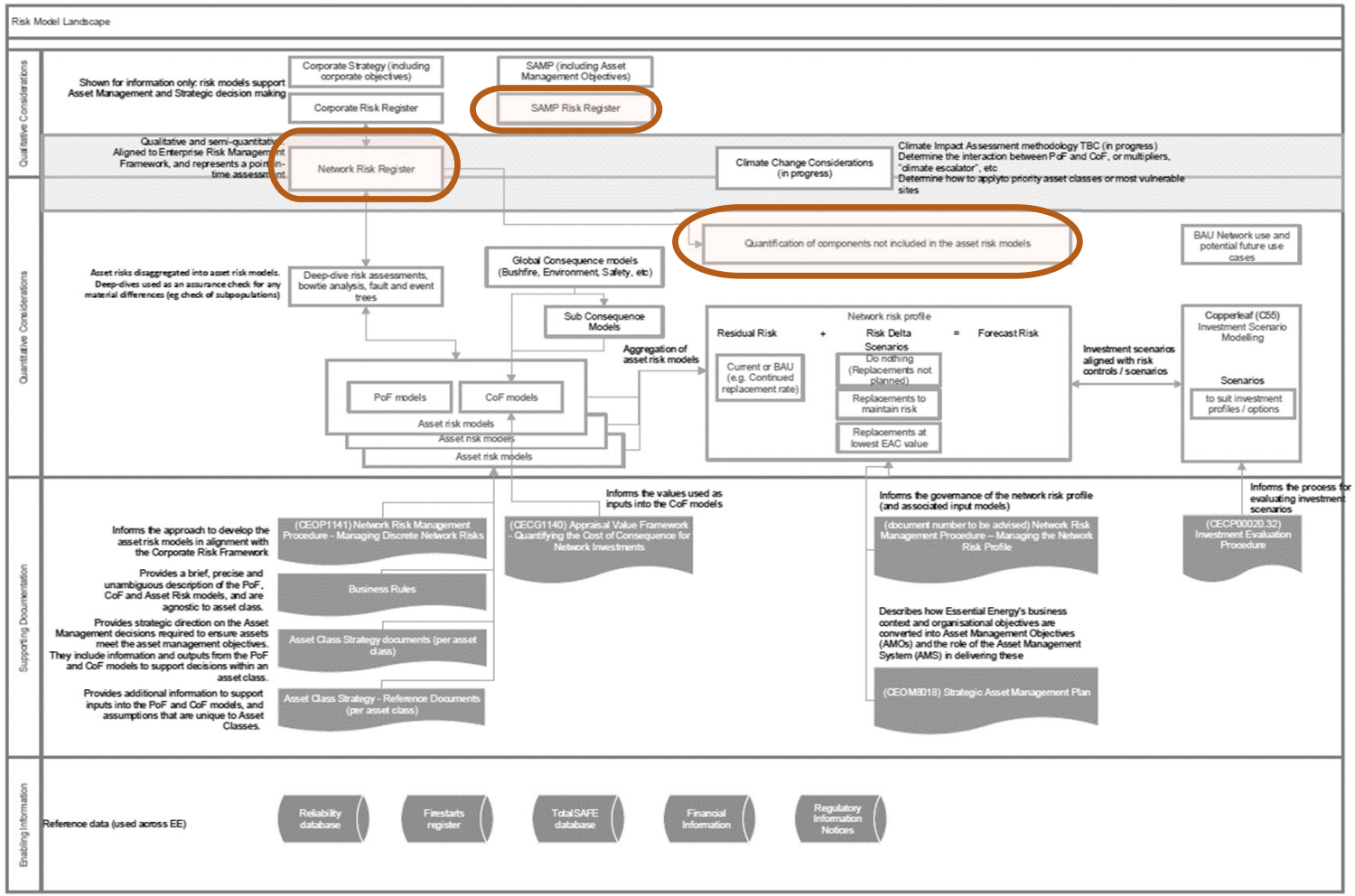
Calibration approach - Quantitative & Qualitative

Documented approach for the overall calibration of Network and SAMP Risk Registers with the quantitative asset risk models

11th February 2022

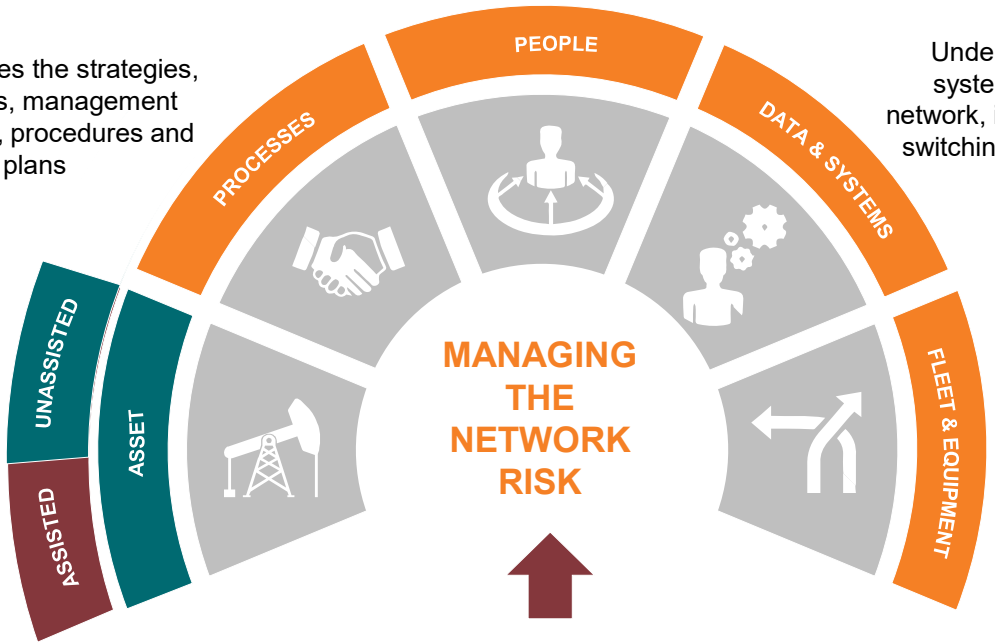
Document Overview

This document captures the calibration approach for the qualitative risk registers (namely the Network Risk Register and the SAMP Risk Register), in order to remove any duplication with the network risk that is quantified in asset risk models.



Context - Managing the Network Risk

Management of Network Risk requires consideration of more than just the asset itself, it includes all the enabling elements of the asset that allows it to operate and create value for the organisation, as well as consideration of external factors and allowance for unknowns.



Sufficient capacity, capability and relationships required to manage the network.

This includes the strategies, standards, management processes, procedures and plans

Underlying data, information and systems required to manage the network, including system operation e.g. switching, planned outage notification

Relates to the physical infrastructure assets that form the electricity network

Fleet and specialist equipment required to manage the network

UNKNOWNS UNKNOWNS

Black Swan Events: Unpredictable events that are beyond what is normally expected of a situation and has potentially severe consequences

SUPPLY CHAIN

This includes product and service providers used to support the asset, including upstream supply

ENVIRONMENT

Environmental Factors, such as weather, climate change, etc

FUTURE ASSETS

Future network arrangements, including connections, gifted assets, SAPs

PUBLIC

Accidental and intentional public interferences with the network

Legend

Network Assets | Non-Network Assets | External | Unknowns

Figure is not indicative of percentage of, or contribution to network risk, and is for illustrative purposes only.

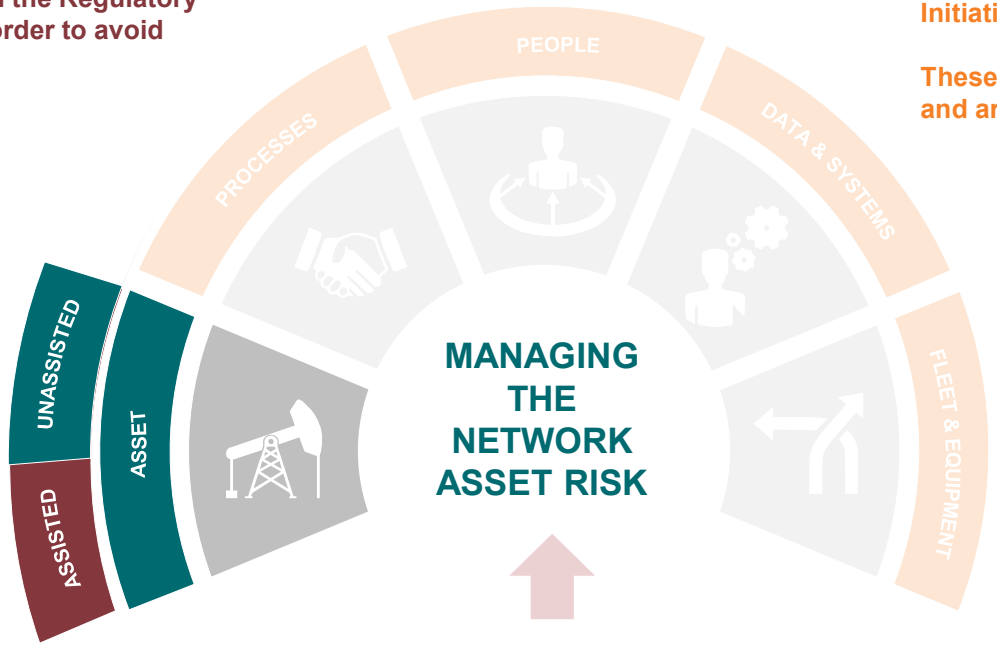
Context - Managing the Network Asset Risk

This document focusses on the approach to the network asset risk. The remaining considerations are managed through existing mechanisms across the organisation.

Corporate obligations and license conditions are not included within this document. These are managed through the Regulatory Compliance Framework in order to avoid material non-compliances.

Risk associated with non-network assets are largely mitigated through Corporate initiatives, e.g. Operating Model, Business Improvement Initiatives, etc

These are quantified through other approaches and are not captured in this document.



Risk associated with network assets are largely mitigated through Asset Management Strategies.

The approach to quantifying the assisted asset failures is captured in this document.

Risk associated with Unknown Unknowns cannot be mitigated or planned for.

These can be quantified through contingency and are not captured in this document.

Risk associated with External organisational influences are largely mitigated through Strategic planning and performance management. These are quantified through other approaches and are not captured in this document.

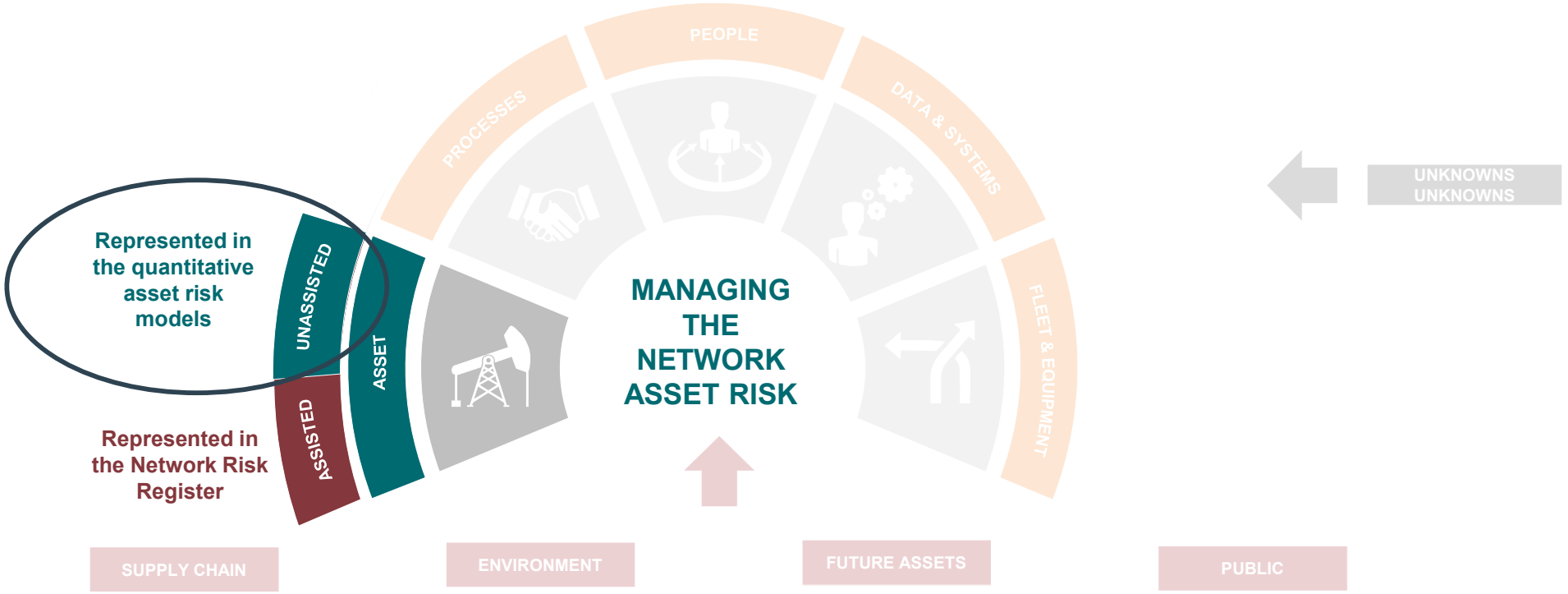
Legend

Network Assets | Non-Network Assets | External | Unknowns

Figure is not indicative of percentage of, or contribution to network risk, and is for illustrative purposes only.

Context - Managing the Network Asset Risk

The quantitative asset risk models provide a credible and realistic representation of a portion of the network asset risk. The remaining component of network asset risk can be quantified from the Network Risk Register.



Legend: Network Assets | Non-Network Assets | External | Unknowns

Figure is not indicative of percentage of, or contribution to network risk, and is for illustrative purposes only.

Context – Asset Management Transformation

Essential Energy has been on a whole-of-business asset management focussed transformation, aimed at enabling the implementation of risk-based asset management approaches. There were a number of key artefacts produced that capture qualitative and quantitative information

Need identified for an improved understanding of the network risk profile (May 2019)

Network Risk Register developed and validated

The Network Risk Register was developed to represent the network risk profile at a point in time. It provides a source of information regarding current controls and their effectiveness across the network, with consideration of asset performance, system operation and third party / external impacts.

Asset Strategies team established (Oct 2019)

Probability of Failure (PoF) and Consequence of Failure (CoF) models completed

Asset Class Strategies risk models established

Appraisal Value Framework 2 CECG1140 (VF2) established (still to be implemented)

Asset Class Strategies risk models revised

Strategic Asset Management Plan CEOM8018 (SAMP) established (still to be implemented)

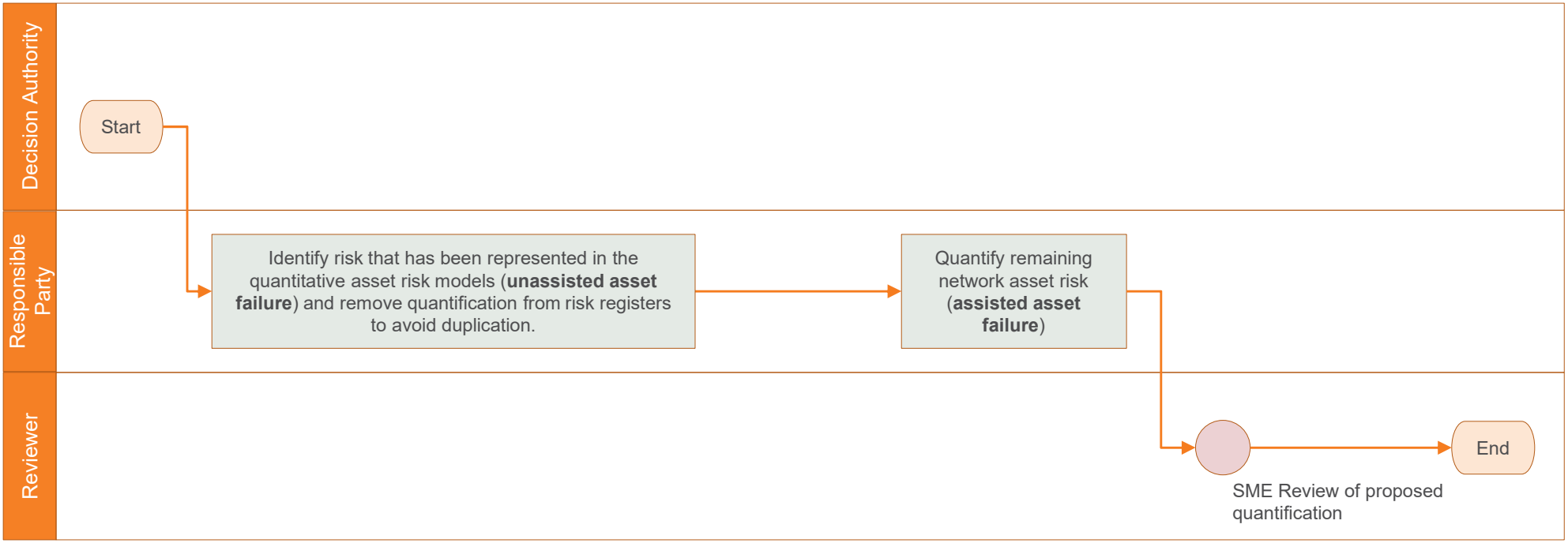
The SAMP Risk Register was developed to document the management of the risk of not achieving Asset Management Objectives (AMOs) articulated within the SAMP. It is owned by the Head of Asset Management and identifies improvement actions that aim to operationalise the SAMP.

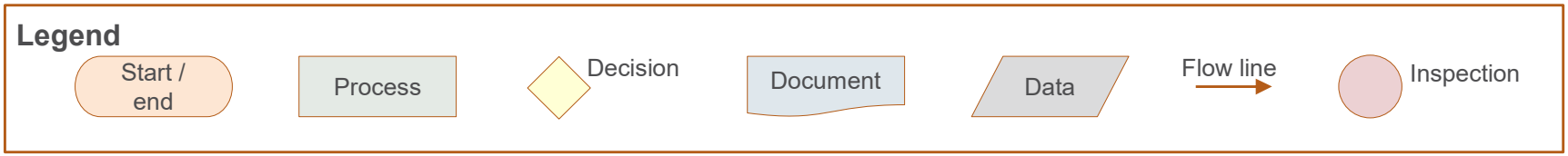
SAMP Risk Register developed

Network risk profile established to support FY24-29 Regulatory submission

Calibration approach

The proposed approach quantifies the components of network asset risk from the existing Risk Registers and avoids duplication with the quantitative asset risk models.





Network Risk Register - Approach

The proposed approach to quantify assisted asset failure risk, and avoid duplication is captured below.

Unassisted Asset Failure	**1. Filter on Column H and remove from Network Risk Register**
Assisted Asset Failure	**1. Filter on Column H for current view of the quantification of Assisted Asset Failure risks.** **2. Review risk assessment for currency since previous assessment.** **3. Provide justification for calculation of risk, and validate accuracy.**

Risk	+	**Risk Delta**	=	**Forecast Risk**
Quantified within Network Risk Register (and inclusive of current controls)		Captured as potential treatment plans in the Network Risk Register, but not quantified		Not quantified within Network Risk Register

Potential suite of risk treatment plans / investment scenarios

Mapping to existing treatment plans across the organisation has been completed. The original sources across these Corporate Initiatives should be referenced for the quantification, and this is not captured in this document.

Enterprise Risk Category	PIP ID and PIP Name
AMOs	Description
Investment Cases	Amplify Initiative
Asset Class Strategy	Branch Projects
System Strategy	Formal Safety Assessment
Primary Network Strategy	

Network Risk Register - Approach

The proposed approach to quantify assisted asset failure risk, and avoid duplication is captured below.

Assisted Asset Failure

1. Filter on Column H for current view of the quantification of Assisted Asset Failure risks.
2. Review risk assessment for currency since previous assessment.
3. Provide justification for calculation of risk, and validate accuracy.

2 Review risk assessment behind risk outputs

		1		Risk Outputs				
Risk ID	Event Description	Grouping	Sub-Grouping	Safety	Network	Reputation	Bushfire	Total
1	Third party contact with overhead network	Assisted Asset Failure	Overhead Conductor	$79,125,000	$116,617	$0	$0	$79,241,617
8	Assisted failure of HV conductors	Assisted Asset Failure	Overhead Conductor	$904,286	$111,164	$0	$4,880,000	$5,895,450
9	Assisted failure of LV conductors	Assisted Asset Failure	Overhead Conductor	$904,286	$4,453	$0	$4,880,000	$5,788,739
17	Assisted failure of padmount substation	Assisted Asset Failure	Enclosed Substation	$3,165,000	$0	$16,000	$0	$3,181,000
18	Third party damage to in-service underground pit and cubicle	Assisted Asset Failure	Underground Service	$3,165,000	$0	$0	$0	$3,165,000
24	Assisted LV conductor clashing	Assisted Asset Failure	Overhead Conductor	$0	$7,308	$0	$1,708,000	$1,715,308
27	Third party damage to in-service underground cables	Assisted Asset Failure	Underground Cable	$904,286	$237,689	$0	$0	$1,141,975
32	Assisted failure of streetlight metal columns	Assisted Asset Failure	Streetlights	$904,286	$0	$0	$0	$904,286
49	Assisted failure of steel tower	Assisted Asset Failure	Pole	$0	$28,747	$0	$0	$28,747

3 What is the basis of this estimate?
- Update to VF2 values for consequence categories and severities, and any other calculation inputs
- Validate the probability utilised for likelihood categories
- Validate the risk outputs

SAMP Risk Register - Approach

There is no proposed quantification from the SAMP Risk Register for the purposes of quantifying assisted asset risk.

1. SAMP Risk Register largely represents uncertainties regarding the ability to achieve the Asset Management Objectives (AMOs)
2. BAU approaches / operational controls are captured in other existing Corporate artefacts and are not proposed for further quantified in this approach.

Risk	+	Risk Delta	=	Forecast Risk
Not quantified within SAMP Risk Register		Captured as potential treatment plans in the SAMP Risk Register, but not quantified		Not quantified within SAMP Risk Register

Potential suite of risk treatment plans / investment scenarios

Mapping to existing treatment plans across the organisation has been completed. The original sources across these Corporate Initiatives should be referenced for the quantification, and this is not captured in this document.

- Enterprise Risks
- Investment Cases
- Corporate Projects
- Planned Operational Activities

Opportunities for Improvements

In addition to the approach captured in this document, there are opportunities for improvement that can be considered in the future.

Observation	Risk	Opportunity
Line of sight between the items captured in the Network Risk Register and the Asset Management Objectives (AMOs), as well as the Capital Projects have been identified, however there appears to be varied levels of awareness of this across the organisation, particularly with first line risk owners.	There is a risk that the first line risk owners are not fully aware of the identified asset risks and associated controls.	There is an opportunity to apportion the asset-related information in the Network Risk Register into future iterations of Asset Class Strategies. This would assist in having the first line risk owners equipped with all existing risk information in a common location. At this point, the Network Risk Register could be utilised as a second line of assurance monitoring tool.

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