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POWERLINK QUEENSLAND REVENUE PROPOSAL

Supporting Document - PUBLIC

Powerlink Queensland
Asset End of Life - Policy

Delivering better value

Asset End of Life

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15/05/09	1.0	New Document	Not Yet Effective	[redacted]	[redacted]
30/05/11	2.0	Template and Introduction section reorganised	N/A	[redacted]	[redacted]
30/05/11	3.0	Minor Grammatical Errors Fixed	N/A	[redacted]	[redacted]
7/10/14	4.0	Update risk documentation	N/A	[redacted]	[redacted]
9/09/15	5.0	Changed from asset replacement to asset end of life approach	N/A		

1. INTRODUCTION

This policy provides the governing principles and criteria for Powerlink's approach to network assets which have reached end of life.

1.1. Purpose

The objectives of this policy are to:

- establish the overarching principles which determine network asset reinvestment or disposal strategies, needs, plans & projects;
- ensure that asset reinvestment or disposal needs are met in a timely manner through projects that cost effectively meet the long term needs of the network, by making an integrated assessment of technical, economic and risk factors.

1.2. Scope

The framework for consideration of asset end of life is consistent for all of Powerlink's network assets. Specific considerations or inputs for asset end of life planning may differ, particularly between stakeholder impacts, long and short lived asset classes, due to the different age profile, ageing characteristics, potential failure modes of assets, or onset of obsolescence, and the risks that these various aspects present.

1.3. References

Unless otherwise specified, the latest edition of the referenced document (including any amendments) applies.

External References

Document Function	Document Type	Author	Publisher	Subject / Title
Guiding	External	Joint Technical Committee OB-007, Risk Management	Standards Australia/Standards New Zealand	*AS/NZS ISO 31000:2009 Risk Management*
Guiding	Internal	Michael Pelevin	Garry Mulherin	Asset Risk Management Framework

2. END OF LIFE

The *End of Life* of a network asset is the point in time at which:

- a network asset is not capable of fulfilling its intended function or the continued operation of the asset gives rise to safety, network reliability, compliance or other risks that exceed appropriate thresholds, such that intervention is required beyond normal maintenance and operational refurbishment activities (the *End of Technical Life*); or
- it can be demonstrated through life cycle cost analysis that maintaining the network asset in service, as compared to options for asset reinvestment or asset disposal; no longer represents the lowest long run cost to consumers (*the End of Economic Life*)

3. ASSET END OF LIFE PLANNING

3.1. Objectives

Asset end of life planning ensures that network assets are capable of meeting the ongoing requirements of the network in a manner that is safe, reliable and within commercially sound parameters.

At the end of their technical or economic life assets may not perform as required or the risks associated with reliability, safety, obsolescence or other factors with the asset require intervention.

Where there is no enduring need for the asset a strategy for ongoing management of the asset should be developed, including options such as retention of the asset under minimal maintenance, electrical disconnection and works to make safe; or full decommissioning and demolition. The strategy for ongoing management should be selected on the basis that it appropriately mitigates identified safety and environmental risks and that it results in the lowest long run cost to consumers.

Where the requirement for the services provided by an asset continues beyond the end of its technical or economic life, the objective of asset end of life planning is to mitigate risks and ensure that reinvestment occurs in a timely manner through the application of technically and economically appropriate solutions.

By assessing network assets against a set of defined triggers and enduring network service requirements, asset reinvestment or disposal needs can be clearly identified.

3.2. Planning Process

Asset end of life planning is an ongoing and iterative process where forecast asset and network needs are coordinated within and between network areas.

A plan to address asset reinvestment or disposal needs is reviewed, prepared and documented on an annual basis in the Asset Management Plan.

Powerlink's overall network development planning includes coordination of asset reinvestment requirements with the broader capital works program. Synergies between projects from different triggers may arise through work type, geographical location or timing and may result in economies of scale and optimised delivery considered as part of Powerlink's approach to portfolio planning.

3.3. Risk Management Framework

The prioritisation of asset reinvestment or disposal needs and options are assessed using Powerlink's Asset Risk Management Framework in accordance with AS/NZS ISO 31000:2009 Risk Management. Factors considered include safety and environmental compliance, reliability, operational impacts and obsolescence.

3.4. Reinvestment or Disposal Project Proposals

Information requirements for asset reinvestment or disposal project proposals and project approval are set out in this policy. The risk management framework is linked to the options and timing for each asset reinvestment or disposal proposal to ensure that overall risks are appropriately managed.

4. ASSET END OF LIFE TRIGGERS

End of technical life triggers for network asset reinvestment or disposal investigation are defined as:

- Age;
- Capacity;
- Capability; and
- Compliance

The above four drivers are combined with condition and health indices for major asset classes that quantify how close the asset is to the end of technical life.

End of economic life occurs if it is more cost effective to either reinvest or dispose of the asset considering the remaining whole of life costs.

4.1. Age

In the first instance, asset age is a trigger for a condition assessment to consider the capacity, capability and compliance of the asset. Age in itself is not justification for the reinvestment or disposal of an asset. Age profiles, combined with desktop analysis of historical performance of plant and equipment, are used to forecast long-term asset reinvestment or disposal requirements.

As a general guide, condition assessments should be undertaken for network assets that are reaching 80% of their remaining life, to assist in the reinvestment or disposal planning process.

4.2. Capacity

For Powerlink, asset capacity relates to a specific asset's ability to bear the load required by its current function. When the load placed on an existing asset increases beyond its current capacity, a reinvestment need is considered to exist.

Examples of this include the continuous current and fault ratings of high voltage substation plant, or the capacity of telecommunications and infrastructure to handle the data load placed on it by operational SCADA and other applications.

It should be noted that asset capacity and network capacity (as related to network augmentations and associated regulatory principles) are different. Network capacity relates to the capability of the transmission network to carry sufficient power to meet the demand placed on it.

4.3. Capability

The capability of the asset is evaluated through a variety of means. Condition assessment provides a foundation for assessing capability, particularly for assets where potential failure modes take longer to evolve and are evident through physical inspection (e.g. corrosion, mechanical wear). Powerlink maintains a program of condition assessments, planned in line with the age of the asset and based on established condition assessment methodologies, undertaken by a mix of internal personnel and external consultants.

For some assets condition assessment is of limited value because capability is reduced due to other issues associated with obsolescence, performance and reliability. Obsolescence is a condition pertinent to certain classes of assets, with criteria including:

- Equipment is out of production and without manufacturer support;
- Equipment is of an age that there is no technical support available; and
- Powerlink and the manufacturer cannot provide adequate spares to sustain the equipment's function in line with known rates of failure.

Reductions in the performance or reliability of an asset are also identified through the ongoing review of network and asset performance data derived from sources including forced outage analysis, plant defect reporting and on-line remote monitoring systems.

In assessing the reinvestment or disposal of all types of assets, reports should be extracted from asset information repositories, such as SAP to provide the following data:

- Equipment types, location and quantity
- Equipment age and assessed remaining life
- Defect and condition based notifications
- Work orders for maintenance costing

In some instances, proprietary databases are maintained that can offer helpful information regarding equipment type, location and quantity, equipment performance, availability and reliability and the impact that equipment failures have had on network outages.

4.4. Compliance

The final aspect of the risk assessment process for asset reinvestment or disposal involves the consideration of compliance issues, involving statutory or legal issues that may impact on the decision to reinvest or dispose of an asset. This may involve the application of environmental legislation, National Electricity Rules, the Electrical Safety Act or relevant Workplace Health and Safety legislation.

4.5. End of Economic Life

Typically end of economic life occurs following an end of technical life trigger. At the end of technical life a significant investment is usually required which can make retaining the asset uneconomic compared to other options, including disposal if there is no long term need. End of economic life can also occur before end of technical life in the event that significant operational expenditure is required on a component of the asset. Whilst it may be cost effective to invest in the asset if there is an enduring need, if there is no future requirement for the asset, disposal should be considered as an option as it may be more economic.

5. INFORMATION REQUIREMENTS FOR PROJECT APPROVAL

When developing the Asset Management Plan, the following information is required to provide a plan coherent with reinvestment or disposal drivers and triggers that exploit as many potential synergies with other capital and operational development programs as possible.

5.1. Technical Evaluation of End of Life Triggers

A technical evaluation of the assets against the appropriate or relevant end of life triggers should be carried out and documented. The basis on which a reinvestment or disposal need is proposed should be in keeping with the range of asset end of life triggers identified in Section 4. This may involve reference to condition assessments, identification of factors that contribute to a state of obsolescence or other strategies that contribute to a reinvestment or disposal need. The technical evaluation will also incorporate a detailed risk assessment of the relevant end of life trigger.

5.2. Options for Reinvestment or Disposal

Proposals for asset reinvestment or disposal should consider the enduring need for the asset functionality. In the event that the asset is no longer required, analysis should be performed to identify the optimum strategy and timing for managing the asset (including continued minimal maintenance; electrical disconnection and works to make safe; and full decommissioning and demolition). Like for like replacement should not be assumed and a range of feasible options should be considered where possible. Qualitative and economic analysis (including an assessment of the extent of risk mitigation provided) should be undertaken on the various options proposed to determine the recommended option. The range and depth of options considered should be commensurate with the investment value.

5.3. Recommended Option

The recommended option for the asset reinvestment or disposal shall be put forward in conjunction with a detailed project specification indicating the technical deliverables, timing and other requirements, supported by a detailed cost estimate.

5.4. Related Projects

In some instances, economies of scale can be achieved by aligning activities with other major network projects. In order to plan for this successfully, projects related to asset reinvestment or disposal should be identified and considered in the Portfolio Plan.

6. RISK ASSESSMENT METHODOLOGY & PRIORITISATION

Within the Asset Management Plan structure, Powerlink applies its Asset Risk Management Framework to review and manage risk and prioritisation of these projects in line with AS/NZS ISO31000:2009 Risk Management.