targets as per the Queensland Electrical Safety Code of Practice (ESCOP) 2020, which defines the maximum three-year rolling average failure rate of 0.01% per year. This equates to 97 pole failures based on Ergons pole population. Reviewing failure data as of 2023, Ergon's yearly pole failures are trending down, however the three-year moving average is still above the legislated threshold at 98 failures per year. We consider it prudent for Ergons to maintain the current rate of replacement until it can be shown that failure rates have settled below the legislated threshold.

Additional factors which may contribute to Ergon's forecasted pole replacement volumes include:

- Climate zones and conditions: Ergon's network covers a wide range of climate zones and challenging climate conditions including large temperature differentials, high rainfall and humidity contributing to elevated rates of timber degradation
- Extreme wind conditions: An extensive portion of Ergons pole reside in tropical coastal regions which are classified as cyclonic as per AS/NZS1170 (Region C). In these areas, wind pressures can be up to 80-130% more than non-cyclonic areas
- Legacy design practices: Ergon has a large population of legacy low strength 3kN rated poles (approximately 10% of the total population) which disproportionality contribute to total annual pole failures (approximately 30% of total historical failures)

Additionally, it's understood that EMCa were not clear of the role of CBRM in developing pole replacement forecast volumes. Following discussions with Ergon, it was clear that CBRM is not primarily as a forecasting tool, and rather, utilised as a top-down 'sense-check' via its generated asset health index (HI) that is used to estimate the assets probability of failure (PoF). Results showed that replacement volumes less than the current level would result in a negative NPV outcome thus the top-down CBRM approach indicated the forecasted replacement volumes are prudent. This misunderstanding may also have contributed to EMCa's questioning of Ergons governance framework and processes (see section 3.2.3).

3.2.2 Grid communications augex justification

EMCa concluded while there was a general need for augmentation expenditure for grid communications, the extent of the expenditure was insufficiently justified. EMCa specifically mentioned the lack of an overarching strategy that was tied to specific technical issues to explain why the expenditure is necessary. Additionally, there was a lack of sufficient alternative options considered and a lack of justification for the timing of investments in this RP.

We have reviewed EQ's Future Grid Roadmap[3], which outlines EQ's plan for adapting its distribution network to meet future challenges and opportunities driven by technology advancements and customer needs. We agree there is opportunity to improve line of sight between grid communications augex and the roadmap.

Ergon has a Future Grid Roadmap (the Roadmap) which is an overarching document that outlines the activities and no-regret investments that are necessary for Energex and Ergon Energy networks to transform from networks that relies on predominantly centralised generation to networks that can safely and reliably support more distributed energy resources (DERs) and other new technologies. We agree with EMCa there is an opportunity for a clearer line-of-sight between EQ's Future Grid Roadmap and the grid communications business cases/justification statements. While the Future Grid Roadmap document is a useful overarching strategy for Ergon, it is unclear without supporting explanation how the grid communications investments will allow Ergon to achieve its strategic goals.

Ergon has indicated that that have already made optimisations to their revised RP, by focusing on priority upgrades which ensure communication path reliability which improve resilience in Ergon's network. This will be reflected in the revised regulatory proposal.

3.2.3 Governance framework application

EMCa concluded that Ergon's governance process does not reflect good industry practice and has led to a systemic over-estimation of capex needs, with forecasting approaches considered inconsistent and lacking in rigour.

Aurecon considers Ergon's governance processes to be well developed and sufficiently mature to support prudent and efficient capital expenditure. We note the opportunity for such systems and processes to be appropriately referenced in Ergon's revised proposal.

From our investigation of Ergon's governance framework approach, we observed Ergon (and EQ) has systems and processes in place make up a comprehensive governance framework. These are referred to in Ergon's Strategic Asset Management Plan (SAMP), RRG Deep Dive presentation to the AER (March 2024), and EMCa / AER Presentation (dated 13-15 May), with examples of such systems and processes provided below for reference:

- Development of annual Grid Investment Plans (rolling 7-year plans), which forecast all network capital projects and programs.

[3] Our Future Grid Roadmap – EQL (Aug 2019)

- Documented annual process for developing and approving network portfolios. Refer to Appendix A, Figure 1 for further information.
- Development of workflows for network programs of work based on complexity and duration of work to ensure work is planned and delivered efficiently. Refer to Appendix A, Figure 2 and Figure 3 for further information.
- Delegation of authority financial commitment approvals that state the approvals required based on the expected financial commitment. Refer to Appendix A, Figure 4 for further information.

We agree Ergon can improve their RP submission by ensuring proper referencing to their own governance framework in the relevant business cases, however it is not true to state that Ergon does not have a comprehensive governance framework already in place.

Additionally, Ergon has also indicated that they (and EQ) are in the process of updating their investment strategy documents as they were recently found to be out of date. This shows that EQ is in the process of improving their governance framework and this will likely show in the revised proposal.

3.2.4 Cost and Benefit assumptions and option selection

EMCa's review has concluded that Ergon's options analysis favoured its preferred expenditure, overstating benefits and replacement volumes, while insufficiently considering non-network and non-replacement alternatives resulting in inadequate support for the analyses conclusions.

Aurecon concludes Ergon's options analysis considered multiple credible scenarios, including industry-standard alternatives, demonstrating no bias toward preferred expenditure. Safety benefits were based on established metrics and applied consistently across business cases.

- A review of the various independent business cases indicates that Ergon has considered a broad range of replacement focussed scenarios and investment levels, including:
  - An option that reflects the repex model cost scenario
  - An option that reflects historical replacement volumes
  - An option which includes increased replacement volumes (e.g. 120% defect rate of the base case)
- In Aurecon's view, Ergon has considered various credible options to compare against the counterfactual and given the acceptance of EQ's defect-based approach (in the poles context), there are limited alternative options that Ergon can credibly consider.
- Considering industry peers, we observed that Evoenergy has undertaken a similar options selection process in their Poles Business Case (November 2023).[4]
- We agree documentation of options considered but rejected, such as non-replacement alternatives should be part of Ergon's business cases (refer to Section 3.2.9 below).
- Additionally, we concur with EMCa that Ergon's business cases could benefit from additional supporting information and clarity regarding the analysis of options (e.g. full breakdown of benefits and costs, BCR, NPV for all options). Specifically, to demonstrate that it has not favoured a predetermined option, Ergon has the opportunity to substantiate how it derived a zero NPV for its BAU or counterfactual option and provide supporting evidence that the counterfactual or BAU offers a net benefit.

EMCa has also raised concerns about duplicated safety benefits across business cases, overstated avoided injury costs, and insufficient evidence for safety risk assessments:

- **Insufficient evidence for safety** – Ergon has detailed its approach for the safety benefit stream, including the basis for safety benefits and the use of disproportionality factors. For example, in the distribution transformers business case, Ergon explained its approach for identifying fatality and serious injury rates. This involved analysing 20 years of Significant Electrical Incident data and justifying the use of conductor asset unassisted failure rates in their modelling
- **Overstated avoided injury costs** – Ergon appears to have consistently applied an injury cost of $1.35 million, representing 25% of the value of statistical life (VSL), across its business cases. In a Peer Review paper prepared

[4] Evoenergy-Appendix 2.2 Poles Business Case-November 2023.pdf (aer.gov.au)

for CitiPower and Powercor as part a review into their consequence parameter values in the planned wooden pole replacement programmes for the 2021-2026 regulatory period, the independent reviewer produces serious injury estimate of 30% of VSL which is in line with the value adopted by Ergon.[5] However, we note that EQ's CBA framework suggests using a simpler approach, applying 10% of the VSL to determine value of injury cost.

- **Duplicated safety benefits** – Based on a review of Ergon's independent business cases, the cost-benefit analysis (CBA) for each business case is understood to be distinct, with only minor overlap in the case of crossarms, which is not considered significant. It is understood, Ergon has adopted 50% of the historical 3-year average replacement volumes, reducing the associated benefits (risk avoidance) by a similar amount. This approach accounts for the remaining 50% as consequential replacement volumes, which do not reflect underlying defect-based volumes This approach ensures that benefits are not overestimated or double-counted.

3.2.5 Application of counterfactuals:

EMCa's review has concluded Ergon's definition of the counterfactual for the ex-ante period does not align with AER guidance. EMCa argue that Ergon's definition of the counterfactual does not accurately reflect the level of replacement activity typical of a "business-as-usual" scenario.

To address these concerns, Ergon could present several counterfactuals that cover all credible options. By modelling its preferred option against multiple counterfactuals and demonstrating the relative outcomes, Ergon can show that, regardless of the baseline chosen, its preferred option remains the optimal choice.

- In evaluating EMCa's conclusion, we considered the counterfactuals previously proposed by Ergon and how they were received by the AER.
  - The AER has historically rejected several of Ergon's counterfactual definitions. For example, in its 2020-2025 final determination, the AER deemed Ergon's 'Do Nothing' business case counterfactuals unrealistic.
  - In the 2025-2030 draft determination, the AER concluded that Ergon's business-as-usual (BAU) counterfactual based on actual expenditure from the previous period was inappropriate because it considered the historical replacement levels to be too high.
- Given the rejection of the above two approaches, Aurecon considered what other options are available for a counterfactual in this context. Potential options include the repex model forecasts or longer-term averages. Aurecon does not consider peer replacement volumes appropriate due to the differences between DNSPs.
- Regardless of the chosen counterfactual, the AER wants justification of the proposed approach. Therefore, Ergon needs to demonstrate the preferred option with respect to the counterfactual remains the preferred option.

3.2.6 Portfolio optimisation practices

EMCa has criticised Ergon as failing to appropriately optimise its portfolio of replacement projects in terms of cost, risk and performance and lack confidence in Ergon's risk modelling approach leading to a prioritisation or reduction in risk for customers. Further, EMCa conclude that Ergon have not sufficiently considered an optimised approach to the delivery of multiple programs of work, including consequential replacement activities and where separate programs target similar benefits.

Aurecon has confirmed Ergon undertakes portfolio optimisation of its program and has a functioning portfolio management process which considers cost, risk and performance. The process is applied across the capex portfolio to prioritise work. Initiatives to mature this process to industry best practice are ongoing.

- Aurecon understands Ergon does undertake portfolio optimisation and prioritisation activities across the business and have been doing so for multiple regulatory resets. Aurecon has cited Ergon's practices in this regard and considers them functional and appropriate[6].
- Ergon is working on implementing industry best practice portfolio optimisation tools in these workflows and actively collaborates with industry peers through national working groups attended by those involved with portfolio optimisation functions from other Australian DNSPs.

[5] Powercor - Revised Regulatory Proposal - 2021-26 - ATT61 - CutlerMerz - Pole model peer review - December 2020.pdf (aer.gov.au)
[6] Strategic Asset Management Plan (SAMP) – EQL (Jan 2024)

- Ergon acknowledges they are on a maturity journey with their portfolio optimisation approach and further improvement is expected. Ergon's current approach is currently a semi-quantitative approach whereby different investment scenarios are considered using multiple different constraints or assumptions, and re-planning activities are undertaken in response to changing needs and constraints. Currently this is completed at an asset level.
- Ergon are in the process of increasing utilisation of more quantitative optimisation tools and methods, such as Copperleaf, which we expect will support Ergon's ability to optimise investment based on risk across large programs of works and across asset classes to obtain a clearer picture of the network-wide risk profile and required investment.
- Ergon's approach to consequential replacements is largely driven by the economics associated with logistical constraints, with isolated locations or areas inaccessible throughout the year requiring bundling and packaging of works for project delivery efficiencies. Based on discussions with Ergon, during delivery, such works to go through a planning and scheduling process where workflows and processes are set up based on the type, cost and volume of works to be delivered. Ergon have acknowledged that previous volumes of pole mounted consequentially replaced assets were elevated, with forecasted volumes for the ex-ante period expected to be 50% of the historical average replacement rates during the ex-post period.

As Ergon continues their asset management maturity journey, we expect further improvements in portfolio optimisation including the optimal timing and packaging of works during the delivery phase will occur.

3.2.7 Use of historical data for forecasts

EMCa has criticised Ergon's reliance on historical replacement volumes and unit rates to inform future requirements and believes Ergon has not demonstrated past volumes and rates were justified in the future.

Aurecon considers this criticism inconsistent with the AER's own applied methods, given the AER has demonstrated through peer determinations it uses historical replacement volumes to calibrate the repex model and make top-down judgements of what constitutes appropriate expenditure.

- In the case of poles expenditure, Ergon's replacement volume forecasts are derived from historical asset inspection and condition data assessed against pole serviceability criteria as described in section 3.2.1. Whilst it's acknowledged that Ergon can more clearly document this forecasting approach and how that has informed options development and selection, this approach whereby historical, real data is used to inform future replacement forecasts rather than risk-based modelling using a probability of failure (PoF) variable is considered good practice methodology that aligns with Ergons wider asset management principles.
- Specifically, Ergon defined the counterfactual scenario as the average of the past three years of pole replacement volumes, being 16,600 poles. This volume of replacements has been based on historical replacement rates due to rectifying defects, which consists of 11,964 pole replacements and 4,658 pole reinforcements, which is consistent with the overall asset management strategy of defect-based replacements.
- The use of historical replacement volumes as a proxy for forecast future replacement volumes is not uncommon across other DNSP's and has been accepted by the AER elsewhere.[7]
- Given the peaks and troughs in distribution network age profiles, it is reasonable to expect replacement volumes to rise and fall over time as large groups of assets reach end of life at the same time. Asset management practices will reflect this.

3.2.8 Provision of information

EMCa's review has concluded that their review process was hindered by a lack of clear or sufficient information from Ergon, despite multiple requests for further data. EMCa further contend that due to incomplete documentation, assumptions had to be applied, leading EMCa to conclude Ergon's capex decisions were not adequately demonstrated as prudent and efficient.

It's Aurecon's view that Ergon has effectively managed information requests from AER/EMCa during this RP submission period, particularly given the tight timeframes for response.

[7] Evo Energy-Appendix 2.2 Poles Business Case-November 2023.pdf (aer.gov.au)

It is understood from discussions with Ergon that EMCa's set of questions arrived one week before the workshop, which took place two to three months after Ergon's initial submission. Many of EMCa's questions overlapped with those previously posed by the AER, to which Ergon had already responded but was asked to address again. Furthermore, Ergon addressed all information requests before the workshop with AER/EMCa on 13th-17th May 2024.

After the workshop, EMCa made an additional information request to Ergon with 64 additional questions on the 30th of May. Given the large number of questions, Ergon requested an extension from the EMCa beyond the original 6th June deadline and delivered a response to EMCa for all 64 questions by 10th June. Overall, between Ergon and Energex, EQ delivered responses to 82 questions from the EMCa in less than 10 days from the 30th May information request.

In evaluating EMCa's conclusions, Aurecon reviewed Ergons governance process for managing information requests, its quality assurance procedures, and other measures for resolving gaps. Based on this review, it is clear that Ergon has a thorough governance framework in place[8]. Specifically, the following processes are in operation:

- The Regulation team coordinates the receipt and response of all information requests (IRs), tracking key details, assigning responsibilities to relevant Subject Matter Experts (SMEs), and ensuring deadlines are met.
- Each response is reviewed for accuracy and compliance with EQ's standards. Upon completion, responses are either emailed to the AER or uploaded to their file-sharing system, with final versions and supporting documentation archived for future reference.
- Data integrity and quality assurance are maintained through peer reviews, with high-risk RFIs escalated to senior management for alignment with strategic objectives.
- Workshops conducted to directly address EMCa/AER questions and provide further clarification.
- Additional questions after the workshop (64 for Ergon) was also responded to in less than 10 days.

3.2.9 Consideration of non-replacement investment options

EMCa considers there is insufficient analysis to justify that lower cost alternatives are not preferable, such that lower forecast expenditure would be prudent.

Ergon considers repair options as part of its asset lifecycle management planning; however, these were not documented in the preliminary proposal repex business cases. Aurecon considers inclusion of repair options as part of the revised business case appropriate and achievable for the revised proposal.

- Other than pole nailing, Ergon's business cases do not detail consideration of non-replacement options for defective or end-of-life assets. The repex business cases submitted in the preliminary determination outline only options that involve full replacement of assets (and consequential replacements) at varying volumes. Opportunity to provide additional analysis of repair options (where technically feasible) include:
  - Poles: Ergon does undertake nailing on some poles, roughly 20%. This percentage may likely increase over time as Ergon phases out their population of undersized (3kN) poles. These undersized poles are more likely to be located on the western side of Ergon's service area, which is much more rural compared to the eastern side.
  - Conductors: Can be re-tensioned under some circumstances e.g.: minor sagging due to thermal expansion, pole or foundation settling etc. Not feasible for corrosion and damage to strands or problematic joints.
  - Distribution transformer: Repairs in place or offline. The practicality of this depends on the failure mode, condition etc.
- From our analysis of Ergon's RP proposal submission, particularly Ergon's repex business cases, we generally agree with EMCa that repair options should be included in the business case, however we do not expect these options to be practical or economical given the nature of the assets involved. Nonetheless, Ergon has the information and expertise to evaluate the economics and feasibility of repair options across its distribution asset population and document accordingly in the business cases.
- Ergon has confirmed with Aurecon that they do, in practice, conduct asset repairs instead of replacements where technically practical.

[8] From spreadsheet received from Ergon on 11/10/2024 (Information Request_May2024.xlsx)

Additionally, by adding alternative options in their repex business cases, Ergon will demonstrate their consideration for increasing utilisation of their current assets, aligning with AER's objective of increasing asset utilisation in the NEM. Testing these options in the business case will also result in a higher quality CBA. Review of past submissions of other DNSPs' RP submissions show that consideration for non-replacement options or options with a mixed repair-replace strategy is observed to be included in repex business cases from peers.

3.2.10 Conductor clearance program classification:

EMCa considers Ergon's reclassification of conductor clearance from repex to augex is inappropriate as such expenditure is usually treated at repex by peers. The reclassification and associated increase in expenditure was considered not adequately justified.

In the context of this expenditure, Aurecon considers Ergon's classification of the conductor clearance program as augex to be sound and aligned with the NEL augmentation definition.

- Under the NEL, augmentation is defined as "augmentation of a transmission or distribution system means work to enlarge the system or to increase its capacity to transmit or distribute electricity;"[9].
- Aurecon considers expenditure as part of Ergon's conductor clearance program in this context as fitting with the NEL augmentation definition because low hanging mains have either limited or no capacity to deliver energy.
- The definition of repex is less specific and not defined in the NEL. Repex is generally understood to consist of costs related to asset condition (age, defect, failing asset related costs) and/or asset that are at or nearing the end of their operating lifecycles.
  - Conductor clearances do not fit this definition given the asset isn't at risk of failure or defect, but rather is not capable of carrying the required energy that is required, the rectification of which is to increase this capacity through lifting the asset to the required height.

Aurecon notes Ergon's classification of the conductor clearance program as augex aligns with Energex, which has historically classified similar programs as augex.

[9] NATIONAL ELECTRICITY (Queensland) LAW, [8 May 2024] – (https://www.legislation.qld.gov.au/view/pdf/inforce/2024-06-18/act-2005-neql)

4 Balanced Assessment of Ergon's Approach

The following table summarises what we consider to be the strengths of Ergon's current approach based on our analysis in Section 3, while acknowledge issues raised by EMCa which we deem to be valid and which Ergon should seek improvement in as part of their revised proposal.

Table 1: Summary of Ergons current approach – strengths and areas for improvement

Element:	Ergon's Strengths:	Balanced Assessment:
Poles replacement expenditure justification	Ergon's forecasted replacement volumes are based on comprehensive condition-based inspections and defect classification. This data-driven approach is aligned with industry good practice and ensures a robust understanding of asset risk. Additionally, it drives compliance with the Queensland Electrical Safety Code of Practice, which mandates reliability targets.	Ergon could enhance its pole replacement justification by improving the documentation of how climate, extreme weather, and legacy design practices influence the increased replacement volumes. Clearer communication of how these factors directly impact replacement rates, combined with more specific economic justifications for higher expenditure could address concerns about potential overestimation of risk and replacement needs.
Grid communication augex justification	Ergon has a comprehensive high level grid strategy in the form of their Future Grid Roadmap. This demonstrates Ergon's long-term vision for their network and provides a general direction for network related investments, with the aim to create a more resilient and reliable network through the energy transition.	While the Future Grid Roadmap is a useful starting point, Ergon needs demonstrate a clearer connection between this strategy and the proposed grid communications business cases. Tying the Roadmap to specific technical issues/challenges that need to be resolved and referencing these in the business cases will better demonstrate the investment need and provide additional justification for the expenditure to the AER.
Governance framework application	Ergon has a functional governance framework that supports prudent capital expenditure. This framework includes comprehensive annual planning processes, investment forecasting, and approval workflows. Ergon's delegation of authority and investment strategy improvement initiatives further enhance their capital management processes, ensuring alignment with industry standards and regulatory guidelines.	While Ergon has a comprehensive governance framework, it could benefit from better alignment with documented industry best practices, particularly in how the framework is referenced and integrated into regulatory submissions. Updating investment strategy documents and ensuring consistency across all business cases would further strengthen Ergon's governance and align with AER expectations. Ensuring up to date documentation will also enhance confidence in best outcomes for customers.
Cost and Benefit assumptions and option selection	Ergon's options analysis considered multiple credible scenarios, demonstrating no bias towards any specific expenditure. Safety metrics were similar to those used by peers and consistently applied across business cases.	Ergon's business cases could provide more detailed supporting information for the options considered and rejected, particularly non-replacement alternatives. Ergon's business cases could benefit from additional supporting information and clarity regarding the analysis of options (e.g. full breakdown of benefits and costs, BCR, NPV for all options). Specifically, to demonstrate that it has not favoured a predetermined option, Ergon has the opportunity to substantiate how it derived a zero NPV for its BAU or counterfactual option and provide supporting evidence that the counterfactual or BAU offers a net benefit.

Element:	Ergon's Strengths:	Balanced Assessment:
Application of counterfactuals	Ergon's definition of the counterfactual has been developed based on the understanding of what it considers to be the replacement volumes required to maintain a relatively business as usual maintenance approach to satisfy reliability, safety and compliance objectives.	To refine the counterfactual scenarios, the business cases would benefit from analysing the preferred option with respect to alternate counterfactuals and demonstrate the relativity between each of these baselines. The aim is to show regardless of what is chosen as the baseline, the preferred approach by Ergon remains the preferred approach and is justified economically.
Portfolio optimisation practises	Ergon has existing embedded portfolio optimisation practices in their capital expenditure program, with a clear focus on balancing cost, risk, and performance. By using semi-quantitative approaches and ongoing collaboration with industry peers to mature these practices, Ergon shows a commitment to continuous improvement in aligning with best-practice standards, including the use of tools like Copperleaf.	Ergon's portfolio optimisation processes could be further developed to achieve full industry best practice. Moving from a semi quantitative to a more fully quantitative approach using tools like Copperleaf would enable better risk adjusted decision making across the portfolio. Greater clarity around the integration of consequential replacement activities and cross asset class optimisation could also help enhance efficiency in capital planning and reduce concerns about overlapping projects targeting similar benefits.
Use of historical data for forecasts	Ergon's application of historical data to forecast future replacement volumes is consistent with the AER's applied methods such as the calibrated repex model for economic assessments. Asset management plans underpin the approach to inform the forward forecast. Customers can take confidence in the fact that Ergon is adapting its replacement volumes to its asset age profiles to maintain safety and reliability.	While the use of historical data is aligned with AER methodologies, Ergon could provide more detailed documentation of how historical replacement volumes are projected forward, addressing concerns about reliance on past volumes. Further clarifying how future risks and evolving network conditions are incorporated into the forecasts would also strengthen the justification for proposed expenditures.
Provision of information	Ergon has demonstrated effective management of information requests from both AER and EMCa, reflecting strong governance over regulatory submissions. Their internal processes for responding to RFIs, ensuring quality control, and peer reviews indicate a structured and transparent approach to informing regulator engagement and decision making.	Although Ergon's information management and response processes are generally robust, improving the clarity and completeness of responses to regulatory bodies, particularly in response to RFIs, would help avoid perceptions of incomplete data. Ensuring that all relevant data is provided in with follow up communication may help address concerns raised by EMCa about missing information during their review process.
Consideration of non-replacement investment options	Ergon considerations included non-replacement alternatives like pole nailing, where feasible, demonstrating that they have considered lower-cost alternatives for some programs.	Although Ergon operationally considers and employs repair options where practical, this is not communicated or analysed in their business cases. Ergon should include non-replacement options as part of their revised business cases. This will not only strength the justification for their proposed expenditure, but also demonstrate to the AER their consideration for increasing the utilisation of their assets.
Conductor clearance program classification	Ergon's classification of the conductor clearance program as augmentation rather than replacement is sound, aligning with the NEL definition of augmentation. This approach parallels similar practices adopted by Energex, thus supporting regulatory consistency.	While Ergon's classification of the conductor clearance program as augmentation is sound, providing more detailed justification for the reclassification, especially in comparison to how peers like Energex handle similar programs, could help address EMCa's concerns. Clearer communication of how this reclassification meets NEL's augmentation definition would improve the defensibility of this expenditure.

5 Conclusions

Based on our analysis, Aurecon makes the following conclusions:

- **Pole replacement expenditure justification:** Ergon has based its forecast on actual asset condition data from inspections. This is a highly objective approach as it relies on individual asset level information (as opposed to predictive models). Poles are rated as serviceable or unserviceable, and the targeted asset performance level is quantified and defined by the Queensland Electrical Safety Code of Practice (ESCOP). Opportunities to better justify the forecasted expenditure economically include explanation of Ergon's operating environment and communicating how these the factors relate to expenditure volumes in the revised business case.
- **Grid communication augex justification:** While Ergon has a comprehensive, high-level overarching grid investment strategy in the Future Grid Roadmap document, Aurecon agrees with the EMCa that there is a lack of line-of-sight between this strategy and the individual grid communications business cases. Ergon has already implemented other changes to their revised grid communications business cases to address EMCa's other relevant concerns.
- **Governance framework application**: Ergon implements and maintains a comprehensive capital expenditure governance framework aligned with good industry practice and applies this framework to capital expenditure approvals. Potential improvements include better documenting these systems and cross refencing their use in the revised regulatory proposal business cases and supporting information to provide transparency on how the framework applies and confidence it is used to achieve prudency and efficiency in investment decision making.
- **Cost and benefit assumptions and option selection**: Ergon has considered a broad range of replacement focussed options and investment levels; however, the lack of non-replacement alternatives is noted as an opportunity for improvement in Ergon's approach which can be explored further in the revised proposal. In Aurecon's view, the avoided injury cost value adopted by Ergon is consistent with NEM DNSP peers. Additionally, it Aurecon understands Ergon has adopted measures to ensure no double-counting of benefits. However, Aurecon agrees with EMCa that Ergon's business cases would benefit from additional clarity, including a full breakdown of benefits, costs, BCR, and NPV for all options.
- **Application of the counterfactual**: In Aurecon's assessment, Ergon's counterfactual definitions are reasonable and align with the necessary ongoing requirements for reliability, safety, and compliance. Ergon conducts periodic inspections and employs Condition-Based Risk Management (CBRM) to top-down validate the prudency of replacement volumes, which supports the counterfactuals used in their business cases. However, it is noted Ergon could provide more information to clarify its counterfactual definition and consider presenting multiple counterfactual options to justify the preferred option under various scenarios. It is our view that by modelling its preferred option against these alternatives, Ergon can effectively demonstrate that its choice remains optimal, regardless of the baseline applied.
- **Portfolio optimisation practices**: Ergon has existing embedded portfolio optimisation practises in their capital expenditure program and organisation which seeks to prioritise expenditure across the portfolio within organisational constraints. Ergon is continuously improving, moving from a presently semi-quantitative project and program driver risk assessed state to a fully quantified approach in collaboration with industry peers. Further improvement opportunities include providing greater clarity around the integration of consequential replacement activities and optimisation across asset classes.
- **Historical forecasts:** Ergon's approach to utilising historical replacement data is consistent with the AER's applied methods, specifically in relation to the calibrated repex model which the AER applies to all DNSPs. Given the varying age profiles of asset classes, it is unrealistic to expect expenditure in all asset classes to remain flat indefinitely. Uplifts in expenditure are a reality of peaks and troughs in the asset base age profile and this is unavoidable if risk and performance is to be managed. Nonetheless, further clarification of how future risks and evolving network conditions are incorporated into the future forecasts would strengthen the justification for proposed expenditure.
- **Provision of information:** Ergon has demonstrated a well-structured approach to managing information request from the AER and EMCa. Aurecon cited clear and transparent information tracking registers and transmittals to provide the AER and EMCa with requested information in the required timeframes. Improving the clarity and completeness of responses to the regulatory bodies' RFIs would help avoid misperceptions of incomplete data.

- **Lack of consideration for non-replacement alternatives:** While in practice, Ergon does consider repair options where operationally practical, the opportunity stands for Ergon to document consideration of non-replacement alternatives in their business cases. Aurecon notes these options may not be economical or feasible, however including “options considered but rejected” and the analysis on why would align with good practice.
- **Classification of conductor replacement program as augex:** Ergon’s classification of conductor replacement as augex is appropriate and aligns with the NEL definition of augmentation. It also aligns with Energex’s approach and thus provides consistency across the EQ group. Clearer communication of this re-classification, including the rationale for doing so would strengthen Ergon’s proposal.

6 Recommendations

Based on the abovementioned conclusions, Aurecon recommends the following:

- **Pole replacement expenditure justification:** Improve the documentation of how the effects of climate, extreme weather and legacy design practices leads to the need for increased replacement volumes.
- **Grid communication augex justification:** Ergon should draw clear connections between their high-level Future Grid Roadmap and their grid communications business cases. This can be achieved via
  - Updating the Future Grid Roadmap document to include specific technical problems that Ergon plans to address in their business cases,
  - Updating their individual grid communications business cases explains how the technical issues they solve tie to the strategy/plans in the Future Grid Roadmap, or
  - Creating a new mid-level document that maps the technical issues Ergon's grid communications infrastructure faces and how it relates to the Future Grid Roadmap.
- **Governance framework application:** Update investment strategy documents and ensure consistent references to them in revised business cases. Clear and consistent referencing of Ergon's/EQ's existing comprehensive governance framework in the RP submission should better demonstrate alignment of Ergon's governance framework with AER's expectations.
- **Cost and benefit assumptions and option selection:** Ergon can improve the quality of their business cases by implementing the following:
  - Provide additional details and supporting information for the options considered and rejected.
  - Provide additional supporting information to improve the quality and clarity of the options analysis, including:
    - Full breakdown of benefits and costs across the same period length
    - NPV for all options
    - Benefit Cost Ratio (BCR) for all options, etc.
  - Provide additional supporting evidence that the BAU was not favoured by demonstrating how it offers a net benefit, or how it derived a zero NPV.
- **Application of the counterfactual:** Where the EMCa has rejected the counterfactual, Ergon should compare the preferred options to alternative counterfactual scenarios. This should demonstrate that regardless of the baseline, the preferred option remains the preferred approach and thus is economically justified.
- **Portfolio optimisation practices:** Ergon should continue to implement fully quantitative portfolio optimisation processes using tools such as Copperleaf. Ergon's needs to also ensure clear communication of cross-portfolio optimisation considerations to the AER in their revised/future submissions to reduced concerns around overlapping projects or doubling up of replacements.
- **Historical forecasts:** Ergon could provide additional detailed documentation on how historical replacement volumes for certain assets were used in future projections, this should help address AER's concerns on the reliance on past volumes. Additional clarification on how future risks and expected changes in the network are incorporated into the calculations for future volumes will help strengthen Ergon's justification for the related forecasted repex expenditure. Ergon should also, going forward, move towards implementing risk-based forecasting methodology using the data collected from their more frequent asset inspections. This will help align Ergon with AER's expectations and the industry's best practices in future RP submissions.
- **Provision of information:** To avoid miscommunication issues in the future and avoid misalignment with AER's expectation for information requests, Ergon may consider demonstrating their tracking and management of information request to the AER. Ergon may also consider following up with AER/EMCa post responding to an information request to ensure that the information provided is what AER/EMCa expected or if additional information needs to be provided.
- **Lack of consideration for non-replacement alternatives:** Ergon should include considerations for non-replacement alternative options in their revised repex business cases. Ergon already operationally considered non-

replacement alternatives where reasonably practicable and demonstrating this practice to the AER in the repex business cases will show that Ergon is considering every option available to them, further justifying the prudency of the resulting preferred options. This also algins Ergon with AER's expectation for NSPs to maximise the utilisation of their existing assets prior to replacements.

- **Classification of conductor replacement program as augex:** Ergon could provide additional documentation that explains and justifies their reclassification of conductor replacement program as augex. This could be a standalone document that can be referenced in the relevant business cases, that explains where the reclassification meets the NEL's definition of augmentation and the alignment to Energex's approach for similar expenditures. This document should also include a breakdown of where relevant ex-post and ex-ante expenditure are classified in each of the relevant financial years and act as the key source that can clarify any concerns with the expenditure reclassification of the relevant programs.

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