Appendix 1.2: Asset management

Regulatory proposal for the ACT electricity distribution network 2024–29

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1. Introduction

This appendix provides an in-depth summary of Evoenergy's asset management and governance approach. Our approach to asset management and governance influences our operating expenditure (e.g., maintenance) and our capital expenditure, by informing us when we need to replace our assets. As a result, Evoenergy considers that sound asset management and governance frameworks are essential for prudent investment in the distribution and transmission networks, and for achieving reliability standards and enabling efficient delivery of network services.

The main purpose of this appendix is to highlight key factors relating to asset management and governance, which demonstrate Evoenergy's proposed expenditure program for the 2024–29 regulatory period is prudent and efficient. Evoenergy provides examples and case studies of improvements to asset management and governance during the 2019–24 regulatory period, which provides a record of accomplishment.

This appendix is set out as follows:

- **Section 2**: provides an overview of Evoenergy's Asset Management System (AMS).
- **Section 3**: explains the risk-based methodologies that Evoenergy applies in developing the asset replacement and renewal program, including how using a top-down challenge provides for prudent and efficient expenditure.
- **Section 4**: outlines the network planning process Evoenergy uses in developing the augmentation program.
- **Section 5**: explains how Evoenergy uses asset information systems to support all aspects of asset management and to facilitate its continuous improvement of the asset management function.
- **Section 6**: focuses on key features of asset management governance and financial governance supporting prudent investment.

Evoenergy provides a comprehensive description of processes and systems in other parts of the submission and references those processes and systems in this appendix.

2. Overview of Evoenergy's Asset Management System

Evoenergy is responsible for the operation, maintenance, planning and augmentation of the electricity sub-transmission and distribution network systems within the Australian Capital Territory (ACT). As at November 2022, our electricity distribution network has:

- more than **209,000 customer connections** in the ACT (as well as a small number in New South Wales that can more effectively be supplied from the ACT);
- more than **190 kilometres** of high voltage sub transmission lines;
- more than **2,120 kilometres** of overhead distribution lines and 48,819 distribution poles;
- more than **2,504 kilometres** of underground distribution lines;
- more than **4,746** distribution substations;
- **16 zone substations** and **switching stations**; and
- **33 power transformers**.

Asset management is a core function of Evoenergy. This section describes Evoenergy's Asset Management System (AMS), including the key processes, components and outputs. In this section, Evoenergy outlines its path for continuous improvement of asset management and its certification to the ISO 55001 standard.

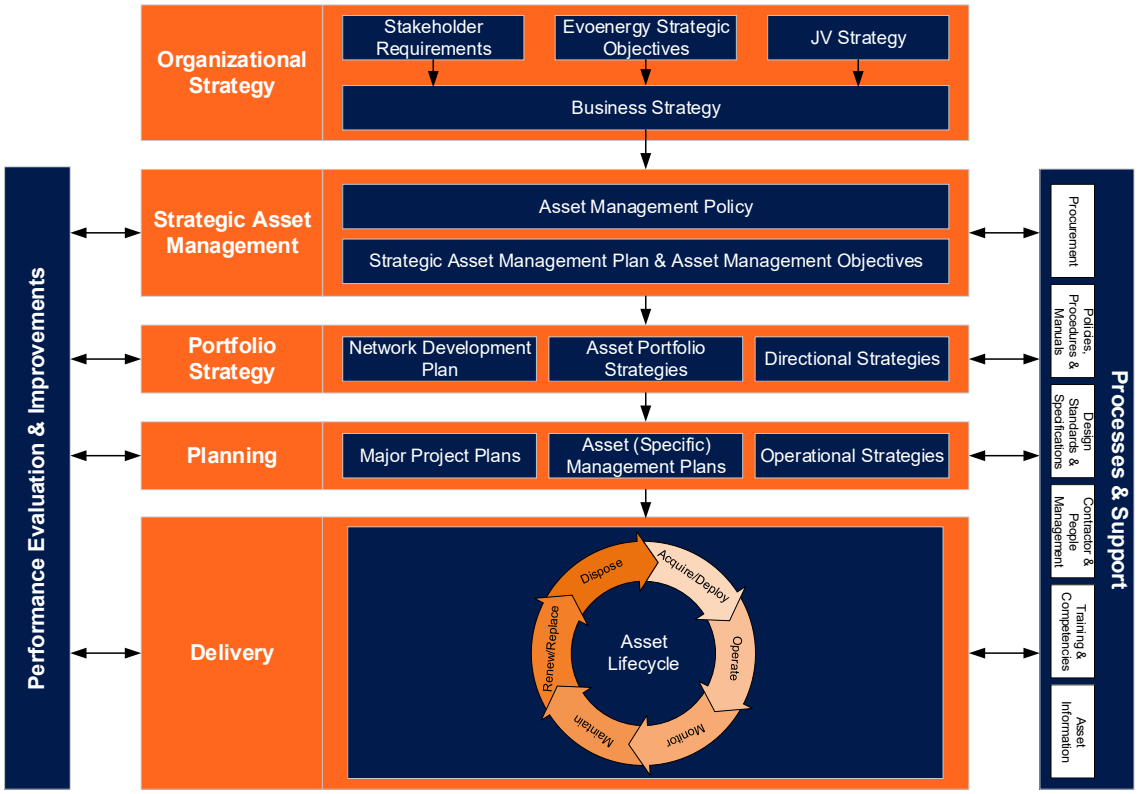
2.1. Asset Management System

Evoenergy's AMS provides the framework for effective and economic management of Evoenergy's sub-transmission and distribution assets. It describes the interlinked processes that support our **asset management objectives** and decision making throughout the asset life cycle. These objectives are to:

- operate and maintain our network safety;
- meet our network reliability targets;
- manage our network for the least total lifecycle cost;
- manage and invest in our network using prudent risk management approaches;
- deliver sustainable and cost-efficient network investments;
- operate an AMS that satisfies the needs of our stakeholders; and
- manage opportunities and drive continuous improvement.

The AMS underpins a structured and systemic approach to asset management which leads to the development and implementation of investment programs, demand management and network planning. Figure 1 is a summary of Evoenergy's AMS.

Figure 1 Overview – Asset Management System



Evoenergy's asset management objectives underpin activities to implement the corporate strategy, which has the following key objectives:

- build our net zero carbon future;
- elevate customer experience;
- optimise our assets and networks; and
- efficient and targeted investment.

2.2. Scope

The assets included within the scope of Evoenergy's AMS are:

- zone substations;
- transmission system;
- distribution system;
- secondary systems (SCADA/protection/communications); and
- operational technology systems.

Managing other asset classes, such as property, fleet or information technology, does not form part of Evoenergy's AMS. Similarly, Evoenergy's regulated gas network is outside the scope of the AMS and is addressed by a separate strategy and system.

2.3. Asset management processes and outputs

Evoenergy's asset management processes cover the entire asset lifecycle from program/project planning and initiation to delivery and eventual disposal. At the front end, these processes include initiation and development of programs/projects which cover network solutions, asset replacement, asset augmentation, customer initiated work and non-network expenditure. Evoenergy further discusses these capital expenditure processes in Attachment 1.

Evoenergy's AMS encompasses an integrated strategic approach to asset management, network development and reliability. The development of these programs are coordinated in a manner that identifies and utilises synergies that may exist between network augmentation, asset replacement and customer connections. As much as practicable, Evoenergy's investment program reflects the whole-of-life approach to asset management and the use of risk-based methodology, including the valuation of risk.

The programs are documented in multilayer reports spanning a wide range of issues from strategy to implementation. The planning documentation includes:

- asset portfolio strategies (section 3);
- asset specific plans (section 3);
- Network Development Plan [1] (section 4); and
- project justification reports (PJR) (section 4).

Attachment 1 provides further context for these critical references in terms of capital expenditure (capex).

The following sections describe key features and improvements in relation to asset replacement, asset augmentation, customer initiated works, and asset information systems implemented in the 2019–24 regulatory period.

The explanation of these improvements includes how each contributes to the efficiency of the investment programs and the development of demand management and capital works proposed for the 2024–29 regulatory period.

2.4. ISO 55001 compliance

Evoenergy maintains and operates an AMS certified to ISO 55001 which provides our stakeholders with a high degree of confidence that our assets are being managed effectively and efficiently as well as that risks and costs associated with the management of assets are carefully considered and optimised.

During the 2019–24 regulatory period, Evoenergy maintained alignment with ISO 55001 and compliance with the standard. Evoenergy undergoes an ISO55001 recertification every three years, complete with annual surveillance audits conducted by an independent certification organisation. Evoenergy's current certification to the ISO 55001:2014 Standard is valid until January 2024.

2.5. Ongoing asset management improvements

Continuous improvement is a requirement of the ISO 55001 standard and is embedded in Evoenergy's organisational culture. Examples of continuous improvement are extracted in Evoenergy's Asset Portfolio Strategies (APS), which are contained as separate appendixes to Attachment 1 Capex attachment.

An important example of continuous improvement is the Asset Condition Strategic Initiative, which will improve how Evoenergy operationalises key asset condition data to optimise asset replacement and

[1] Which is used to inform Evoenergy's Annual Planning Report.

maintenance expenditure versus risk cost. In practice, this helps to find the optimal time to replace the assets and improve the works planning. Improvements will flow from more efficient inspections and better risk-based decisions.

Examples of continuous improvement are also included in our operational strategies. For example, in the Reliability Strategy,[2] Evoenergy pointed to the following improvements in asset management:

1. invest in people and process;
2. plan for a more responsive network;
3. embed risk-based asset management;
4. incorporate best practice vegetation management; and
5. create a better outage experience.

Going forward, it proposed Evoenergy's response to the challenges identified in the Reliability Strategy (particularly a deterioration in reliability performance in 2021/22). More detail on these improvement initiatives is contained in the strategy. More broadly beyond reliability, Evoenergy has consistently pursued continuous improvements in how it approaches asset management.

2.6. Major strategic factors

This subsection provides a summary of strategic factors influencing Evoenergy's AMS.

Climate change

The ACT Government's climate change policies include a number of initiatives that will directly or indirectly affect the electricity network. These policies include:

- maintain the existing 100 per cent renewable use;
- net zero by 2045 emission target;
- gradual substitution of existing gas use with electricity;
- all electric, no gas new developments;
- efficient land use including 70/30 infill (greenfield development ratio); and
- Zero Emissions Vehicle Strategy, which encourages uptake of electric vehicles (EVs).

The above initiatives are likely to influence the operation of the electricity network, including:

- an increase in electrical load due to gas substitution;
- an increase in electrical load due to increased use of electric vehicles;
- an increase in electrical load density in the locations subject to redevelopment;
- changes in energy consumption patterns and locations (e.g., volumes, peak times, locations);
- changes in energy flow patterns (e.g., two-way flows);
- consequential changes to voltage regulation, balance and power quality; and
- continuing growth in embedded generation and other Distributed Energy Resources (DER).

Furthermore, Evoenergy is cognisant of the potential impacts of higher temperatures and increased incidents of extreme climate events. These impacts require us to employ engineering and operational solutions. Some of these impacts are observed now, while others are anticipated over the coming period.

Evoenergy responds to these challenges by including specific initiatives in the DER Integration Strategy, the Sustainability Strategy and the asset portfolio strategies.

[2] Appendix 1.14: Evoenergy Network Reliability Strategy.

Power quality

Evoenergy's power quality requirements stem from both Schedules 5.1, 5.1a and 5.3 of the National Electricity Rules (the rules) and the ACT's Electricity Distribution Supply Standards Code.[3]

The Electricity Distribution Supply Standards Code stipulates power quality standards for Evoenergy's network within the ACT. Evoenergy's Service and Installation Rules describe the applicable power quality design and operating criteria that our consumers must meet.

Power quality is affected by energy consumption and technology trends, particularly the unprecedented growth in DER, which creates a range of power quality challenges. These include, but are not limited to:

- voltage regulation within the prescribed envelope in the low voltage network;
- voltage regulation within the prescribed envelope within zone substations and the high voltage (HV) network;
- voltage unbalance;
- voltage balance within limits prescribed by the relevant standards;
- transient/intermittent voltage and current changes;
- voltage and current harmonic distortion; and
- power factor outside the limits prescribed by statutory rules (e.g., the Rules and the service and installation rules).

Evoenergy applies a range of proactive and reactive measures to manage power quality design standards, monitoring, testing, measurements, analysis and investigations. The specific power quality initiatives are described in the Quality of Supply Strategy in Appendix 1.6.[4]

Reliability

Evoenergy has regulatory obligations from the AER and the ACT Technical Regulator to 'maintain quality, reliability and security of supply'. Evoenergy is committed to providing a reliable electricity supply that meets the expectations of consumers and fulfils regulatory requirements. Our strategy is to maintain reliability performance in line with our regulatory targets and incentive schemes. Evoenergy is subject to two reliability targets:

- A target for unplanned and planned outages is set by the ACT Technical Regulator and specified in the Electricity Distribution Supply Standards Code.
- The AER sets a target for unplanned outages as part of the Service Target Performance Incentive Scheme (STPIS).

Our asset plans recognise that various components of our network impact reliability in different ways depending on the asset condition and criticality. Evoenergy's reliability performance continues to be one of the best in Australia.

Distributed Energy Resources

Evoenergy has experienced unprecedented growth in DER in recent years. They encompass solar PV, energy storage devices (batteries), zero emission vehicles (ZEVs)[5] and other consumer appliances that are capable of responding to demand or pricing signals.

As Evoenergy sees a rapid increase in the uptake of DER and other generation located within the ACT such as solar farms, bio-generation and grid batteries, we anticipate that a higher proportion of

[3] Utilities (Electricity Distribution Supply Standards Code) Determination 2013.
[4] Appendix 1.6: Evoenergy Quality of Supply Strategy.
[5] Excluding hydrogen vehicles, which are not DER.

demand will be supplied within the ACT, rather than imported through TransGrid's transmission network.[6]

In the ACT, mandatory requirements of DER in new residential developments reflect the shift to increased DER. For example, development requirements for the Ginninderry Estate development[7] include having PV systems installed on new detached dwellings.

Ginninderry Estate

The Ginninderry Estate is a 70 acre estate straddling the NSW and ACT borders around West Belconnen. It will be a significant new residential development. The estate will be electricity only, with a high penetration of rooftop PV generation systems. The first stage of the development will require rooftop PV systems, demand management systems and solar or heat pump hot water systems, with all dwellings to be fitted with smart meters. Evoenergy will use the Advanced Distribution Management System (ADMS) to monitor the performance of the network, particularly the impact on power quality.

A significant component of DER is the increasing uptake of ZEVs. Like other jurisdictions, uptake is increasing quickly in the ACT from a low base. The ACT Government recently announced ambitious targets in its ACT's Zero Emissions Vehicles Strategy 2022–30.[8]

The uptake of ZEVs has a significant effect on Evoenergy's planning requirements. In simple terms, as ZEVs displace traditional internal combustion engine (ICE) vehicles, there will be increased electricity demand on our network. The location and timing of that electricity load will depend on ZEV uptake across geographic areas and consumer charging practices. The Evoenergy Net Zero Model (NZM), developed by Marsden Jacobs, has the uptake of ZEVs as an important input to its modelling. This has informed our capex program for the 2024–29 regulatory period. More detail on the NZM and its interaction with the capex program is contained in Attachment 1.

The integration of DER will subsequently require changes to system components, configuration and control systems to ensure that the network is maintained in accordance with regulatory requirements. Facilitating DER will require investment in network monitoring systems such as the ADMS.[9] A key technical challenge associated with DER is maintaining stable voltage levels. More detail on the technical challenges presented by DER and potential solutions are discussed in Evoenergy's Quality of Supply Strategy and DER Integration Strategy. More detail on the technical challenges associated with DER and how it affects our network planning processes is provided in section 4.

[6] In the future, there is also potential for the ACT to become a net exporter to TransGrid during times of minimum demand.
[7] See Section 9.5 of publicly available Evoenergy 2021 Annual Planning Report.
[8] This Strategy is discussed in more detail throughout the Proposal and is not expanded on here to avoid repetition.
[9] There are two separate business cases related to ADMS for the 2024–29 regulatory period which are discussed in more detail in the Attachment 1: Capital expenditure.

Distributed System Operator (DSO)

An evolving industry landscape, including energy consumption trends, technology and government policies are changing Evoenergy's traditional role within the energy supply chain. Some of these trends are emerging, while others are profoundly affecting how we manage our network. High growth of DER, network batteries and virtual power plants are some of the existing examples. These changes offer opportunities to Evoenergy and its customers. In preparation, Evoenergy is transitioning its role as the Distribution Network Service Provider (DNSP) to the Distribution System Operator (DSO). The new role is required to support:

- two-way operation of the electricity network;
- efficient utilisation of existing network assets;
- a focus on the customer connection experience; and
- enabling customers to access new markets.

To map out this transformation, Evoenergy prepared the DER Integration Strategy[10] which captures the steps and timeframe for the evolving role.

The strategy primarily focuses on the integration of residential DER with an emphasis on rooftop PV. Rooftop PVs account for the majority of DER within the Evoenergy network and this trend is forecast to continue across the National Electricity Market (NEM).

The integration strategy is a directional strategy for the business which, over time is periodically updated. The purpose of the first iteration of the strategy is to address the short-term threats while outlining the long-term framework for leveraging DSO capabilities as feasible, practical and sustainable network solutions. Some of the specific initiatives are also reflected in other asset management artefacts such as the QoS strategy and asset portfolio strategies.

Stakeholder expectations

Consultation with stakeholders is an important part of the asset management process. Evoenergy is cognisant of a wide range of stakeholder objectives and expectations. When developing asset management plans and strategies, we endeavour to deliver outcomes that at a minimum balance the following:

- cost of investment;
- benefits of investment;
- community and consumer preferences/impact;
- broader societal implications;
- reliability, power quality and other operational outcomes; and
- return on investment.

[10] Appendix 1.5, Evoenergy DER Integration Strategy.

3. Development of the asset replacement and renewal program

Evoenergy's asset replacement and renewal program occur in the context of its broader asset investment optimisation (AIO) process. Evoenergy's approach to managing existing assets aims to optimise investment over the lifecycle of the assets. The asset replacement program includes all the assets within Evoenergy's AMS. Asset retirement and renewal are closely coordinated and integrated with the network augmentation plans to access synergies and thereby capture savings for our consumers.

Evoenergy's AIO tool supports strategic decision making and the development of significant capex and opex forecasts. This system has been in use since the 2014/15 financial year to create investment plans that are submitted annually to executive management for endorsement. Since then, the AIO system has evolved to ensure planning methodologies are prudent and efficient, including adopting principles from the AER industry practice application note (Asset Replacement Planning 2019).

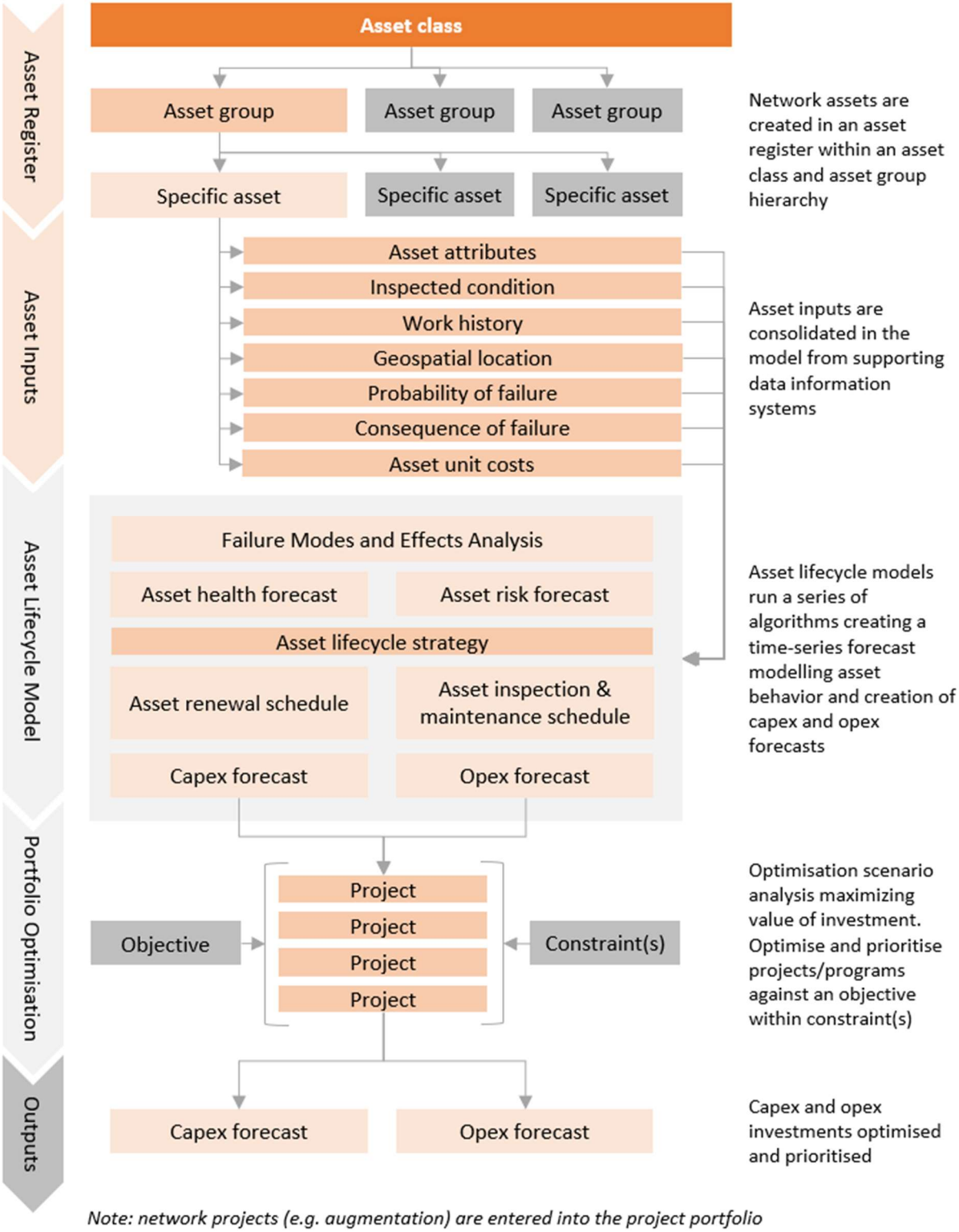
The AIO tool is integrated with Evoenergy's operational technology to enable data-driven forecasting processes. The asset register is sourced from the asset database and Geospatial Information System forming the foundation of the bottom-up forecast. Asset lifecycle models are applied to the assets to create asset specific plans (ASP) which detail required capex and opex forecasts, a program of works and projected future asset health and risk.

Network augmentation investments are also registered in the AIO tool. This allows for optimised and prioritised investments while facilitating integrated planning processes where asset replacement and maintenance plans are accessible and visible to network capacity planners.

Ultimately, this tool develops and consolidates investment plans for 30 years including the current and upcoming regulatory control periods. With this information, capex and opex forecasts are identified for each asset and network investment categories. Implicit in this is that substitution possibilities between opex and capex have been taken into account in developing efficient capex and opex forecasts. Capital and operating costs are balanced with risk in terms of safety and reliability.

Figure 2 provides a visual illustration of the key elements of the AIO tool.

Figure 2 Asset Investment Optimisation key elements



Note: network projects (e.g. augmentation) are entered into the project portfolio

Detailed in this appendix are the systematic and coordinated activities and practices whereby Evoenergy manages each asset class in an optimal and sustainable manner to achieve the organisational strategic plan. Attachment 1, section 6 (repex) references the key APS when discussing the capex program.

The foundation of the asset management approach is operational risk assessment based on the analysis of asset condition, performance and criticality. Asset criticality considers the operational function of the asset and the consequences of failure. The analysis includes a variety of data and asset information collected as part of network operations including asset monitoring, testing and inspections. The performance and failure rates of specific assets or asset classes are factored into asset management whenever available.

3.1. Risk-based methodologies in asset renewal and replacement

The development of the asset replacement program uses integrated risk-based methodologies. A risk-based approach allows for a comparison of risks and benefits which assists the selection of a preferred solution and investment decision. The methodologies are:

- the application of the Failure Mode, Effects and Criticality Analysis (FMECA) and Reliability Centered Maintenance (RCM) methodologies to determine replacement from a 'bottom up' perspective; and
- the top-down challenge to optimise the allocation of resources.

The asset renewal and replacement plan:

- meets the asset class objectives;
- is technically feasible;
- controls risk at an acceptable level; and
- has the least net present cost (NPC) for customers/community over the long term.

Implicit in the NPC is that Evoenergy adjusts all expenditure for the time value of money to correctly account for the impact of cashflow and timing. Attachment 1 provides additional information on how Evoenergy applies risk-based methodologies in asset renewal and replacements.

The application of methodologies

The RCM and FMECA methodologies are designed to assess and quantify risk.

The **RCM** is a structured framework for identifying and analysing the functions and potential failures for a physical asset to preserve system functions.[11] The objective of RCM is to maximise the value that the business can derive from each asset, using a whole-of-life approach.

The **FMECA** is a structure to identify specific ways that a product, service or process may fail to meet customer expectations. The FMECA provides a tool to improve process performance, reliability and safety and prevent asset failure. It is an extension of the RCM analysis. Since it is detailed and time consuming, its application is usually reserved for high value cases or cases of critical importance.

[11] The governing factor of RCM analysis is the impact of a functional failure at the equipment level, and tasks are directed at a limited number of significant items – whose failure might have safety, environmental or economic consequences.

At a high level, the risk is a function of probability and consequence. Evoenergy uses the FMECA methodology for significant asset classes (as captured in the ASP) using desktop analysis. The FMECA is key to understanding (and monetising) an asset's risk.

Failure modes are the basis for calculating asset risk and consider:

- **Probability of Failure (PoF)** — the probability that an asset experiences a non-repairable functional failure during a given year.
- **Likelihood of Consequence (LoC)** — the probability that any given non-repairable functional failure of an asset results in a consequence occurring.
- **Cost of Consequence (CoC)** — the average cost of a consequence resulting from the asset failure.

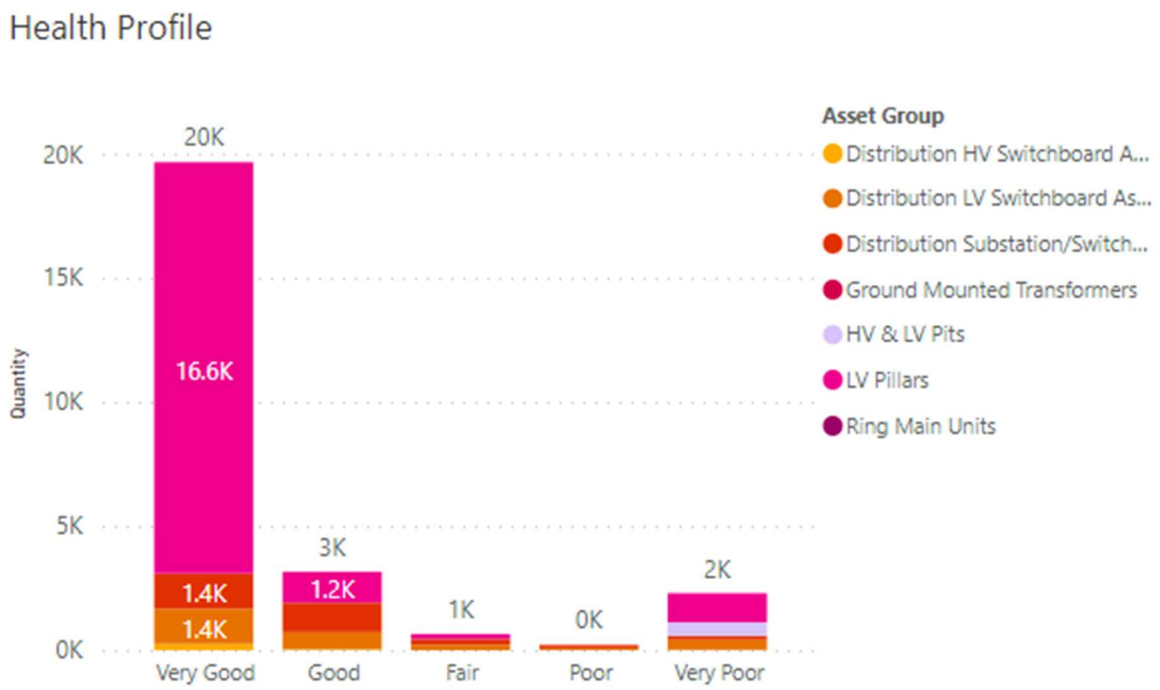
Figure 3 High level risk value framework

The use of RCM and FMECA methodologies requires the assessment of asset health and criticality. As far as practicable, an asset health assessment is based on direct monitoring, inspections and testing. Otherwise the analysis of asset health uses a combination of asset age and operational experience as a proxy of asset health.[12]

The asset health index (AHI) is determined at the start of the planning period, and future asset health is forecast forward. The asset health assessment is a repeatable process outlined in the Asset Health Framework. To illustrate how asset health is presented, Figure 4 presents the Asset Health Profile chart for Ground Distribution Equipment.[13]

[12] Analysis of asset health draws on operational experience where available, as well as experience of other distributors and advice from manufacturers.
[13] Appendix 1.12: Evoenergy Asset Portfolio Strategy – Ground Assets.

Figure 4 Asset Health Profile (as at July 2022) – Ground Distribution Equipment



Asset criticality takes into account the operational function of the asset and the consequences of failure. The criticality of the asset, together with the probability of failure and likelihood of consequence, allows for a quantification of risk. A series of factors contributing to the probability and consequence of failure for respective asset classes are identified, analysed and rated by a team of cross-functional subject matter experts within Evoenergy.

FMECA assists with the development of preventative maintenance and replacement programs. Evoenergy uses FMECA to analyse common or recurring faults with specific types of assets, which are identified through historical records of the performance of assets. Although time intensive, Evoenergy applies FMECA as an extension of the RCM method to prioritise:

- the criticality and urgency of tasks;
- the dynamic nature of condition-based work; and
- work bundling opportunities and resource constraints.

Using the FMECA has enhanced the control of maintenance activities and supported more effective condition assessment methods to determine the criticality of assets. Evoenergy uses the FMECA to prevent similar faults or failures from occurring in the future, improving reliability and reducing maintenance costs.

The RCM and FMECA methodologies are used in the prioritisation process in our AIO process, as shown above in Figure 2.

The next section discusses how Evoenergy applies a top-down challenge to the asset specific strategies, which provides for efficient and prudent expenditure of the asset renewal/replacement and maintenance program.

Top-down optimisation

As a further measure to ensure that the repex expenditure program is prudent and efficient, Evoenergy has overlayed a top-down assessment onto its bottom-up, asset-specific planning approach. This top-down challenge was provided by Cutler Merz, using the AER's repex model.[14] A summary of this engagement is contained in Attachment 1. In short, Cutler Merz found that Evoenergy's modelled repex was lower than the relevant threshold.

While this top-down testing is a useful check, Evoenergy makes replacement decisions based on risk as a function of asset condition and criticality. Further information is provided in Asset Portfolio Strategies.

Documentation of the asset renewal/replacement program

Evoenergy documents the asset replacement and renewal program in APS which are developed for primary and secondary asset classes and are an aggregation of more detailed underlying ASP. Evoenergy has prepared four APS, which are included as appendices to Attachment 1. These are:

1. Overhead Assets;
2. Zone Substation Assets;
3. Ground Assets; and
4. Secondary System Assets.

These APS have been developed to a standardised format, where possible. The structure is broadly:

1. Purpose;
2. Portfolio overview;
3. Asset portfolio objectives;
4. Asset class strategies; and
5. Program of work (including replacement and maintenance programs, and the long-term forecast).

As a result, Evoenergy's repex program is presented in the APS for its key asset classes. In addition, the APS refers to the more detailed ASP. These ASP are contained within the AIO tool, PowerPlan, which creates each plan at the time of request, using the current state of asset inventory, analysis, needs and activities. The dynamically generated elements include:

- asset base (inventory counts by asset sub-type);
- asset failure models (failure modes for each asset type within the group);
- asset costs (unit costs for replacement, maintenance and monitoring);
- projected inventory (graphical representation of asset counts for next 10 years);
- age profile (a graphical representation of asset age by year);
- consumption profile (a graphical representation of the percentage of asset life consumed);
- health profile (a graphical representation of asset base condition);
- maintenance program (a graphical representation of asset opex projections for the next 10 years);
- planned replacements (graphical representation of asset replacement events for the next 10 years); and
- future cash flow (graphical representation of opex/capex needs for the next 10 years).

The APS provide the business case for asset management strategy selection and specify the activities, resources, responsibilities and timescales for implementation for each specific asset class. Together the APS form part of Evoenergy's Asset Management Plan which describes the management of operational assets of the electricity distribution system.[15]

[14] Appendix 1.9.
[15] Individual asset classes are documented in 18 ASP as at July 2022.

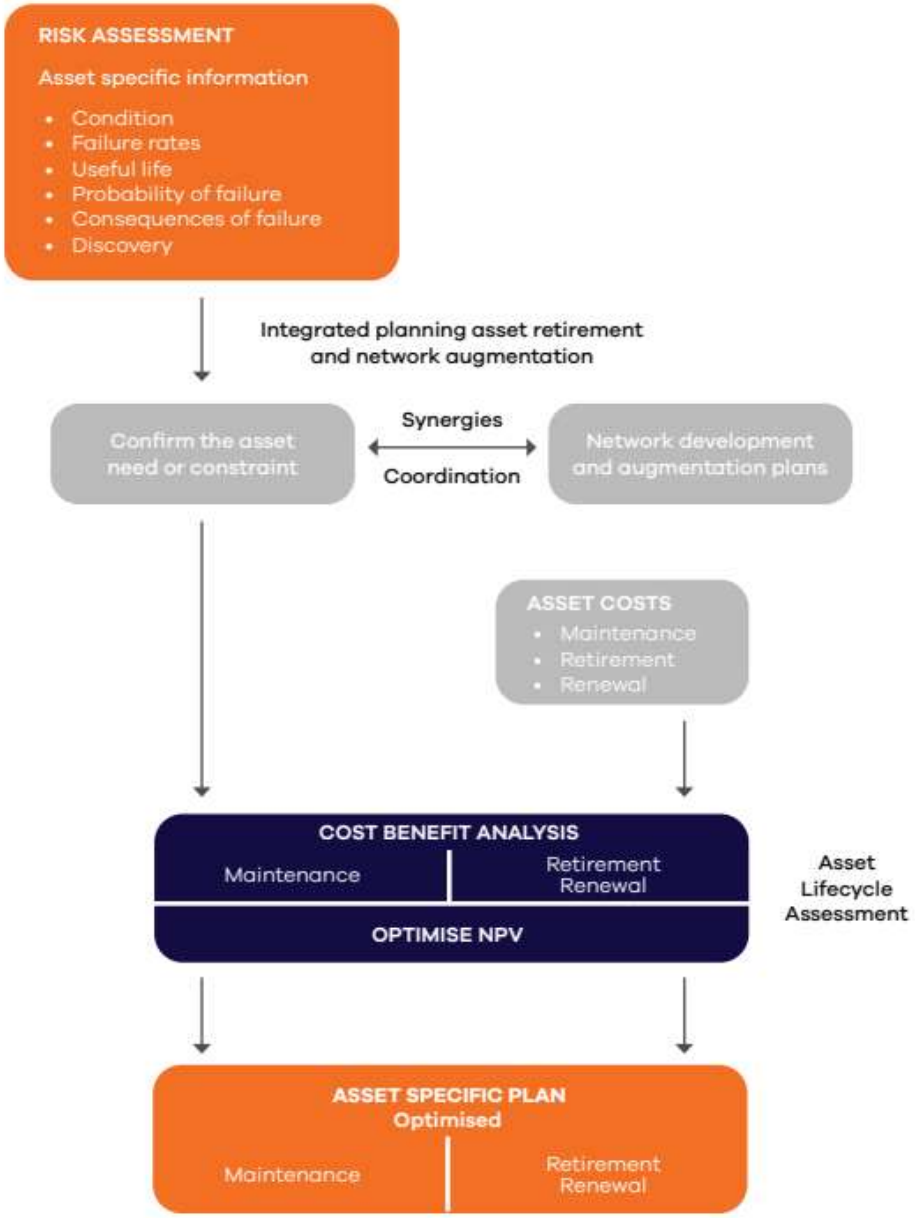
Asset management options are assessed in the context of the current state of each asset class, including the:

- asset condition;
- asset performance;
- asset criticality;
- risks;
- lifecycle costs;
- trends; and
- external environment.

A recommended asset strategy is presented with **associated capex and opex** forecasts, including a 10 year budget forecast, for consideration by management. Section 6 of this appendix provides further explanation in relation to Evoenergy's governance arrangements, including program/project risks and financial governance.

To summarise, Evoenergy uses a risk-based approach in developing its asset replacement program. The asset replacement program occurs in the context of Evoenergy's broader AIO system. Evoenergy's approach to managing its existing assets aims to optimise investment over the lifecycle of the assets. As a result, asset replacement only occurs when it is considered a more prudent than to undertake maintenance expenditure (see Figure 5).

Figure 5 Optimising asset retirement and renewal (overview)



4. Network planning

Evoenergy applies its network planning process in developing the augmentation capex program. The primary objective of network planning is to ensure sufficient security and reliability of supply at the lowest feasible cost. Evoenergy analyses network performance and capacity against projected demand and future network needs. The Network Development Plan (NDP), contained at Appendix 1.16, provides a full documentation of this process. This section provides a summary of the key information.

The **NDP** is an outcome of the strategic planning conducted in line with Evoenergy's Strategic Asset Management Plan. The purpose of the NDP is to provide the long-term view of the drivers impacting the electricity network and the ensuing electricity supply requirements. This plan sets the network development path which balances the operational needs with investment risks within the evolving business environment. Projects detailed in the Annual Planning Report (APR) and the corresponding PJR are a mid-term snapshot of the NDP.

Evoenergy's planning standards are set to ensure sufficient level of supply security for key components of the distribution and transmission network, including sub-transmission lines, substations and distribution lines. These network augmentation standards are aligned with Evoenergy's asset management strategy.

Evoenergy's planning standards are determined on an economic basis but expressed deterministically. As a starting point, the deterministic methodology is used to identify parts of the network where demand may exceed capacity. The network is designed with a limited redundant capacity margin in the critical parts of the network to cater for credible contingency events. A credible contingency event[16] is the loss of a single network element, which occurs sufficiently frequently, and has such consequences, as to justify Evoenergy to take prudent precautions to mitigate. This deterministic methodology is usually referred to as the *n-1* criteria.

The ADMS network analysis tools use demand forecasts to analyse and identify network limitations including capacity and quality constraints, through a process known as load flow modelling.

Synergies with asset replacement and retirement program are considered and captured at the same time. The identified constraints are further assessed by applying probabilistic planning methods (discussed in more detail below).

Network planning analysis also considers the security of supply requirements, which are documented in Evoenergy's Distribution Network Augmentation Standard[17] and is consistent with its NDP.

Evoenergy documents the outcomes of the network planning process in its APR. The APR describes the network planning process and the corresponding outcomes which form the network augmentation program. The APR summarises projects proposed for implementation over the next five years, including those proposed over the next five years, which may be subject to assessment through the Regulatory Investment Test for Distribution (RIT-D) or Transmission (RIT-T). The APR reflects the aggregate program, which is further detailed in the strategic planning reports, area plans and individual PJR.

[16] Under the Rules, it is an event described in Cl 4.2.3(b). Examples are provided under this clause, consistent with Evoenergy's description.
[17] Evoenergy, Distribution Network Augmentation Standard, referenced in more detail Appendix 1.15: Demand Driven Augmentation Capital Expenditure Business Case.

4.1. Project Justification Reports

Evoenergy's PJR provide investment justification for augmentation projects through the use of cost-benefit analysis (CBA). These investment proposals address specific network constraints within the strategic context. The analysis detailed in the PJR addresses growth in electricity demand and capacity requirements and evaluates credible options to address network needs.

The options analysis rigorously evaluates alternative solutions to address supply requirements including the 'do nothing' option and 'non-network' option as appropriate. Non-network solutions include demand management options, which are considered as part of each proposal. For example, a proposed demand management solutions are discussed in the Demand Management Strategy contained at Appendix 1.20. In the context of the investment funding regulations in the Rules, demand management traditionally represents operational expenditure for network businesses, who contract for, and otherwise support, DER and other non-network solutions as an alternative to investing capital in new or augmented network infrastructure. However, as regulation evolves and technology matures and reduces in price, demand management may be provided by economical and regulatory compliant capex options such as batteries to shift demand peaks.

Under PJR, each investment proposal is subject to a rigorous process of forecasting, analysis of asset capability and options analysis (including non-network solutions). The PJR take into account a range of requirements including supply security, reliability, safety and environmental and power quality requirements. The next section discusses how Evoenergy prepares annual demand forecasts as a key input into its network planning.

Evoenergy also assesses customer-initiated works that impact on network extension and network augmentation requirements. For instance, new estate developments and connections of major customers are considered when preparing the network augmentation plans or PJRs.[18]

In addition, Evoenergy undertakes non-demand driven augmentation to address supply security and resolve power quality issues not directly linked to demand driven works. For instance, changes to information technology and secondary systems, such as improved supervisory control and data acquisition (SCADA) or additional switching flexibility, are required to address environmental, safety and compliance issues or to enhance functionality of network assets.

4.2. Demand forecasting improvements

Evoenergy's annual planning process involves a comprehensive analysis of all indicators and trends to forecast the future load on the network and is followed by a detailed analysis of network performance and capability.

The demand forecast is the key input for determining capacity requirements for the augmentation program and network planning. Evoenergy's network planning approach considers the combination of demand (load) forecasts, current and spare capacity, asset ratings and asset failure rates to identify the severity of constraints and the required timing of solutions, that need to be addressed by either network or non-network solutions.

Evoenergy prepares and updates a 10 year rolling load forecast, identifying expected summer and winter maximum demands for the whole network, each zone substation and each 11kV feeder. The forecast maximum demand for summer and winter loads for each zone substation and bulk supply point and the forecast for whole-of-system demand inform network planning requirements. For example, demand forecasts are the main input that determines the augmentation program for zone substations.

Evoenergy has adopted the Australian Energy Market Operator's (AEMO) maximum demand forecasting methodology which uses the Monash Electricity Forecasting Methodology. Further details

[18] Appendix 1.21, Customer Initiated Works Report.

of Evoenergy's forecasting methodology and results are provided in Attachment 1.16, the Network Development Plan, and discussed in Evoenergy's publicly available Annual Planning Report.

During the 2019–24 regulatory control period, Evoenergy implemented a number of methodology improvements which provide a more accurate demand forecast and robust network augmentation program. Evoenergy, in-line with a focus of continuous improvement, has undertaken significant work to refine the demand forecasting methodology in support and expenditure decisions.

To help frame its investment decisions 2024–29 regulatory period, Evoenergy has also engaged Marsden Jacobs and Associates to develop the dedicated NZM. Evoenergy's NZM enables a data driven approach to consider the impacts of a net zero transition on our electricity and gas networks on a longer-term view (to 2045). It acts as a 'top down' guide, which is validated by our established demand forecasting methodology, which acts in a more 'bottom up' role. Further detail on the NZM modelling is contained at the dedicated Appendix 1.4.

The next section explains the risk-based methodologies Evoenergy applies for the planning and extension of the distribution network. For example, Evoenergy uses deterministic and probabilistic planning approaches to develop the augmentation program and demand management alternatives.

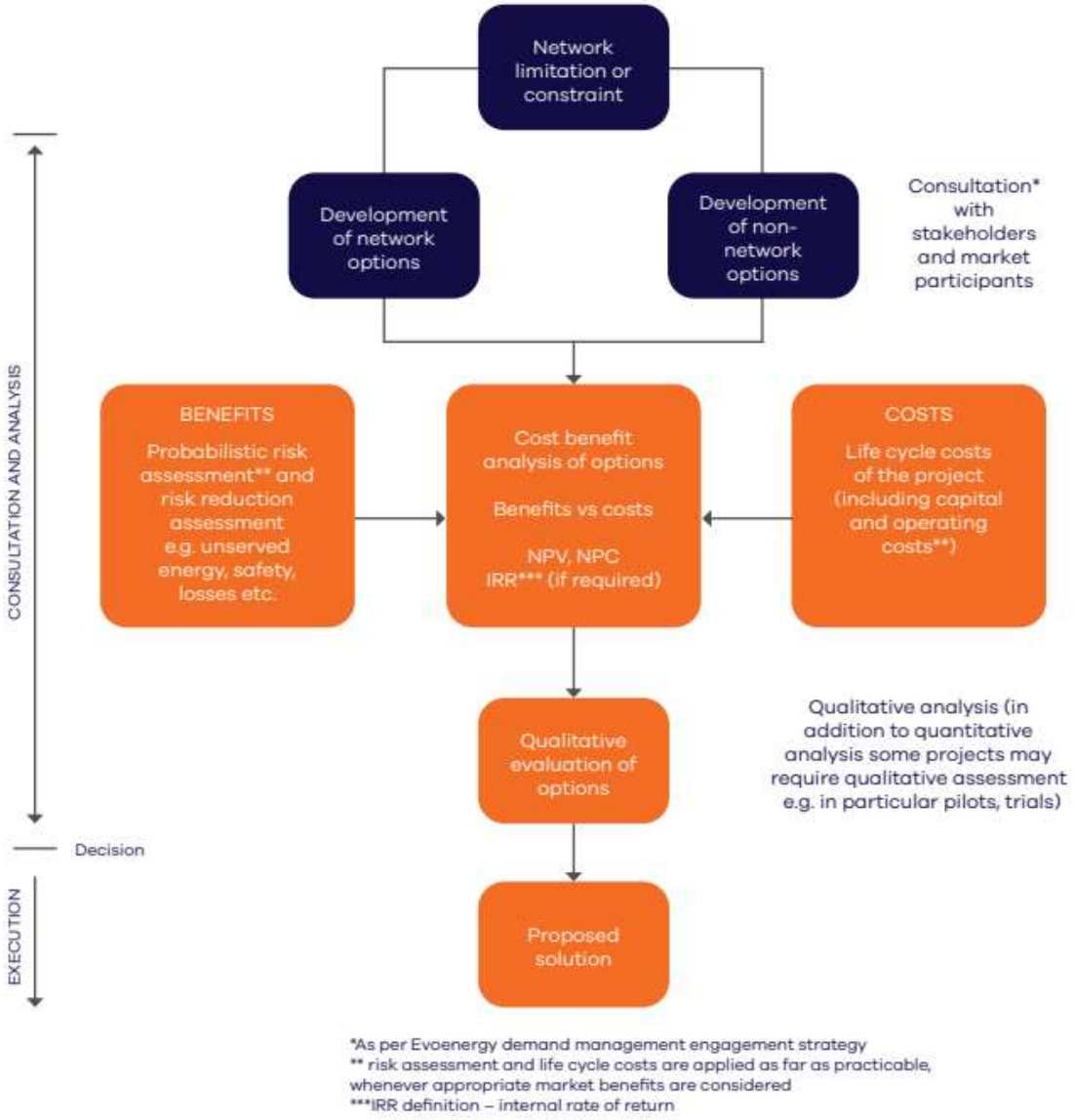
4.3. Risk-based approach in network planning

Risk management principles assist Evoenergy in achieving an appropriate balance between supply adequacy, security, reliability and safety at the lowest cost to consumers. Evoenergy applies several risk management methodologies in network planning.

As a starting point, deterministic criteria are used to identify parts of the network where demand may exceed supply capacity. These supply security criteria allow for a limited backup capacity for the critical parts of the network. The backup capacity enables Evoenergy to avoid interruption of supply in case of a credible network event such as a failure of major equipment. The reduced network capacity after the contingency event is commonly referred to as the N-1 capacity.

In recent years, Evoenergy significantly reduced reliance on deterministic planning criteria. For example, if part of the network has inadequate capacity, Evoenergy supports the deterministic methodology by using risk-based and probabilistic methods. The publicly available Annual Planning Report provides an overview of how Evoenergy makes probabilistic risk-based investment decisions.

Figure 6 Overview – probabilistic risk-based investment decisions



Evoenergy's planning approach to addressing network constraints or load growth issues is to use probabilistic analysis techniques coupled with fully exploring non-network solutions, such as demand-side management, before investing in network augmentation.[19] This approach considers the combination of demand forecasts, asset ratings and asset failure rates to identify the severity of constraints and the required timing of solutions.

To undertake probabilistic analysis in economic analysis, asset managers analyse the time for which demand is likely to exceed capacity. Subsequently, 'energy at risk' is estimated based on the probability of supply interruption and other related parameters. Evoenergy undertakes this assessment on a case-by-case basis by reference to the load curves. This approach reflects the value of network reliability to consumers.

[19] Discussed in more detail in Appendix 1.15: Demand Driven Augmentation Capital Expenditure Business Case.

The Value of Customer Reliability (VCR) outlines the dollar value impact of power outages lasting up to 12 hours for customers in the National Electricity Market. The AER publishes the VCR annually for different types of customers for adjustments in line with inflation.

Furthermore, to minimise investment in major network assets, Evoenergy uses emergency capacity of power transformers as the reference for the zone substation loading limits. This emergency capacity is typically 20 to 50 per cent higher than the capacity based on continuous transformer rating.

In the event of a network fault, Evoenergy plans for immediate significant load transfers between zone substations to reduce the load from emergency levels to ensure sustainable and continuous loading limits. Savings in capacity investment offset the increased operational risk associated with load transfers. Using this approach allows Evoenergy to defer significant capex on major capacity augmentation projects.

The next section discusses how Evoenergy assesses non-network options for demand-side management in determining the proposed augmentation program.

4.4. Non-network demand management options

Evoenergy recognises that under the deterministic planning approach the timing of network augmentation is determined based on peak demand exceeding the planning criteria. The probabilistic planning approach is an extension of the deterministic planning approach in that it provides a method of assessing the economic value of network reliability to consumers. A probabilistic planning framework therefore may offer a different range of opportunities for demand management.

Using probabilistic planning provides a scope for non-network demand management alternatives to reduce load by introducing the economic value of supply for customers. The consideration of non-network alternatives is made clear in the augmentation business cases,[20] particularly 11kV feeders, where batteries have been considered as investment options.

In the next section, Evoenergy highlights how its network planning process considers demand management solutions in addressing network constraints or load growth issues.

4.5. Demand management

Evoenergy has a dedicated Demand Management Strategy which is contained in Appendix 1.17. Demand management is deliberate action taken by network operators to better utilise existing network capacity by reducing or shifting demand for electricity, as an alternative to increasing network capacity to meet that demand. In the modern context, demand management may also theoretically unlock more rooftop solar PV, other DER or new services and provide improved flexibility to customers. It can therefore be considered a planning and operational approach which ultimately facilitates the DSO paradigm, where DNSP provide a customer centric platform for energy services adding value to customers through cost reduction, emissions reduction and flexibility.

Evoenergy's options analysis for addressing network needs includes the mandatory assessment of non-network options as a potential preferred solution.

Historically, demand management has been focused on addressing network constraints resulting from growth in demand using 'non-network' options. By undertaking demand management, Evoenergy seeks to influence the patterns of energy consumption, including the amount and rate of energy use, the timing of energy use and the source and location of energy supply. However, these demand

[20] Contained as Appendices to Attachment 1: Capital expenditure

management options are increasingly capable of being leveraged to address additional constraints, such as thermal or quality of supply issues, resulting from increased DER penetration.

Effective application of demand management can defer the need to augment parts of the network to address constraints. This reduces the capital costs of assets and leads to lower costs for consumers. Evoenergy intends to, where prudent, utilise non-network technologies such as solar PV generation and battery energy storage and manage the use of new loads such as EV charging stations, to reduce daily system peaks and produce a smooth a load as possible.

Evoenergy's Demand Management Strategy is underpinned by the following key **strategic initiatives**:

- **DM1 –** Drive lower electricity costs;
- **DM2 –** Maximise customer value;
- **DM3 –** Work existing assets harder;
- **DM4 –** Support decarbonisation;
- **DM5 –** Community engagement; and
- **DM6 –** Best practice planning.

5. Asset information systems

Evoenergy uses asset information systems to support all aspects of asset management including the collection and analysis of data. These systems facilitate Evoenergy's continuous improvement of the asset management function. Continuous improvements to the asset information systems enable Evoenergy to respond to changes in needs or to drive efficiencies in business processes.

Table 1 lists the key systems supporting asset management at Evoenergy. Evoenergy's Technology Plan (Appendix 1.22) contains a more detailed extraction of our various asset information systems across the key areas of works management, network operations, metering and billing and asset management, including improvements made over the 2019–24 regulatory period.

Table 1 Evoenergy's key asset information systems

Asset information system	Function
Accruent – Meridian Engineering Drawing Management System	Meridian provides the storage, revision control and authorisation workflow for all drawings within Evoenergy. These drawings include all Zone & Chamber Substation assets and Unit Assembly Construction Standards.
Schneider Electric – Advanced Distribution Management System (ADMS)	ADMS performs network load modelling and operations management in a real-time environment. Incorporating distribution management and outage management, it leverages the GIS and ArcFM to model the network. It also contains analytics, automated control of network apparatus and off-the-shelf AMI integration.
ESRI – Geographic Information System (GIS)	This GIS manages geographically referenced assets and the topology of a connected electrical network.
Schneider Electric ArcFM/Designer	A utility-specific extension to the ESRI ArcGIS system that provides configurable data models and sophisticated asset management and

	design tools, a single platform for documenting/maintaining the network topology, directly in the GIS.
Azteca - Cityworks	A GIS-centric system for works and asset management, also utilises the GIS as the source of the network topology and asset register, linking works and condition data to assets sourced from the GIS; providing asset histories in a geospatial environment.
PowerPlan – Asset Investment Optimisation	A planning tool that provides a decision framework and scenario analysis to help quantify asset risk and drive smarter investments. It is a venue to perform asset lifecycle analysis in Asset Decision Support (ADS) and Capital Investment Planning in Asset Investment Planning (AIP).
Utility Asset Inspection Management System (UAIMS)	UAIMS is a customer planning tool for vegetation notification, scheduling and rectification of encroachments on the electricity network. It integrates with Evoenergy's works management system, Cityworks and generates letters and work orders to customers and contractors.
Gentrack – Velocity	A utility-specific billing and customer relations management tool that manages the customer relationship for customer-initiated works. Velocity is integrated with the retail market, supports customer profile level meter and meter data management.
Oracle – eBusiness Suite Financials	Financial management software which manages the financials of the organisation. In this area it manages creation of projects and integrates with Cityworks for recording and calculation of costs in those projects.

6. Governance

Evoenergy's asset management activities are informed by and support organisational objectives and whole of organisational objectives and whole of organisation strategies and plans via a holistic governance structure. This section explains the frameworks and elements of its governance most relevant to the effective delivery of electricity distribution services in the 2024–29 regulatory period.

Evoenergy's sound corporate governance supports effective delivery of services and compliance with legal and regulatory obligations. In particular, the governance arrangements enable Evoenergy to operate the electricity distribution business, including financial controls, in compliance with ring-fencing obligations.[21]

Evoenergy operates within the broader corporate structure of the ActewAGL joint venture partnership, which includes regulated electricity and gas distribution networks services.

6.1. Asset management governance

Evoenergy's asset management governance supports asset management implementation, cost minimisation and risk management. The maturity of Evoenergy's asset management aligns with the best practice requirements of the ISO 55001 series of standards.

Evoenergy's asset management processes cover the complete spectrum of its activities, from initiation to delivery of assets, including project initiation, work planning, design, approvals, work delivery projects closure and reviews.

The Evoenergy Asset Management Committee (AMC) provides oversight and governance of Evoenergy's AMS and ensures that the AMS is meeting Evoenergy's strategic plans and objectives.

6.2. Allocation of responsibilities

While the AMC provides high-level strategic oversight, responsibilities for specific asset management activities are delineated according to a defined corporate structure which is organised to deliver the strategic objectives of the organisation. Under this structure, the main asset management responsibilities for all aspects of the Evoenergy's network are allocated across four Groups. Table 2 summarises the high-level responsibilities of the respective Groups.

[21] The latest AER ring-fencing guidelines applicable to Evoenergy are the *Ring-Fencing Guideline (Electricity Distribution) 2021 (Version 3)*.

Table 2 Corporate structure for the provision of electricity distribution network services

Group	Activities	Principal responsibility
Strategy and Operations	• Asset management policy development • Asset management system design and development • Asset strategy • Asset standards • Network planning • Asset commissioning and acceptance • Regulatory compliance • Operation of the network, including system control function.	• Asset ownership responsibilities and development of the program relating to network augmentation, demand management and the real-time operational system.
Major Projects	• Management of the program of major projects • Network augmentation design and work packaging.	• Design and Field activities relating to construction of major projects.
Customer Delivery	• Customer connection offers and management • Customer connection design and work packaging • Construction and replacement of network assets and customer connections • Use-of-network billing • Feed-in-tariff administration • Meter data validation and management • Contact centre operations.	• Development of the customer-initiated works program and NEM compliance (Local Network Service Provider, Meter Data Provider, Meter Provider (Type B))
Network Services	• Maintenance and management of the primary power assets • Maintenance and management of the secondary systems • Management of the program of work • Inspection and maintenance of network assets • Reactive and emergency repairs • Construction and replacement of network assets • Network switching.	• Development of the asset maintenance and replacement program. • Field activities relating to construction, inspection and maintenance.

The above summary demonstrates a clear allocation of key asset management responsibilities. However, Evoenergy's processes require cross-collaboration in project and program management to ensure a seamless approach to project and program implementation.

Evoenergy manages its projects and programs in accordance with tier classifications that reflect financial, delivery and other business risk. The next section describes how Evoenergy tailors the project management intensity according to the level of risk.

6.3. Risk management

Evoenergy manages projects according to the corresponding level of risk. As far as practicable, each project is assessed in relation to a level of risk (e.g. reputational, legal, financial, implementation etc).[22] On this basis, projects are categorised as either Tier 1, 2 or 3. The tier level determines how projects are approved and managed. A tier rating is a requirement when setting up a project and is applied prior to project approval. Evoenergy defines the tier allocation systematically according to an approved methodology.[23]

Tier 1 is granted to the highest risk projects. Tier 1 projects are usually strategic or high value projects which may require a higher level of management oversight, higher level of financial approval and/or may carry high implementation risk. The higher risk rating can also be allocated if the project involves new technology or is particularly complex. Higher risk projects (e.g. Tier 1) are often classified as "major projects". Major projects are usually managed through a specialised Major Projects Group.

Generally, Evoenergy employs Prince 2 methodology for project management and applies the methodology in accordance with the tiering system. The scalable methodology allows for a tailored project management approach according to the project size or complexity. Broadly, projects with a higher risk (Tier 1) are monitored closely through project boards in accordance with stricter Prince 2 project management principles. Projects with a lower risk rating (Tier 3) are usually implemented by the functional teams within the existing organisational structure.

In the next section, Evoenergy discusses how financial governance supports project risk management. Evoenergy's financial governance framework ensures that project tiering correctly reflects the associated with projects in a prudent and succinct manner.

6.4. Financial governance

Evoenergy's Commercial Risk Framework (CRF) underpins sound financial management within the business. The CRF provides an overall structure for managing financial processes related to forecasting, budgeting and approvals for the expenditure program. Together, these processes reflect a fully integrated planning process, and align with implementation of the expenditure program. Further, the financial governance policy and procedure set overall parameters for managing primary business risk and formulating objectives and requirements for:

- financial planning and forecasting;
- budgeting; and
- project and program approvals.

The CRF provides an overarching layer of guidance and direction, and combined with the financial delegations framework, acts to limit the exposure to risk for network planning and delivery of the works program. The financial planning processes and associated activities of Evoenergy's financial governance are discussed in the sections below.

Financial planning and forecasting

The CRF provides a risk-based approach toward the commercial management of expenditures (both capital and non-capital). Evoenergy aligns its financial planning and budget forecasting processes for the network with corporate financial planning. Financial plans and forecasts for business planning are largely based on the asset programs developed by asset managers. The formulation of the expenditure forecasts within the financial planning process strategically align business plans and strategies with program/project delivery.

[22] More detail on the Project Tier Classification Matrix is detailed in Appendix 1.3: Financial Governance Procedure.
[23] ibid

Evoenergy prioritises expenditure on programs/projects based on 10-year forecasts, developed in accordance with business requirements. These requirements include operational needs, customer needs and compliance with regulatory obligations.

Evoenergy gives careful consideration to the timing of expenditures with respect to the overall business drivers, cash flow effects and availability of resources. In particular, business planning processes incorporate the delivery of customer-initiated works. Evoenergy undertakes financial planning in compliance with the *Utilities Act 2000* (ACT), Consumer Protection Code, requirements of both the technical regulatory and the pricing regulatory, as well as industrial, public safety and environmental legislation.

Budgeting

Evoenergy implements its budgets, plans, programs and project-level estimates using a consistent approach that reflects actual costs. Evoenergy prepares financial forecasts (10 year forecasts) annually for formulating the annual budget for expenditure on projects/programs. The annual review of the expenditure program occurs in conjunction with updating the 10 year forecast period. The review process defines the forthcoming budget over the following one to two years of the 10 year forecast period.

Financial estimates of the expenditure requirements for business planning determine the budget in the forthcoming financial year. Annual budgets for capital and operating expenditure are updated to reflect business needs, and expenditures are prioritised in accordance with business requirements. Each year, the forward budget reflects the timing of expenditure for program/project delivery.

Evoenergy manages business planning by effectively deploying financial and non-financial resources to achieve whole-of-business targets. The commercial manager oversees and reviews resource balancing, such that all available resources are effectively deployed and that budgets do not exceed available resources to execute the program of works. Suppose a circumstance arises where there is a need for material unbudgeted expenditure, and offsets cannot accommodate this in Evoenergy's budget. In that case, the chief financial officer must be advised, and it may be necessary to request the ActewAGL Joint Venture Board (JV Board) for an increase of funds with an adjustment to the financial budget forecasts.

Evoenergy records all expenditure in its core finance system, Oracle. The system has financial delegations built-in to the purchasing and project modules to ensure the release of payments is authorised in accordance with the JV Board's financial delegations. These governance and reporting requirements ensure appropriate controls are in place and provide assurance for consistency of budget management.

The next section explains the formal approval requirements for managing program/project expenditure.

Financial approval requirements

Evoenergy develops projects through technical assessment and manages the projects/program within a financial framework. Evoenergy evaluates engineering requirements and risks in conjunction with financial risk and expenditure requirements before implementing solutions to address network needs.

The financial approval process jointly considers the needs of the technical program and financial management. Approved projects are subject to ongoing review to evaluate decision-making for prudent expenditure.

Expenditure is approved at a program expenditure level, with additional governance and reporting to ensure appropriate controls for incurring costs. The requirements for project/program approval apply to the following:

- financial forecasts (10 year forecasts), which are based on the proposed programs and are prepared/approved annually;
- budgets for capital/operating expenditure are prepared and approved annually; and
- individual projects/programs (included in the budget) are approved individually on a case by case basis.

Evoenergy's delegations schedule defines the levels of financial authority for releasing funds for expenditure on program/projects. Approval must be sought from the appropriate level of delegated authority with approval consisting of the following elements:

- financial authorisation (budget recognition and alignment);
- technical network approval; and
- financial approval.

For strategic projects, expenditure proposals are prepared by asset managers and coordinated through section managers before being advanced through the general manager for consideration by the executive. Broad adjustments, as directed by the executive are communicated back to asset managers for further refinement of expenditure proposals. This process is repeated until an acceptable solution is reached.

The expenditure proposal is rigorously assessed at each stage to ensure compliance with regulatory requirements, and expenditure is justified through a 'needs' assessment, and options analyses are thorough and accurate. This process validates that expenditures are efficient and necessary for Evoenergy to achieve its strategic objectives. The JV Board approves program expenditure and is responsible for the release of funds based on business cases with a significant capital value.

The next section discusses how Evoenergy incorporates a risk-based approach in managing the procurement of goods and services.

Procurement of goods and services

Risk-based procurement policies also support financial governance. Procurement of goods and services allows Evoenergy to make the best use of resources consistent with the size and complexity of the ACT network. Evoenergy applies corporate policies regarding contract management and procurement that ensure contract arrangements reflect arms-length terms. All goods and services provided meet specified performance requirements and minimise the total acquisition cost.

Evoenergy uses tendering to ensure that it receives and considers competitive offers through an open approach to the market. Evoenergy uses evaluation criteria to assess whether the procurement of goods and services is consistent with value-for-money principles. A value-for-money judgment balances the relative importance of the criterion against the costs and risks involved.

Evoenergy outsources components of the works program to maintain and develop the network to achieve cost efficiencies. For example, the design and construction work for major projects, such as constructing a new zone substation, is outsourced. The key rationale is that major projects can require specialised skills and solutions, and it is more cost-effective to outsource the works. This is discussed in more detail in Appendix 1.8.

Evoenergy applies financial thresholds to procurement and incorporates market testing in determining value for money. Financial delegations apply to procurements to ensure commercial risks are managed appropriately. This approach applies increasing threshold values for managing commercial risks of contracting for external goods and services.

In addition, Evoenergy is committed to ensuring a high standard of probity in all phases of the procurement process, from initial advertising to final decision making and debriefing of applicants.

Evoenergy's probity principles set out the standards of ethical behaviour that must be adhered to by all parties at all times during the proposal process. The probity plan provides a strategy and process to protect the integrity of the procurement.[24]

Evoenergy prepares technical specifications for the procurement of major primary assets, including requirements for assessing whole-of-life costs, including electrical losses.[25] The method of assessing these costs is included in the specification and is considered when selecting the successful tender, including:

- a business case that identifies the need in the context of the organisation's objectives;
- consideration of a range of possible options in meeting the objective, such as asset transfer, re-utilisation, lease or purchase;
- identification and quantification of costs, benefits and potential risks for options, including life-support costs and disposal issues; and
- justification for the recommended course of action.

The level of detail required in the business case will depend on the complexity and cost of the initiative. The key consideration for procurement is to ensure access to the required inputs for current and future asset management capabilities. The resourcing strategy ensures:

- asset management is optimised and sustainable in terms of whole-of-life, whole system cost over the long term; and
- the required level of service is met in the most cost-effective way through efficient use and maintenance of existing assets and prudent investment in new assets.

6.5. Risk management and accountability

Risk management is fundamental to Evoenergy's investment decisions. Although the methodology may vary for different asset classes, the risk management is integrated with asset management decisions and network planning. Network investment is designed to mitigate existing or emerging risks.

Evoenergy's Risk Management policy and procedures align with the International Standards Organisation's *ISO 31000:2009 Risk management – principles and guidelines.*

Risk management spans the full range of business activities, from strategic planning to field activities. Several examples applicable to asset management have been discussed above. The treatment of risk is commensurate with the level of risk. This strategic approach to risk reflects pre-determined tolerance levels and risk appetite.

The JV Board determines the tolerance for risk of the organisation. The JV Board, through the Safety, Audit and Risk Committee (SARC), has oversight on controls for managing risk and risk mitigation for key business risks. For other types of specific risks, the responsibility and risk ownership is allocated to line management in accordance with functional responsibilities.

For example, the responsibility for electricity network operation and asset management is allocated predominantly at the branch level, with each branch responsible for elements of the operation and

[24] The probity plan and protocols supplement other obligations applying to employees, including:
- *Work Health and Safety Act 2011 (ACT)*
- *Crimes Act 1914*
- *Privacy Act 1988*
- *Territory Records Act 2002;* and
- ActewAGL Distribution Code of Conduct.

[25] The effects and costs of distribution losses are included in the system planning analysis and investment strategy as inputs to determining any augmentation required to the system capacity to maintain the supply-demand balance.

management of the electricity distribution network. Table 2 above summarises the high-level responsibilities of the respective branches.

During the current regulatory period, Evoenergy has progressively increased the integration of a risk-based approach with asset management. In most cases, risk management is integrated with various processes and functions within the business. The sections above provided examples of how risk management is used in:

- development of APS;
- development of ASP;
- top-down reviews of the proposed program to allocate financial controls; and
- project and program management.

Evoenergy considers that its risk management measures strike an appropriate balance between the need to manage risks without compromising the efficiency of operations. In applying risk management measures, Evoenergy is aware of the need to use risk management in a way that adds value to business outcomes and is commensurate with the scale of its projects.

Abbreviations

Abbreviation	Meaning
ADMS	Advanced Distribution Management System
ALARP	As Low As Reasonably Practicable
AHI	Asset Health Index
AIO	Asset Investment Optimisation
AMC	Asset Management Committee
AMS	Asset Management System
APR	Annual Planning Report
APS	Asset Portfolio Strategies
APQRC	Australian Power Quality and Reliability Centre
ASP	Asset Specific Plans
CoC	Cost of Consequence
CRF	Commercial Risk Framework
DER	Distributed Energy Resources
DM	Demand Management
DSO	Distribution System Operator
FMECA	Failure Modes Effects and Criticality Analysis
GIS	Geographic Information System

ICE	Internal Combustion Engine
LoC	Likelihood of Consequence
NPC	Net Present Cost
NPV	Net Present Value
NZM	Net Zero Model
OLTCs	On-load tap changers
PJR	Project Justification Report
PoF	Probability of Failure
PV	Photovoltaic
RCM	Reliability Centred Maintenance
RPN	Risk Priority Number
SAMP	Strategic Asset Management Plan
SARC	Safety, Audit and Risk Committee
SCADA	Supervisory Control and Data Acquisition
VCR	Value of Customer Reliability