Dear Sir/Madam,

Please find attached the Centre for Smart Power and Energy Research (CSPER), School of Engineering, Deakin University's submission to the Australian Energy Regulator (AER) consultation on AusNet Services' January 2026 Bushfire Cost Pass-Through Application.

Prepared by Dr Alireza Ganjovi and Associate Professor Saman A. Gorji, this submission provides technical, engineering, and governance-focused commentary on the proposed recovery of bushfire-related expenditure and the broader regulatory assessment of resilience investment under the National Electricity Rules.

The submission does not oppose recovery of efficient, prudent, and genuinely incremental disaster-related expenditure where the applicable regulatory criteria are satisfied. Rather, it focuses on strengthening regulatory confidence by improving the visibility of event causality, expenditure boundaries, evidence quality, consumer value, resilience outcomes, and future regulatory learning.

Instead of treating bushfire cost recovery solely as a financial assessment, the submission frames it as a resilience decision-assurance process. We propose a Resilience Decision Assurance Framework (RDAF) that complements the existing pass-through assessment by providing a structured and transparent approach to evaluating event causality, expenditure assurance, evidence quality, consumer value, resilience benefits, and adaptive governance without creating unnecessary regulatory burden.

The submission further highlights the importance of regulatory observability, recognising that effective regulatory decisions require more than expenditure totals alone. We argue that decision-makers should be able to observe the complete pathway linking network damage, restoration activities, expenditure categories, operational performance, customer outcomes, and resilience improvements. This approach strengthens transparency, improves reproducibility of regulatory decisions, and supports greater public confidence in natural-disaster cost recovery.

Recognising that climate-related hazards are becoming more frequent and severe, the submission also emphasises the importance of treating information as regulatory infrastructure and embedding adaptive governance into future resilience decision-making. We recommend proportionate post-event review mechanisms that allow each major disaster to contribute to improved regulatory practice, resilience planning, and consumer protection over time.

Drawing on our ongoing research and regulatory engagement in electricity-network resilience, regulatory observability, adaptive governance, consumer value realisation, and infrastructure decision assurance, we believe future resilience frameworks should remain transparent, evidence-based, and capable of evolving alongside changing climate risks and electricity-system conditions.

We appreciate the opportunity to contribute to this consultation and trust that the submission will assist the Australian Energy Regulator in its assessment of AusNet Services' application. We would welcome any further discussion or clarification if required.

Yours sincerely,

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Resilience Decision Assurance, Consumer Value Realisation, and Adaptive Governance in AusNet Services' January 2026 Bushfire Cost Pass-Through Application

Submission to the Australian Energy Regulator

AusNet Services - January 2026 Bushfires Cost Pass-Through Application
Consultation Paper, June 2026

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Submission Context

This submission responds to AusNet Services' January 2026 Bushfire Cost Pass-Through Application. CSPER does not oppose recovery of efficient, prudent, and genuinely incremental disaster-related expenditure where the National Electricity Rules criteria are satisfied. Its contribution is narrower: to show how the AER can strengthen confidence in the proposed recovery by making event causality, expenditure boundaries, evidence quality, consumer value, resilience outcomes, and future learning observable. The submission proposes a Resilience Decision Assurance Framework that complements the existing pass-through test without creating an unnecessary regulatory burden.

Executive Summary

AusNet seeks approval to recover costs associated with the January 2026 Longwood and Walwa bushfires. The regulatory issue is not only whether the fires occurred or whether AusNet incurred costs. It is whether the proposed recovery amount is supported by a transparent decision chain linking event impact, network damage, restoration actions, incremental expenditure, consumer outcomes, and resilience learning. Thus, this submission frames bushfire cost recovery as a decision-assurance problem rather than a narrow cost-assessment exercise.

We recommend that the AER assess the application through five linked principles: evidence assurance, consumer value realisation, regulatory observability, information quality, and adaptive governance. In practical terms, each approved cost category should have a visible technical cause, visible operational action, visible financial classification, and visible consumer or resilience implication. This approach supports legitimate cost recovery while reducing the risk of double recovery, weak cost attribution, or passive reimbursement of repeated disaster impacts.

1. Introduction

Electricity network regulation is moving from a reliability-centred model toward a resilience-centred model. Conventional reliability metrics, including outage frequency, outage duration, expected energy not served, SAIDI, SAIFI, and service-performance incentives, remain necessary but are incomplete for high-impact events such as bushfires, storms, floods, heatwaves, and compound climate hazards. The engineering problem is no longer only whether the network performs under normal conditions; it is whether the network can withstand, absorb, recover from, and learn after severe external shocks [1, 2].

This shift is now material in Australian electricity regulation. The AEMC's 2025 resilience rule requires the AER to consider whether forecast capital and operating expenditure would efficiently reduce the risk and impact on consumers of outages caused by severe weather events [3]. The AER's Network Resilience Guidelines consultation confirms that resilience expenditure is becoming an explicit regulatory assessment issue, not a peripheral asset-management matter [4].

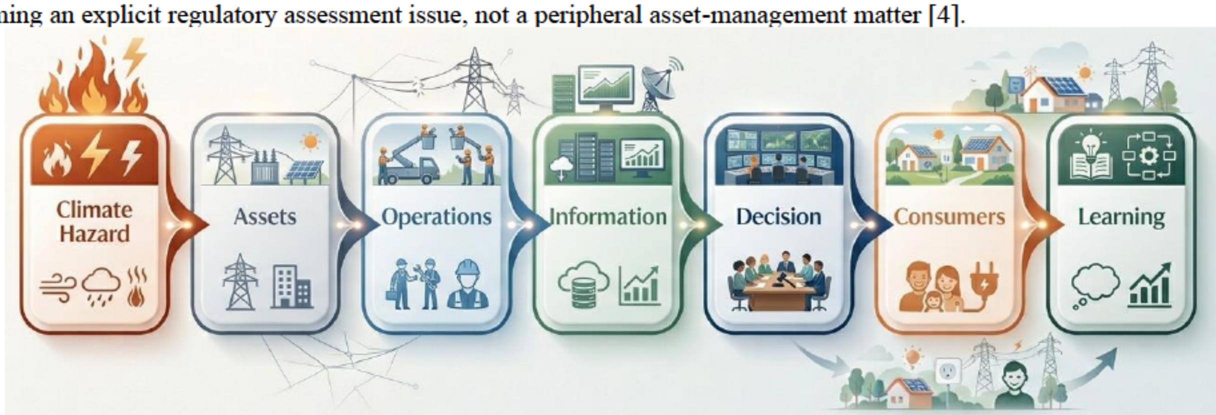

Figure 1. Systems view of climate hazard, regulatory decision-making, and resilience.

This system's perspective is illustrated in Figure 1, which shows how climate hazards propagate beyond physical asset damage to influence operational response, information quality, regulatory decision-making, consumer outcomes, and organisational learning. The figure highlights that resilience is an end-to-end property of the electricity system rather than a characteristic of individual network assets.

AusNet's application illustrates the scale of the issue. The January 2026 bushfires affected more than 240000 hectares, close to 900 km of power lines, about 350 poles, and more than 10000 customers. AusNet identified approximately $40.7 million in incremental costs and proposes recovery of $16.1 million in smoothed revenue in 2027-28 [5, 6]. These figures show that resilience expenditure already enters consumer bills through determinations, pass-throughs, and future planning allowances.

Resilience expenditure should therefore be assessed as risk-reduction investment under uncertainty. Relevant inputs include hazard probability, asset exposure, fragility, redundancy, restoration time, customer criticality, emergency access constraints, and avoided outage cost. Relevant outputs are fewer customers interrupted, shorter restoration time, lower energy not supplied, reduced safety exposure, improved emergency operability, and lower lifecycle cost under future hazard scenarios [7, 8].

2. The Regulatory Decision Context

Bushfire cost recovery is often framed as a retrospective question: what did the network business spend, and should consumers fund it? That frame is too narrow. A natural-disaster pass-through is a regulatory decision under uncertainty. The AER must determine whether the event qualifies, whether the costs are material, whether they are incremental to existing allowances, whether they were caused by the event, and whether the recovery amount is prudent and efficient [3, 5].

The regulatory decision can be represented as a structured pathway rather than a simple expenditure assessment. As illustrated in Figure 2, the proposed decision pathway progresses from the bushfire event through network damage, restoration actions, incremental eligible expenditure, regulatory assessment, consumer value, and ultimately resilience learning. Each stage provides the evidence required to justify the next, creating a transparent chain from physical events to regulatory determination. Failure at any point weakens decision quality. If the event is verified but expenditure boundaries are poorly defined, consumers may fund routine asset management. If costs are incremental but restoration actions are not demonstrated to be efficient and prudent, consumers may fund inefficient operational responses. Likewise, if restoration is completed but consumer outcomes and resilience benefits are not made visible, the pass-through becomes a reimbursement mechanism rather than a process that strengthens regulatory confidence and future network resilience. Hence, Figure 2 shows the central proposition of this submission: bushfire cost pass-through should be assessed as an integrated decision-assurance process that links technical evidence, financial accountability, consumer value, and continuous resilience improvement.

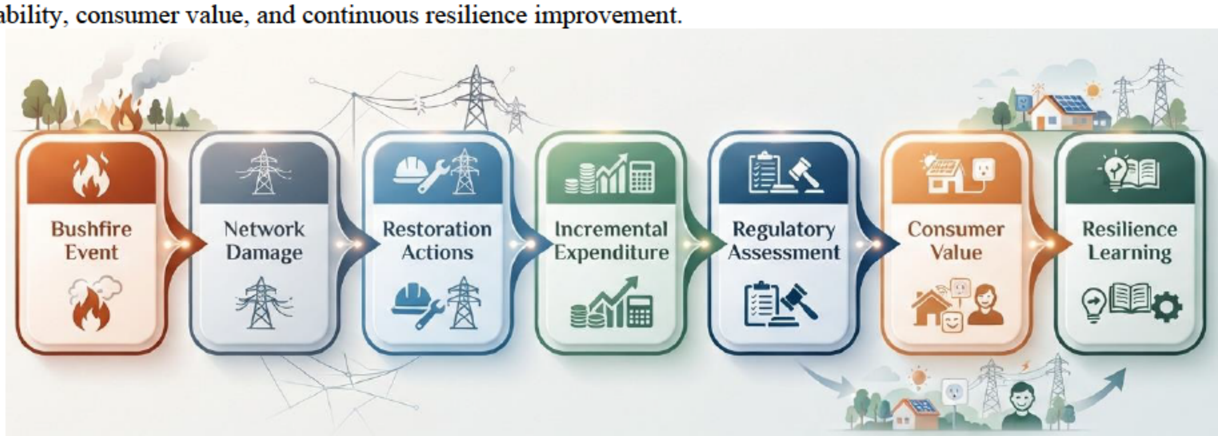

Figure 2. From Bushfire Event to Consumer Value and Resilience Learning

The AER's assessment should distinguish four quantities: physical damage, restoration action, incremental expenditure, and consumer-risk reduction. Only incremental expenditure is directly recovered, but the legitimacy of recovery depends on evidence across all four. A cost claim without physical-damage evidence is weak. A restoration claim without operational necessity is weak. An expenditure claim without incrementality is weak. A resilience claim without consumer-risk visibility is weak.

This layered assessment is consistent with resilience research, which measures system performance through anticipation, absorption, degradation depth, recovery trajectory, restoration time, load not served, and adaptation after disruption [1, 2, 9]. It is also consistent with outage-cost studies showing that severe-weather outages impose direct repair costs and broader social costs through business interruption, emergency response, communications disruption, health and safety impacts, and community vulnerability [10, 11].

3. Sources of Decision Uncertainty

3.1 Incrementality of expenditure

Incrementality is the first decision boundary. A pass-through should recover only costs that would not have been incurred under approved allowances, routine emergency management, ordinary vegetation management, or normal asset replacement programs [5, 6]. Bushfire recovery often combines inspection, repair, replacement, temporary supply, vegetation clearance, customer support, and compensation. The AER should therefore require reconciliation between pre-event asset condition, event damage, work-order classification, replacement scope, avoided future works, insurance recovery, and savings already captured in current or future regulatory periods.

3.2 Efficiency and prudency

Efficiency and prudency are uncertain because disaster restoration occurs under constrained conditions. Access restrictions, safety controls, road closures, vegetation hazards, material shortages, emergency coordination, and labour mobilisation can legitimately raise unit costs. The relevant test is not the lowest theoretical normal-condition cost, but whether the selected actions were reasonable under the actual operational state of the network. Indicators should include mobilisation timing, crew utilisation, inspection completion, restoration sequencing, temporary supply deployment, customer criticality, and contractor controls [6, 9].

3.3 Asset replacement versus resilience improvement

Post-bushfire works may restore pre-event functionality or improve resilience. Like-for-like replacement, accelerated renewal, asset hardening, insulated conductor, sectionalisation, monitoring, automation, and stand-alone power systems have different benefit streams. Replacement decisions should therefore be mapped onto a functionality pathway: event damage → asset intervention → restored service → reduced vulnerability → consumer-risk reduction. If the intervention only restores damaged assets, its value is recovery value. If it reduces future hazard consequence, it creates resilience value [7, 8].

3.4 Consumer exposure and climate uncertainty

Consumers face two exposures: paying for recovery through network charges and bearing outage, safety, and economic impacts during the event. Bill impacts should therefore be assessed with service impacts, including customers interrupted, interruption duration, critical-load impacts, temporary supply duration, GSL payments, and geographic concentration. Future climate risk adds a dynamic baseline problem: what was once exceptional may become recurrent. Scenario testing should consider hazard frequency, fire-weather indices, asset fragility, customer density, critical infrastructure dependence, and restoration-resource constraints [4, 8].

3.5 Information limitations

The final uncertainty is informational. If asset records, inspection findings, outage logs, work orders, geospatial fire overlays, temporary supply records, and customer-impact data are incomplete or not linked, the regulator can observe expenditure but not decision quality. Minimum evidence should show where the asset was located, whether it was exposed to the fireground, what damage was observed, what work was performed, why it was required, what cost was incurred, whether the cost was incremental, and what consumer or resilience outcome was achieved [12, 13].

4. Resilience Decision Assurance Framework

We propose a Resilience Decision Assurance Framework (RDAF) to complement the existing cost pass-through assessment under the National Electricity Rules. The framework does not alter the regulatory requirements or approval criteria. Rather, it strengthens decision confidence by making the assessment more transparent, reproducible, and technically grounded through a structured evaluation of six complementary assurance dimensions: Event Assurance, Expenditure Assurance, Evidence Assurance, Consumer Value Assurance, Resilience Assurance, and Regulatory Assurance. Together, these components establish a clear decision pathway linking event causality, expenditure boundaries, evidence quality, consumer outcomes, resilience benefits, and regulatory learning, thereby improving the consistency and robustness of future cost pass-through determinations [3, 4]. Table 1 summarises the proposed framework.

Table 1. Resilience Decision Assurance Framework (RDAF)

Component	Core question	Minimum evidence	Regulatory purpose
Event Assurance	Did the eligible event cause the network impact?	Emergency declarations, fire maps, event timeline, asset exposure	Establish event boundary and causality
Expenditure Assurance	Are the costs incremental, efficient, and prudent?	Work orders, cost categories, procurement records, offsets	Prevent double recovery and inefficient pass-through
Evidence Assurance	Is the decision auditable?	Asset records, inspection data, outage logs, accounting reconciliation	Improve transparency and reproducibility
Consumer Value Assurance	What consumer outcome was delivered?	Interruption data, restoration duration, temporary supply, GSL payments	Link recovery to consumer-risk reduction
Resilience Assurance	Did expenditure improve future resilience?	Asset hardening, restoration capability, risk reduction evidence	Distinguish recovery from resilience uplift
Regulatory Assurance	Does the decision support consistent future governance?	Determination logic, benchmarks, review triggers, reporting commitments	Preserve incentives and regulatory learning

Event Assurance defines the temporal and spatial boundary of the claimed natural-disaster event before expenditure is assessed. Expenditure Assurance separates event-caused expenditure from baseline asset management and operating costs.

Evidence Assurance requires traceability from asset location to event exposure, observed damage, required work, completed work, incurred cost, incrementality adjustment, and proposed recovery. Consumer Value Assurance tests whether the expenditure restored supply, reduced interruption consequence, or improved safety and service continuity. Resilience Assurance distinguishes recovery from resilience uplift by examining whether expenditure reduces hazard exposure, asset fragility, restoration time, or customer consequence. Regulatory Assurance preserves incentives by ensuring that pass-throughs do not become routine reimbursement for repeated disaster impacts [1, 9, 11].

5. Regulatory Observability

Regulatory observability is the ability of the regulator, consumers, and stakeholders to see the technical, financial, and service-performance basis of a network expenditure decision. For bushfire cost recovery, observability requires a traceable relationship between event exposure, damaged assets, restoration actions, expenditure categories, replacement decisions, operational performance, and consumer outcomes [12].

Restoration activities should be represented as a recovery curve, not merely a narrative. Useful indicators include time to first restoration, time to 50%, 90%, and full restoration, load restored per hour, temporary generation capacity deployed, damaged assets per kilometre of exposed network, customers supplied temporarily, and critical customers affected. Resilience literature shows that degradation and recovery trajectories provide more useful information than final restoration status alone [1, 2, 9].

Regulatory observability requires that each stage of the cost pass-through assessment be supported by transparent and auditable information. Rather than relying on aggregated expenditure totals, the assessment should make visible the complete decision pathway, including restoration activities, expenditure categories, replacement decisions, resilience outcomes, customer impacts, and operational performance. This information enables the AER to verify operational necessity, test expenditure incrementality and efficiency, distinguish recovery from resilience improvement, assess consumer outcomes, and evaluate emergency response performance under actual operating conditions [5, 6]. Table 2 summarises the proposed Regulatory Observability Framework and the minimum evidence required to strengthen transparency, consistency, and decision quality.

Table 2. Regulatory Observability Framework

Observability layer	Minimum evidence	Main regulatory use
Restoration activities	event timeline, switching logs, inspection records, restoration sequence	test operational necessity and restoration effectiveness
Expenditure categories	cost breakdown, work orders, contractor costs, materials, offsets	test incrementality and efficiency
Replacement decisions	asset class, pre-event condition, replacement type, specification change	distinguish recovery from resilience uplift
Resilience outcomes	restoration curve, customer-minutes interrupted, temporary supply, critical load continuity	measure event recovery and future risk reduction
Customer impacts	affected customers, outage duration distribution, GSL payments, communications	connect recovery cost to consumer outcomes
Operational performance	crew mobilisation, access constraints, repair productivity, re-interruption data	test prudency under emergency conditions

6. Consumer Value Realisation

Cost pass-through approval is a financing mechanism, not the final regulatory outcome. The stronger question is whether the expenditure produced realised value for consumers. In engineering terms, expenditure is an input; restored service, avoided interruption, reduced future consequence, and improved operational capability are outputs. The value pathway should be: approved expenditure → restoration action → service recovery → risk reduction → avoided customer cost → consumer value [8, 10].

Restoration effectiveness should be assessed using event-level recovery metrics, including time to first restoration, time to 90% restoration, load restored per hour, temporary supply duration, and critical-load continuity. Customer interruption reduction should be measured through customer-minutes interrupted, energy not supplied, number of customers affected, restoration-time distribution, and critical-customer duration. VCR and interruption-cost methods can support monetisation, but standard values should be used carefully for long-duration, emergency-condition outages [10, 11].

Consumer value should be assessed through measurable outcomes rather than expenditure alone. Approved recovery should demonstrate improvements in restoration performance, reduced customer interruption, enhanced network resilience, avoided future costs, and stronger operational capability. These outcomes provide an engineering-based assessment of whether expenditure has delivered tangible consumer benefits beyond restoring damaged assets. Accordingly, we propose a Consumer Value Realisation Framework that links each value dimension to objective performance indicators and their regulatory interpretation, enabling the AER to assess realised value in a transparent and consistent manner [8, 9]. Table 3 summarises the proposed framework.

Table 3. Consumer Value Realisation Framework

Value dimension	Suggested indicators	Interpretation
Restoration effectiveness	time to first, 50%, 90%, and full restoration; load restored per hour	Measures recovery performance
Interruption reduction	customer-minutes interrupted; energy not supplied; critical-customer duration	Measures avoided service harm
Resilience improvement	change in exposure, fragility, restoration time, and consequence	Measures future risk reduction
Avoided future costs	avoided replacement, emergency response, temporary supply, interruption cost	Measures economic value
Operational capability	crew mobilisation, inspection rate, temporary supply deployment, communications	Measures future response capability

7. Information as Regulatory Infrastructure

Information should be treated as regulatory infrastructure. The AER cannot test incrementality, prudency, efficiency, consumer impact, or resilience value from financial totals alone. It requires decision-useful information: asset records, inspection evidence, work orders, outage data, restoration logs, geospatial event overlays, customer-impact records, and accounting reconciliation. These records perform the same function as monitoring infrastructure in engineering systems: they make the system state observable, auditable, and controllable [12, 13].

High-quality regulatory decisions depend on high-quality information. Rather than treating documentation as supporting material, information should be recognised as regulatory infrastructure that enables transparent, auditable, and evidence-based decision making. The required decision pathway extends from the initial event through asset exposure, inspection, restoration, expenditure verification, consumer outcomes, and post-event learning. Each stage requires a distinct class of information that supports a specific regulatory function, reducing information asymmetry between the network business, the regulator, and consumers while strengthening confidence in the final determination [13, 14]. Table 4 summarises the proposed Information as Regulatory Infrastructure Framework.

Table 4. Information as Regulatory Infrastructure Framework

Information class	Minimum content	Regulatory function
Event information	emergency declarations, fireground maps, timing, containment, access constraints	defines event boundary
Asset information	asset ID, location, type, age, condition, feeder, exposure	links event to network state
Inspection information	damage state, timestamp, field evidence, safety classification	verifies physical impact
Restoration information	switching, isolation, crew action, repair, temporary supply, reconnection	verifies operational response
Expenditure information	work order, labour, material, contractor, overhead, offset, insurance	verifies incrementality and efficiency
Customer information	customers interrupted, duration, critical loads, GSL payments, communications	verifies consumer impact
Learning information	failure modes, response constraints, improvement actions	supports future resilience governance

Data quality should be assessed explicitly. Relevant dimensions are accuracy, completeness, timeliness, consistency, accessibility, and fitness for use [15]. In this application, practical tests include whether asset identifiers are consistent across inspection and cost records, whether timestamps reconstruct the restoration sequence, whether cost categories align with work orders, whether customer impacts link to affected feeders, and whether avoided-cost and insurance adjustments are transparent.

8. Adaptive Governance

Adaptive governance is necessary because bushfire-related expenditure is assessed under evolving climate and network conditions [3, 4]. A cost pass-through should therefore create a continuous learning cycle rather than conclude with expenditure approval. As illustrated in Figure 3, information, observability, evidence, consumer value, and learning should be integrated across planning, response, recovery, and resilience improvement so that each bushfire event strengthens future regulatory decisions and network resilience.

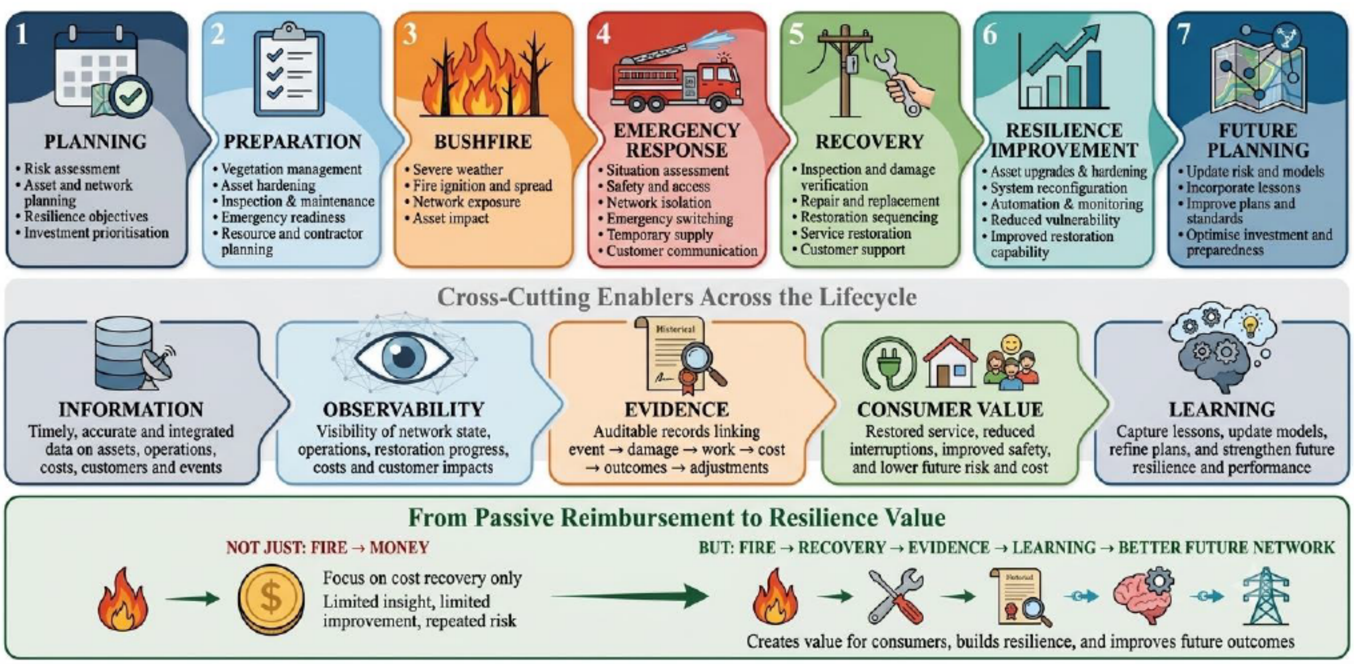

Figure 3. Bushfire resilience lifecycle and continuous regulatory learning.

Adaptive governance recognises that resilience assessment is an ongoing process rather than a one-off regulatory decision. While a static determination asks whether expenditure is eligible at a particular point in time, an adaptive approach also considers whether evidence from the event should improve future decision making. This requires periodic measurement, model refinement, review triggers, and regulatory feedback to update assumptions about hazard probability, asset vulnerability, restoration capability, consumer exposure, expenditure patterns, and climate risk as new evidence becomes available [1, 2]. Accordingly, we propose an Adaptive Governance Framework that identifies the principal review areas, the conditions that should trigger further regulatory attention, and the corresponding decision purpose. Table 5 summarises the proposed framework.

Table 5. Adaptive Governance Framework

Review focus	Suggested trigger	Decision use
Repeated disaster events	repeated event + material customer impact + repeated expenditure category	tests whether risk baseline has changed
Resilience performance	persistent long restoration times or weak temporary supply outcomes	tracks whether recovery changes the resilience profile
Expenditure trends	recurring costs by event type, region, or asset class	detects systematic cost drivers
Operational learning	repeated access, inspection, communication, or restoration constraints	updates response planning and capability
Climate risk	new fire-weather, heat, storm, or vegetation-risk evidence	updates hazard and asset-exposure assumptions

A proportionate mechanism could use three review horizons: post-event reconciliation within 6-12 months to confirm final costs, offsets, restoration completion, and customer-impact data; resilience performance review within 12-24 months to assess whether replacement and operational changes improved resilience indicators; and strategic resilience update through the next distribution annual planning report or revenue proposal. This would not reopen the pass-through indefinitely. It would convert each major event into structured evidence for future decisions [4, 8].

9. Summary Recommendations

- Approve only efficient, prudent, and genuinely incremental costs that are causally linked to the January 2026 bushfire event.
- Require a clear reconciliation from gross event cost to proposed pass-through revenue, including offsets, avoided future work, insurance recovery, and deductions for funded baseline activities.
- Use the Resilience Decision Assurance Framework to test event causality, expenditure assurance, evidence quality, consumer value, resilience effect, and regulatory learning.
- Require event-level observability of restoration activities, expenditure categories, replacement decisions, customer impacts, and operational performance.
- Distinguish like-for-like recovery from resilience uplift and make any claimed future resilience value explicit.
- Treat information quality as part of the regulatory evidence base, including asset, inspection, outage, restoration, cost, and customer-impact records.
- Use proportionate post-event review to capture lessons for repeated disaster events, expenditure trends, resilience performance, and changing climate risks.

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