CLADDING SAFETY Victoria

RESEARCH ANALYSIS NO. 6

Essential Safety Measures survey

FIRE RESCUE VICTORIA

BUILDING MONITOR

VICTORIA State Government

Aboriginal acknowledgement

Cladding Safety Victoria respectfully acknowledges the Traditional Owners and custodians of the land and water upon which we rely. We pay our respects to their Elders past, present and emerging. We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life. We embrace the spirit of reconciliation, working towards equality of outcomes and an equal voice.

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Executive summary

Cladding Safety Victoria (CSV) was established by the Victorian Government in 2019 to address the risk posed by combustible cladding on the external walls of a range of building types across the state.

Working in partnership with building owners and residents, the Building and Plumbing Commission, Municipal Building Surveyors, Fire Rescue Victoria and a range of other agencies and expert bodies, CSV has largely retired cladding risk in the state. In all, thousands of buildings in the Class 2, Class 3, Class 9 and government-owned categories have been assessed with funding and/or formal advice to mitigate risk provided to more than 2,000 buildings.

Essential Safety Measures (ESM) are critical to the ongoing occupancy and use of residential apartment buildings – regardless of the presence of combustible cladding. ESMs are the life-safety systems and features designed to operate as an integrated network that provides multiple layers of protection for building occupants during an emergency, particularly in the event of fire.

The aim of this paper and the function of the physical survey undertaken throughout 2025 in support of this paper, was to observe the readiness of ESMs through the mandatory maintenance obligations and to observe the actual 'ready state' performance of the systems. The survey was designed to focus on gaining insights into their operability rather than auditing for compliance. Specifically, the objective was to ascertain whether ESMs were present, maintained and functioning and how they were managed across multi-owner residential settings.

The scope of the survey was limited to voluntary participation by owners corporations of buildings and active building sites in CSV's Cladding Rectification Program (CRP) at the time. The survey results do not purport to reflect the ESM status of the entire stock of Class 2 buildings in Victoria; however, CSV is of the view that the findings are broadly representative of the types of issues faced by owners across the building sector in relation to ESM operability and that the observations concluded from the survey results have broad significance across the sector.

ESMs are critical to first responders, providing the systems and information essential to safe, timely and effective emergency response. Their performance directly influences operational decision-making, responder safety and the effectiveness of emergency interventions.

ESMs are the legal responsibility of building owners or owners corporations under the *Building Act 1993* which sets out requirements for ensuring they are operating properly and are being regularly maintained.

Victoria's local government, Building and Plumbing Commission and Fire Rescue Victoria also have proactive programs to assist in checking on ESMs from time to time. This activity occurs outside any statutory requirement for them to do so.

In order to optimise the opportunity presented by the unique access and insights which CSV's Cladding Rectification Program have provided, CSV has researched and published papers on a range of issues. This paper is the product of a survey of 80 Class 2 buildings in its program.

The survey methodology was developed collaboratively with Fire Rescue Victoria (FRV), prioritising on-site verification and functional observation, using non-intrusive testing methods such as proof-of-water, smoke activation and alarm generation, supplemented by document and record evidence.

FRV has long been a strong public advocate for the ongoing role that ESM maintenance plays in occupant and first responder safety and has raised awareness of the positive confirmation that Annual Emergency Safety Measure Reports (AESMRs) provide in reporting that the providers have undertaken maintenance in accordance with the relevant Australian Standards and Regulation codes. FRV's core message to building residents that defective or sub-optimal ESMs compromise safety and increases community risk also aligns to the Building Monitor's remit which provides recommendations to government on ways to address problems faced by building consumers.

Key findings of the report indicate that of the buildings surveyed:

- All wet, detection and warning systems were found to be operational at the time of inspection, providing functional assurance in practice.
- 34 per cent of buildings had inconsistencies between Occupancy Permit documentation and on-site conditions.
- 100 per cent of buildings surveyed did not have a complete set of maintenance documents.
- 18 per cent of building owners could not produce their latest Annual Essential Safety Measures Report (AESMR) upon request, indicating that owners do not have a high-level understanding of their obligations.

The findings identified the following key observations:

- **Insufficient verification of performance assurance and inconsistency in annual and milestone performance testing**: while maintenance is broadly understood and undertaken, the inconsistencies observed in performance testing may impact negatively by limiting confidence in the long-term system reliability of ESMs.
- **Misalignment between approved documentation and on-site ESMs**: this is driven by undocumented alterations, legacy approvals and outdated Occupancy Permits and can lead to weakening the lifecycle traceability of ESMs.
- **ESM records are fragmented and incomplete**: the impact of this compromises and prevents effective verification of design intent, baseline performance and testing outcomes.
- **Limited evidence of a whole-of-life asset management approach**: missing data or ageing assets limit the ability to undertake proactive risk identification and sustained assurance over time.
- **The quality of AESMRs limit their ability to provide assurance as a standalone instrument**: CSV identified limitations to their effectiveness due to ESM providers' contractual maintenance scope exclusions, variability in contractor practices, record format, terminology, evidence of quality and validation.

Collectively, these findings indicate a systemic assurance gap with the ESM framework, where functional operation is not consistently supported by confidence in performance against design or longer-term operation past the intended lifespan of ESMs. This gap is constrained and driven by:

- **Complex and disjointed governance**, with responsibilities dispersed across designers, contractors, owners corporations and regulators.
- **Inconsistent record management**, limiting traceability between approved documentation, installed systems, building alterations and maintenance outcomes.
- **Over reliance on owners corporations**, who are required to navigate complex technical and regulatory obligations without sufficient capability, often compounded by upstream documentation and governance deficiencies.

It is reasonable to conclude that strengthening lifecycle governance, improving documentation alignment and enhancing the clarity and reliability of assurance mechanisms would support more consistent, transparent and defensible outcomes for building safety across the sector.

The activation for such changes is for government to consider and align with other reform and regulatory framework enhancements currently being implemented (Building Reform Expert Panel Stages 2 and 3) through a phased approach.

1. Background

1.1 About Cladding Safety Victoria and the ESM survey

Cladding Safety Victoria (CSV) is responsible for delivering the Victorian Government's $600 million Cladding Rectification Program (CRP). As of December 2025, CSV has funded cladding rectification work for more than 450 privately-owned apartment buildings affected by combustible cladding, with more than 430 projects now complete. This means that approximately 21,500 homes are subject to ongoing ESM maintenance requirements established through Occupancy Permits and Maintenance Determinations, which specify the ESMs required for a building and the applicable maintenance and testing intervals. As a result, the reliability of these systems has direct implications for first responders who depend on and understand the level of safety provided by ESMs on a building-by-building basis, to support safe and effective emergency response. As part of the regulatory framework, OCs must prepare and retain an AESMR which serves as a formal declaration that reasonable steps have been undertaken to ensure required reporting has occurred. The AESMR forms a key regulatory reporting mechanism and may be requested by regulators as part of compliance oversight.

Regulatory oversight and enforcement functions are undertaken by relevant authorities, including Municipal Building Surveyors, the state building surveyor, the Building and Plumbing Commission (BPC) and Fire Rescue Victoria (FRV), each exercising powers within their respective legislative remit. These authorities may request maintenance documentation, undertake inspections, issue infringement notices, commence prosecutions or take disciplinary action where required.

1.2 Current industry practice

In principle, OCs typically engage external servicing contractors to undertake the inspection, testing and maintenance of Essential Safety Measures based on the building's approved documentation and applicable maintenance schedules. In particular, AS1851 and other relevant Australian Standards[1] establish a common benchmark of inspection, testing, preventive maintenance and record-keeping. These arrangements are commonly coordinated through OCM or Facility Managers (FM), especially in larger or more complex buildings.

Maintenance activities generally follow the structure set out in approved documentation, specifying maintenance requirements including the interval of maintenance. The scope and frequency of these activities vary by asset type and are influenced by building age, system configuration, baseline documentation capturing original design and intended system performance and historical approvals.

Records of ESM maintenance are commonly generated through service reports, logbooks and certificates produced by servicing contractors. These records may be held in a combination of hardcopy and digital formats and may be retained by different parties over time, including servicing contractors, OCMs, FMs and OCs.

AESMRs are prepared annually to summarise maintenance activities undertaken during the reporting period and are typically compiled by appointed agents on behalf of the OC, using available maintenance records and evidence.

1 AS 1851 *Routine Service of Fire Protection Systems* and Equipment; AS 2419.1 *Fire Hydrant Installations*; AS 2118.1 *Automatic Fire Sprinkler Systems*; AS 2293.2 *Emergency Escape Lighting and Exit Signs*; AS 1668.1 *Fire and Smoke Control in Buildings* and AS 1668.2 *Mechanical Ventilation in Buildings*.

1.3 Acknowledgement of related research and standards

1.3.1 Building on prior research

Stephen Scimonello's[2] (2024) doctoral thesis, *A Performance-Based Building Code on Statutory Maintenance: Exploring the Translation of Policy to Practice for Multi-storey Residential Buildings in Australia*, provides an important foundation for understanding how Australia's shift to performance-based building regulation has influenced the management of ESMs. His work identified a persistent gap between policy intent and on-ground practice, emphasising how deregulation and private certification transferred long-term maintenance responsibility to building owners and contractors.

While Scimonello's study primarily explored behavioural and regulatory drivers, this report focuses on the operational realities, record quality and maintenance evidence.

1.3.2 Other CSV research papers

CSV has published an extensive suite of research and insights derived from its Cladding Rectification Program, covering topics such as building design, non-cladding defects, impacts of building non-compliance on owners corporations and construction quality and safety. These publications are complementary to this report and collectively contribute to a deeper understanding of Victoria's residential building safety landscape. Two of these publications are of particular relevance:

1. Compliance in building design[3]
2. Victoria's cladding program: The role of owners corporations[4]

It is recommended that these papers are read in conjunction as a means of providing further valuable context to understand the systemic issues of maintenance, governance and lifecycle assurance explored in this report.

2 Dr Stephen Scimonello, a highly respected leader in the building surveying profession, with more than 25 years experience as a registered building practitioner. Along with a PhD from Victoria University, his qualifications include a Master of Engineering (Construction Management), a Master of Social Science (Planning & Environment) and a Bachelor of Technology (Building Surveying).

3 https://www.vic.gov.au/sites/default/files/2025-02/Research-Analysis-Compliance-in-Building-Design.pdf

4 https://www.vic.gov.au/sites/default/files/2025-08/Research-Analysis-Victoria%27s-cladding-program-The-role-of-owners-corporations.pdf

2. Terminology, methodology and limitations

2.1 Alignment with PMCR and life-safety priorities

The early development of the ESM survey methodology was undertaken in collaboration with FRV, who are at the forefront of emergency response and have operational insight of building systems during emergencies. Insight was also further supported by FRV's active inspection unit, which conducts inspections on ESMs on a fixed number of randomised types of buildings across Victoria each year.

The survey was grounded in CSV's Protocols for Mitigating Cladding Risk (PMCR), a scientifically validated, risk-based framework developed with CSIRO Data61 and fire-safety engineering experts. The PMCR identifies the systems that have the greatest direct influence on occupant life safety and emergency response outcomes[5]. The PMCR provides a measured, repeatable, and risk-based approach for assessing the risks posed by combustible cladding on Class 2 and Class 3 buildings. These risk-based foundations align closely with FRV's operational priorities during incident attendance, ensuring the survey reflects the systems more critical to effective emergency response.

Beyond the risk posed by the external facade in relation to combustible cladding, CSV recognises that life safety performance relies on the collective effectiveness of all ESMs, including passive fire protection, egress and maintenance practices, and therefore evaluates their interdependencies to provide a holistic understanding of building safety.

The ESM assets prioritised as part of the survey include:

- fire detection and alarm systems
- occupant warning systems
- fire-fighting and suppression systems

These systems form the backbone of early warning, evacuation and containment in line with CSV's PMCR and FRV firefighting operations. Their functionality during the initial minutes of a fire event is critical to life preservation. For this reason, they were given emphasis throughout the survey. Both from on-site observations and the analysis of supporting maintenance evidence.

2.2 Methodology

The survey methodology was designed to assess three core questions for ESMs:

1. Presence

Is the observed ESM asset installed and implemented on-site as per the latest OP or Maintenance Determination (MD)?

2. Maintenance

Is the ESM being maintained as evidenced by available documentation and on-site visual cues and indicators?

3. Functionality

Is the ESM operational at the time of the survey, verified through non-onerous tests to confirm basic functionality, but not to assess compliance with the system's design performance?

2.2.1 Participant engagement

The survey was conducted across a sample of Victorian multi-owner residential buildings. Engagement with participants included OCs, OCMs and servicing contractors, and was undertaken to facilitate site access, document provision and clarification of maintenance arrangements.

Participation was voluntary for non-active CSV project participants who were informed of the scope and purpose of the survey, including its focus on observed functionality and available evidence at the time of inspection.

5 https://www.vic.gov.au/cladding-risk-prioritisation-model-policy-and-methodology

Engagement was structured to support cooperation and transparency, while recognising that the survey did not seek to attribute fault, determine compliance or verify performance against original design intent

2.2.2 Survey implementation

Building surveyors were engaged by CSV to undertake the survey. For buildings which were not active CSV projects, participation was voluntary. Following initial engagement, the OC or OCM was requested to provide available building documentation to the appointed consultant.

The consultant reviewed the documentation and contacted the OC/OCM to arrange a site inspection. The documentation reviewed included relevant maintenance records from the previous 12 months, including most recent annual milestone testing records. This includes their most recent AESMR, and consent to contact their ESM service provider to obtain maintenance records directly and seek clarification where required.

Site surveys were attended by the consultant and their ESM servicing contractor, who together undertook inspections in accordance with the prescribed methodology.

Following the site inspection, a draft report was prepared and a post-survey documentation request was issued to address any information gaps identified on-site or to obtain records not previously provided. This provided an opportunity for the OC/OCM, PM or their ESM service provider to respond to observations and clarify queries arising from the survey.

An average allowance of four weeks was provided from the date of the post-survey request, during which at least two follow-up emails and two follow-up phone calls were made.

Survey reports were updated to reflect any additional documentation or clarification received. Where no response was provided, records were treated as unavailable for the purposes of assessing maintenance evidence and record retention.

Where on-site findings indicated a low level of confidence in asset operation, supported by limited or absent maintenance records, a re-attendance was scheduled. This involved selective milestone testing and/or full functional testing to confirm ESM performance to verify that the building would respond appropriately in an emergency.

2.2.3 Analysis and determination of maintenance confidence

Survey data was analysed at the asset level and aggregated across buildings to identify patterns in maintenance outcomes. For each asset, available evidence was assessed against the relevant maintenance interval to determine whether documentation was sufficient to support confidence that maintenance activities had been undertaken.

Maintenance confidence was derived by considering:

- the presence and completeness of supporting documentation
- alignment between documented activities and the applicable maintenance interval; and
- consistency between observed site conditions and available records.

Where evidence was incomplete, unclear or absent, this was recorded as a maintenance gap. Importantly, the absence of evidence was treated as an absence of verifiable assurance, rather than confirmation that maintenance had not occurred.

2.3 Limitations

The contents of this report are subject to several known methodological limitations. The survey relied on information and documentation made available at the time of inspection and did not include an exhaustive review of historical records, original design documentation or commissioning data.

The survey did not assess the technical adequacy or quality of maintenance activities beyond what could reasonably be inferred from available evidence, nor does it verify system performance against original design intent or baseline performance parameters. Where documentation was not provided, this was treated as an absence of evidence rather than confirmation that maintenance had not occurred.

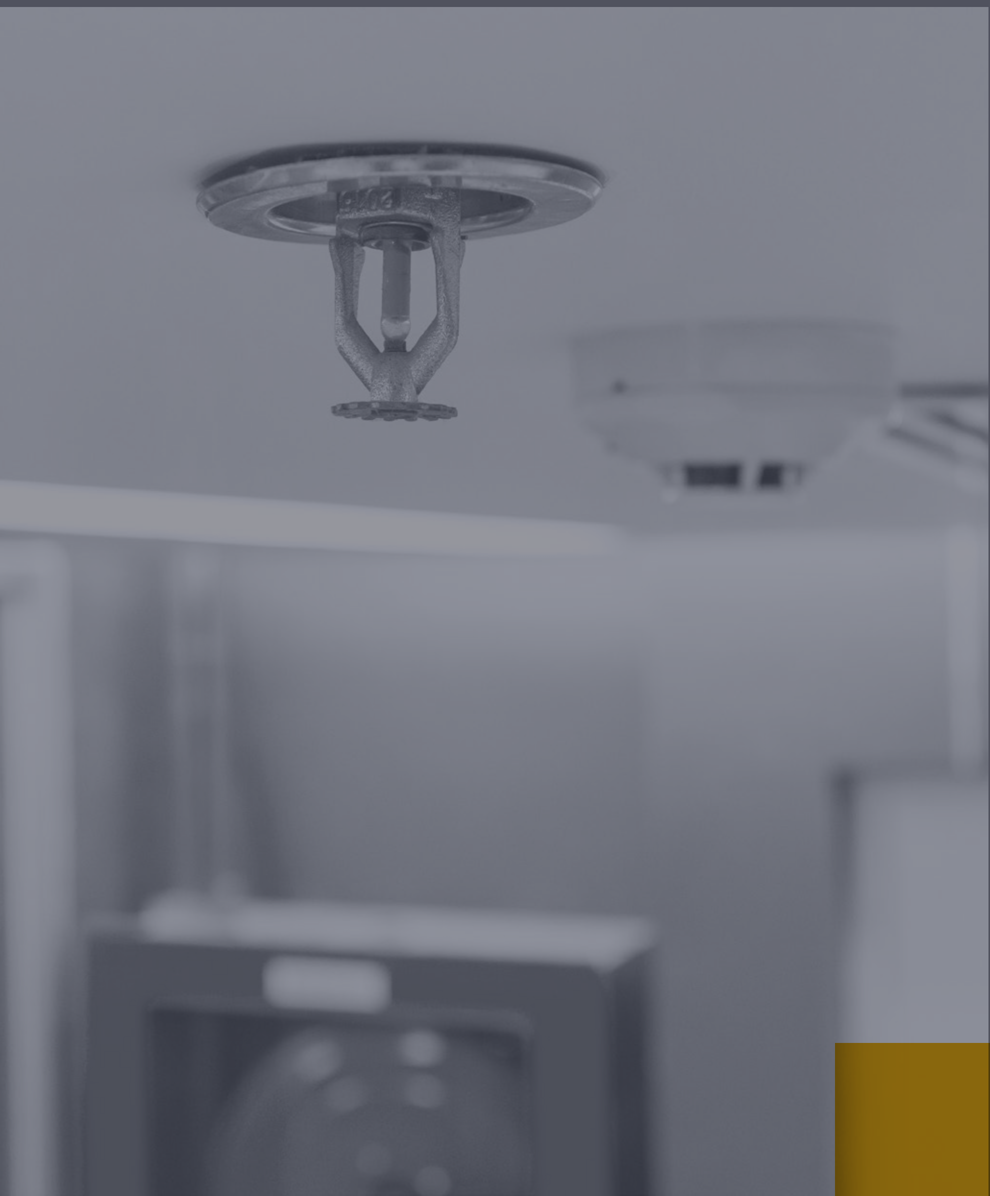
The survey did not assign responsibility or liability to OCs, servicing contractors or other parties. Findings reflect observed functionality and available evidence at a point in time and should be interpreted within the context of evolving regulatory frameworks, standards and building histories.

Regulatory frameworks and technical standards within the building and fire-safety industry have evolved over time. Amendments to the NCC and key Australian Standards[6] have introduced changes to terminology, system classification or compliance requirements. As a result, individual buildings reflect the regulatory environment, design practices and maintenance standards applicable at the time of construction, certification and subsequent servicing.

Unless otherwise specified, references to codes, standards and terminology reflect the versions in effect at the time of this report. While reasonable effort has been made to interpret findings within the historical regulatory context of each building, differences between past and current requirements should be recognised when applying or referencing these findings.

6 National Construction Code (various editions); AS 1851 *Routine Service of Fire Protection Systems and Equipment*; AS 2419.1 *Fire Hydrant Installations*; AS 2118.1 *Automatic Fire Sprinkler Systems*; AS 2293.2 *Emergency Escape Lighting and Exit Signs*; AS 1668.1 *Fire and Smoke Control in Buildings* and AS 1668.2 *Mechanical Ventilation in Buildings*.

3. Context



The maintenance and assurance of ESMs occurs within a complex, multi-party environment involving OCs, servicing contractors, regulators and documentation inherited over the life of a building. While regulatory requirements define maintenance obligations, the practical delivery of these obligations varies depending on asset type, testing complexity and the availability of historical records, design intent and correct installation.

OCs rely heavily on servicing contractors to identify maintenance requirements, undertake inspections and testing and advise on compliance-related matters. This reliance is shaped by the technical nature of ESMs, the testing requirements, availability of baseline documentation and the limited capacity of many OCs to independently verify maintenance outcomes.

Over time, buildings are subject to upgrades and refurbishment and alterations and changes can affect the accuracy and completeness of ESM records. Where documentation is fragmented or poorly maintained, traceability between approved documentation, installed systems and maintenance activities can deteriorate, constraining confidence in what systems are meant to be present, how they work and how they are intended to be maintained and perform.

This context is critical to understanding the survey findings that follow.

4. Key findings

4.1 While ESMs generally function as intended in practice, there is little evidence of sustained performance over time

All buildings were found to have operational detection, warning and wet systems in common areas at the time of the survey. This indicates a level of confidence that, should an emergency occur, the ESM would activate as intended to support occupant safety and firefighting operations.

This suggests that owners corporations, regardless of their level of understanding of their maintenance obligations, reside in buildings where ESM assets appear to remain operable.

4.2 Misalignment between ESMs present on-site against what is listed on the OP

Thirty-four per cent of buildings surveyed had some form of variance between what was specified on the Occupancy Permit (OP) and what was observed on-site. These variances pertained to:

Unlisted ESM assets	68 per cent of sites contained ESMs not referenced in the OP, such as solid core doors, smoke and alarm systems and building occupant warning systems.
Missing or non-existent ESMs	55 per cent of buildings had assets such as fire hose reels, fire protective access panels, mechanical ventilation systems and regulatory signage (e.g. lift warning or door obstruction notices).
Inconsistent terminology or scope	27 per cent of OPs used outdated or inconsistent terminology (e.g. "smoke and heat detection" vs. "smoke alarms"), creating ambiguity about the actual system configuration.
Design modifications over time	14 per cent of buildings had undergone upgrades or partial system replacements, such as fire detection and alarm systems, without corresponding updates to the maintenance determination or maintenance schedule.

These misalignments indicate more than just isolated documentation issues and point to broader weaknesses within the ESM life cycle, creating ambiguity and increasing the risk that ESMs are not formally captured or maintained.

The survey results show that a complete set of baseline data was not available for any of the surveyed buildings.

The case study below provides practical context for the findings and discussion, illustrating how the issues identified may arise in individual buildings.

CASE STUDY – DISCREPANCY

A three storey building in St Kilda was reviewed as part of the ESM survey, which provides a representative case study of issues relating to variance between the installed ESMs present in the building and those listed on the original OP. During the survey, it found several ESMs onsite that weren't listed in the OP. These included solid core doors inside the building, smoke detection and alarm systems and an occupant warning system. While these features were clearly installed and integrated into the building, they weren't mentioned on the OP. Conversely, some ESMs that were listed in the OP couldn't be located during the inspection. These included fire-protective access panels and mechanical ventilation systems. Physical evidence of these measures in the areas was not seen at the time.

4.3 Maintenance of ESMs

No building surveyed held a complete, consolidated set of records showing end to end maintenance across the life cycle of the asset.

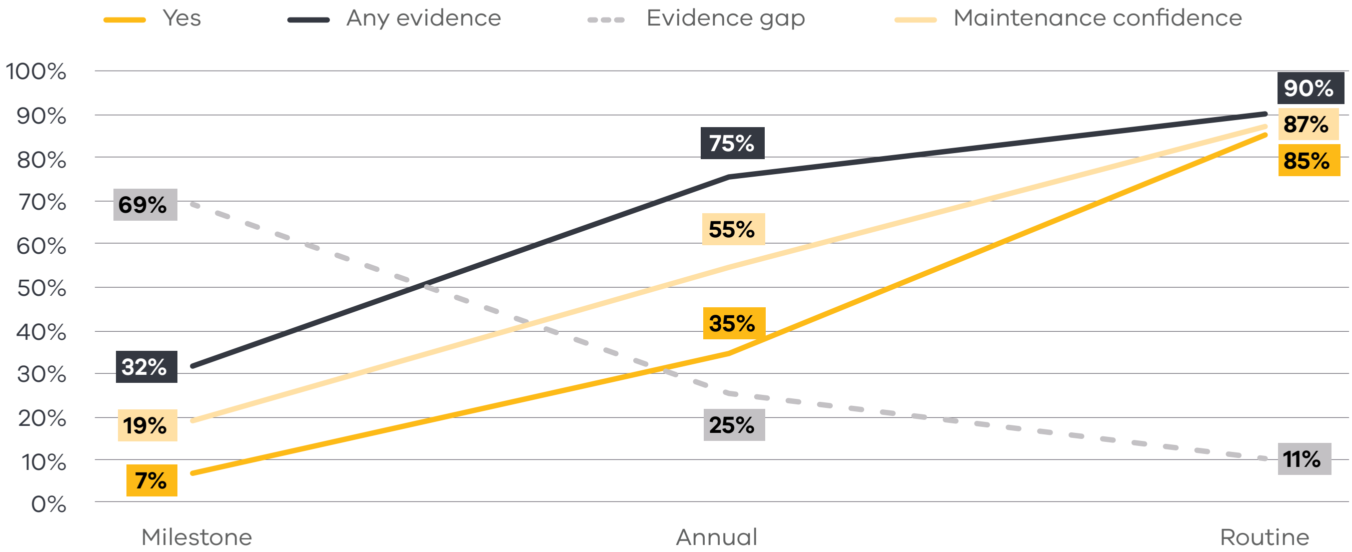
Within this context, milestone testing represents the primary level of performance assurance, providing critical verification of long-term system reliability against design intent and baseline performance. Survey results indicated that only seven per cent of buildings held sufficient evidence to show milestone testing was undertaken.

Annual maintenance introduces periodic performance verification but is more limited, while routine maintenance is predominantly focused on the day-to-day functionality and operation rather than assurance of performance under intended design conditions.

Taken as a whole, ESM maintenance is focused on undertaking prescribed activities to maintain operability and performance and to respond to identified defects. Where performance requirements or design intent is not clearly established or known, this maintenance framework provides a limited basis for proactive consideration in anticipation of end of line, degradation to establish forward looking remediation and pathways for eventual renewal.

The overall relationship between maintenance interval, testing complexity and assurance is summarised in Figure 1, which shows maintenance confidence declining from approximately 87 per cent at the routine interval, to 55 per cent at the annual interval, and 19 per cent at the milestone interval as testing becomes less frequent and more performance based.

Figure 1. An inverse relationship between availability of evidence and frequency of testing for active systems across all intervals



4.3.1 Maintenance assurance varies by interval and complexity

Figure 1 shows a decline in the evidence gap from 69 per cent for milestone testing to 11 per cent for the routine interval. This indicates that assurance outcomes are increasingly constrained by evidence and verification requirement, rather than by the absence of the maintenance activity itself.

At the routine interval, maintenance activities are frequent, procedural, visual and check-based, resulting in readily available records and higher confidence. In contrast, annual and milestone testing requires more specialised assessment, reference to design intent and baseline performance and coordination between multiple parties. As these requirements increase in complexity and occur less often, the ability to consistently document, retain and verify testing outcomes diminishes.

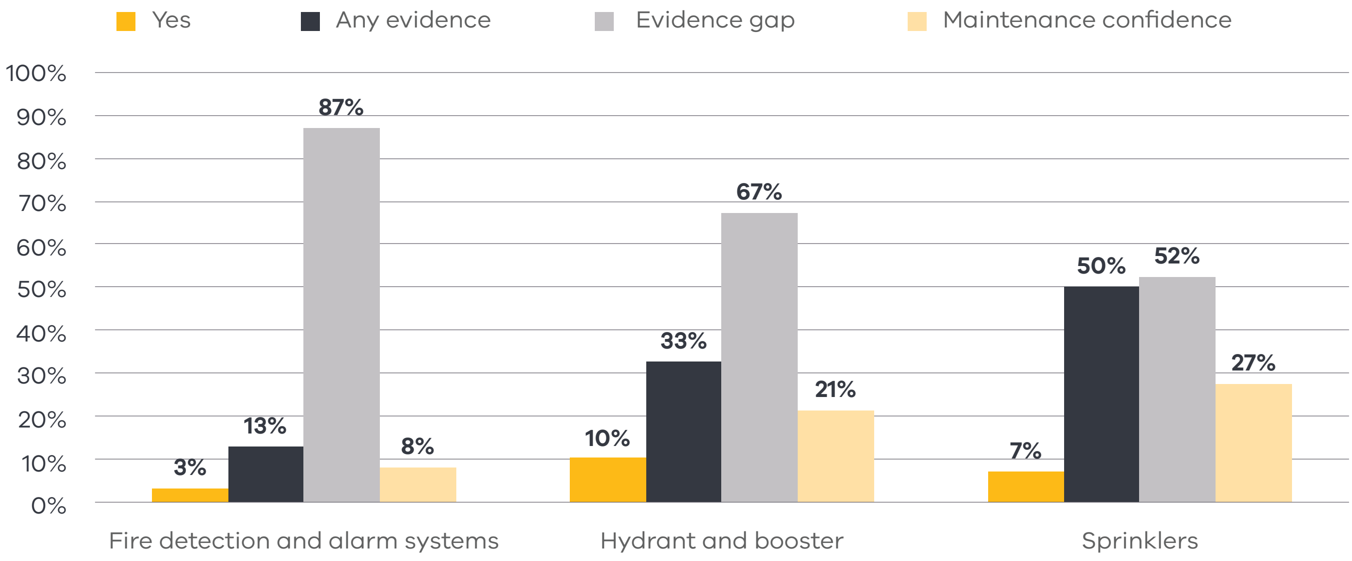
This pattern provides important context set out in sections 4.3.2 to 4.3.4, which examine the individual maintenance intervals.

4.3.2 Milestone maintenance

Milestone maintenance is limited to the active systems, fire detection and alarm systems, hydrant and booster systems and sprinkler systems, being the only ESMs subject to five-yearly performance-based testing. Figure 2 shows that fire detection and alarm systems present the highest deficiency, with the largest documentation gap resulting in a maintenance confidence of eight per cent.

Hydrant and booster systems exhibit more moderate levels of assurance, indicating that while maintenance occurs, evidence of full milestone testing is inconsistent with 21 per cent maintenance confidence. Sprinkler systems display comparatively higher confidence, with more consistent testing records and traceable documentation at 27 per cent maintenance confidence.

Figure 2. Comparison of maintenance evidence at milestone intervals for active systems



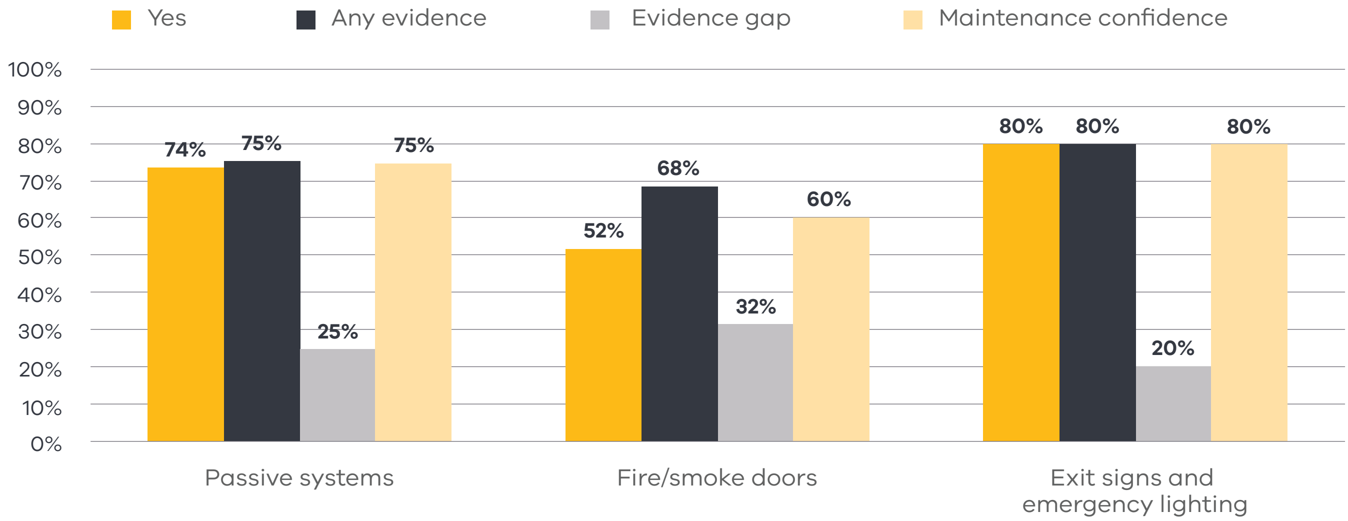
Available evidence at the time of the survey indicates that in approximately 10 per cent of cases, the servicing contractor has provided quotes to the owners corporation and were awaiting approval to proceed with milestone testing.

4.3.3 Annual maintenance

Maintenance at the annual interval applies both across both active and passive systems, specific performance testing and verification activities, often accompanied by detailed service reports that confirm both the scope of testing and the specific assets inspected. For active systems, when compared with milestone maintenance, deficiencies in supporting evidence are now less prevalent at the annual interval.

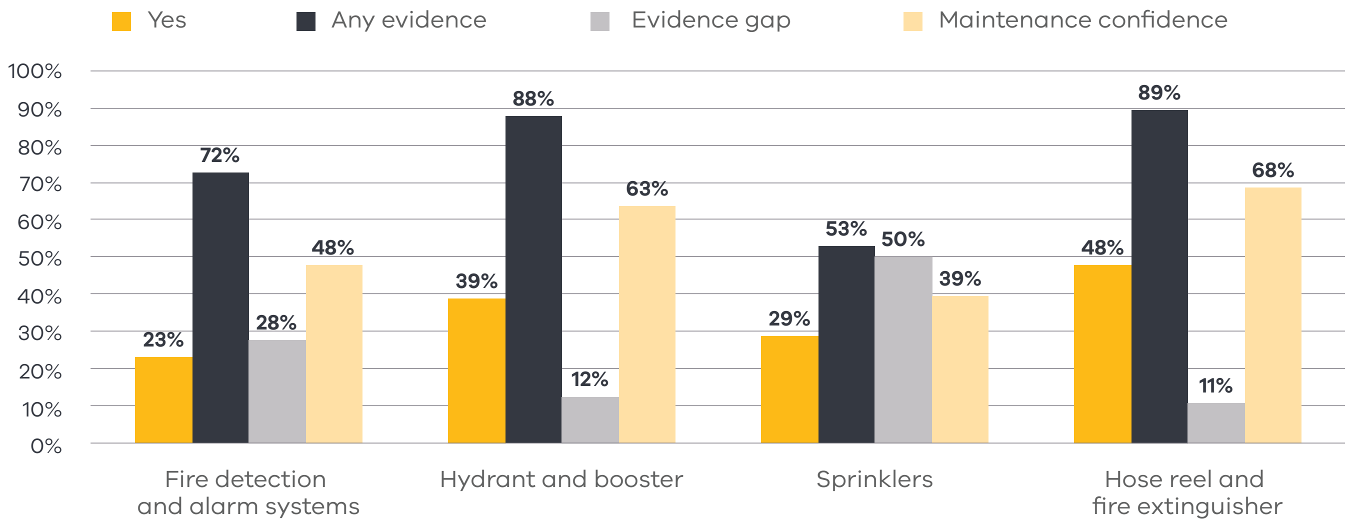
When considered by system type in Figure 3, passive systems demonstrated higher levels of annual maintenance confidence overall, with exit signs and emergency lighting recording confidence levels of approximately 80 per cent.

Figure 3. Comparison of maintenance evidence at annual intervals for passive systems



In contrast, Figure 4 demonstrates that active systems showed lower confidence at the annual interval, with sprinkler systems exhibiting the lowest maintenance confidence at approximately 29 per cent. Taken together, the results indicate that while evidencing improves at the annual interval, confidence remains uneven across system types and individual assets.

Figure 4. Comparison of maintenance evidence at annual intervals for active systems

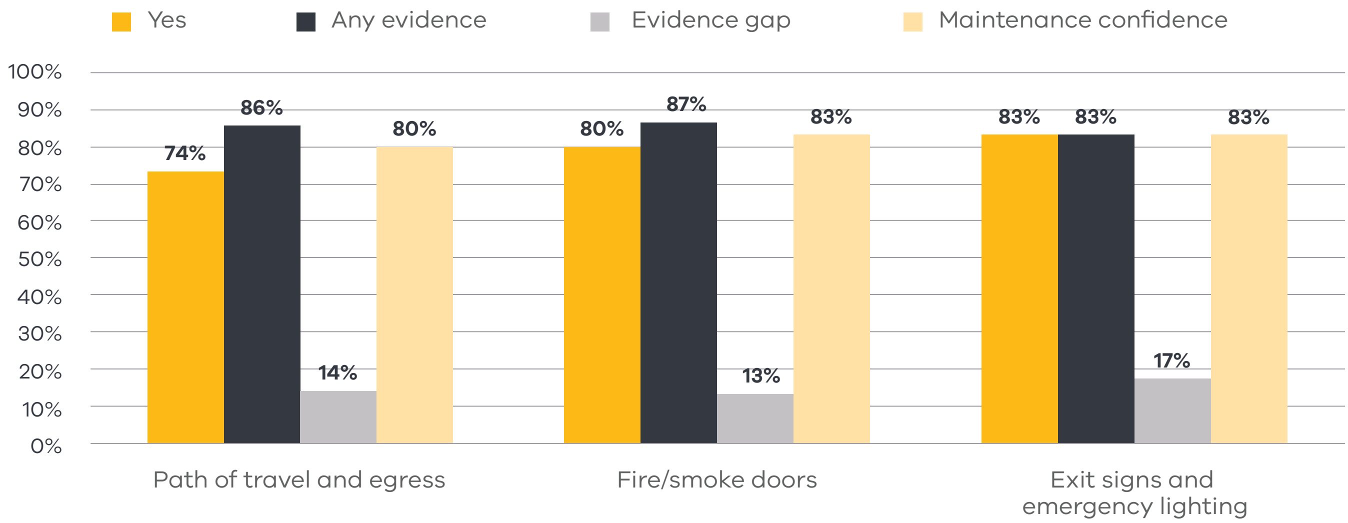


4.3.4 Routine maintenance

Routine maintenance, depending on the particular asset, refers to the most frequent interval of maintenance, either monthly, quarterly or every six months. Activities performed at the routine interval are predominantly visual and focused on checks to determine operations rather than any performance testing.

Overall, the survey indicated a high level of confidence that routine maintenance of ESM servicing was occurring across the buildings, with maintenance confidence exceeding 77 per cent for all assets. When considered by system type as shown in Figure 5, passive systems showed lower confidence at the annual interval, with path of travel and egress being the lowest maintenance confidence at approximately 29 per cent.

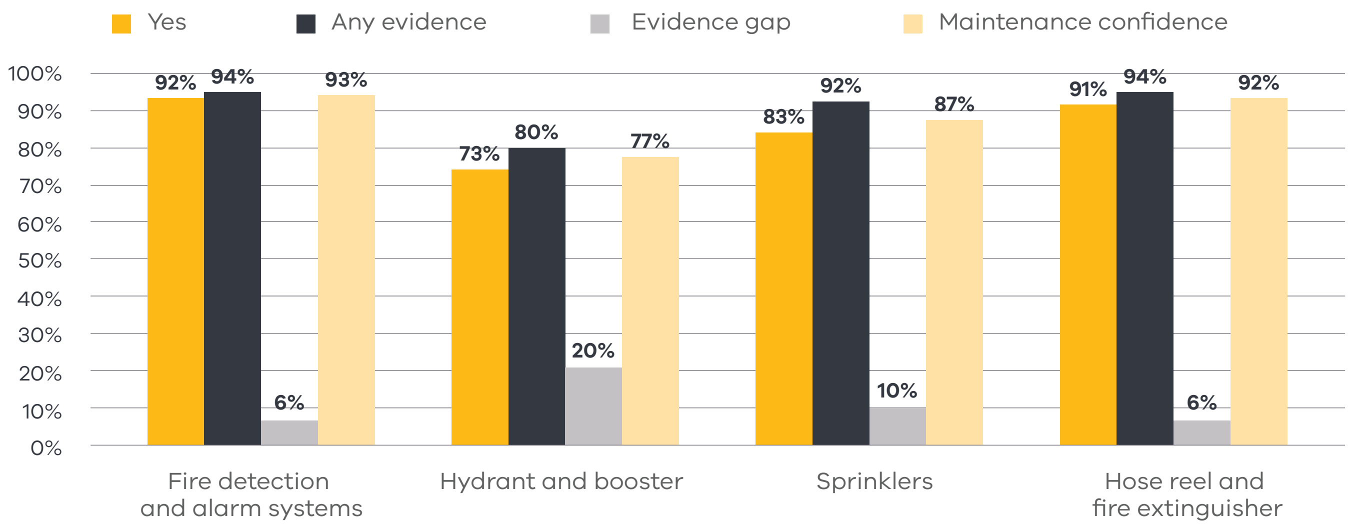
Figure 5. Comparison of maintenance evidence at routine intervals for passive systems



In contrast as shown in Figure 6, active systems demonstrated higher levels of routine maintenance confidence overall, with fire detection and alarm systems recording confidence levels of approximately 93 per cent.

Variability is still present across system types and individual assets and where performance testing elements are removed at the routine level, active systems perform better.

Figure 6. Comparison of maintenance evidence at routine intervals for active systems



The case study below illustrates the matter regarding maintenance.

CASE STUDY – FIVE YEAR MILESTONE TESTING

Between 2021 and 2023, service records regularly identified the overdue five-yearly sprinkler valve overhaul, along with several physical deficiencies. Although there was evidence of quotes submitted, there is no evidence confirming completion of these remedial works and milestone testing. In early 2024, a new contractor was engaged for routine servicing, again noting that the five-yearly overhaul remained outstanding. By mid-2025 another contractor had been engaged, with service documentation suggesting that monthly and six-monthly inspections were being performed without identifying major additional defects. Nevertheless, the August 2025 logbook cited the booster connection overhaul as "due," implying that the milestone may have only recently been scheduled or completed, though supporting documentation was not available at the time of review.

4.4 AESMR as a mechanism of maintenance assurance

Of the buildings surveyed, 18 per cent were unable to produce their most recent AESMR upon request. Of the AESMR that were received:

- 66 per cent were produced and signed by the head servicing contractor
- 10 per cent noted the OP could not be located for the property
- 9 per cent were unsigned
- 5 per cent could not be issued due to outstanding defects
- 33 per cent noted coverage to common areas only
- 10 per cent noted active enforcement action

Across the AESMRs reviewed, multiple inconsistencies were identified, including discrepancies between AESMRs and contractor logbooks; misalignment with ESMs listed on the OP or Maintenance Determination (MD); omission of required measures; inclusion of outdated or unapproved assets; and failure to capture all ESMs present on-site. In several cases, AESMRs did not reconcile with routine maintenance records, milestone testing outcomes or known documentation gaps.

While AESMRs are commonly produced, their presence alone does not provide assurance that ESM maintenance and performance have been comprehensively or independently verified.

5. Discussion

5.1 Operation of ESM assets despite limited records

The survey ascertains that active systems were functioning at the time, despite the lack of evidence for milestone and annual testing. This suggests that while the more performance-based testing may not have been fully documented or undertaken, routine maintenance activities and inherent designed longevity of the specific systems continue to support day-to-day system functionality relied upon by first responders during emergencies; however, without evidence of milestone or annual performance testing, the extent of system reliability under real fire conditions remains uncertain.

The apparent functionality of these assets could be attributed to several factors:

1. **Incomplete documentation**: Maintenance may have been undertaken, but supporting evidence was not available during the survey, possibly due to record-transfer issues or limited accessibility.
2. **Residual performance**: Many of the surveyed buildings were constructed within the past 10–15 years, meaning that systems may still be within their original design life and functioning despite inconsistent servicing.
3. **System resilience**: Even where maintenance has not been systematically performed, the inherent durability and redundancy of the existing ESM maintenance ecosystem allows assets to operate as designed in the short to medium term.

While these findings confirm short-term functionality, they may likely represent residual performance rather than verified assurance. Without documented evidence of milestone or annual testing, the extent of system reliability under actual fire conditions remains uncertain, highlighting the importance of maintaining robust documentation and verification practices alongside routine maintenance activities. As maintenance requirements extend beyond routine servicing into more specialised and infrequent testing, the ability to evidence performance becomes increasingly constrained.

5.2 Complexity of maintenance obligations and assurance

From the survey, routine servicing activities are relatively understood across buildings, with servicing providers undertaking visual checks and basic operational inspections that support day-to-day operability of ESMs. In contrast, annual and milestone testing requirements introduce greater technical complexity, longer inspection intervals and more detailed verification expectations. An example of the greater complexity is that milestone testing falls outside standard contracting agreements, therefore OCs need to plan for long-term costs above standard operating budgeted costs.

These activities often require the servicing contractor to undertake specialised testing, interpretation of Australian Standards from the appropriate time of the system and reconciliation against baseline documentation, which stipulates the design intent and performance of the system.

The diversity in servicing contractors also introduces challenges in maintaining consistency, both in the systems and methods applied, the level of detail, completeness and how maintenance records are managed and presented. This naturally also links to the issue of competency and the challenge of verifying the qualifications of individuals undertaking ESM maintenance. There is no mandatory accreditation system covering all ESM related trades in Victoria. Therefore, as the level of technical requirements and complexity increases from routine to milestone testing, the availability, consistency and traceability of supporting evidence declines and contractor variability increases.

This complexity has direct implications for OCs who are expected to understand, oversee and make informed decisions and approve expenditure regarding ESM maintenance despite often lacking the technical expertise or access to the appropriate records required to do so.

Even when milestone testing is performed, the absence of baseline data and complete records impacts the understanding of testing outcomes. As a result, assurance gaps are not driven solely by an absence of maintenance activity, but by the increasing difficulty of evidencing performance against complex and evolving standards. Increasing technical complexity reduces the availability, consistency and traceability of supporting evidence, amplifying variability in maintenance outcomes. In this context, OCs increasingly rely on contractor judgement and certification without the ability to independently verify completeness or adequacy, undermining confidence in long-term system performance and ongoing record integrity.

The case study below provides additional context to the findings.

CASE STUDY – BASELINE DATA

An ESM contractor provided a checklist of baseline data required, including items like the OP, Fire Engineering Report (FER), Design Drawings, Design Specifications, As-Installed Drawings, Control Wiring Schematics and Description of Operation. Of all the documents listed, only the OP had been provided to the contractor. The contractor included limitations within their service reports noting "While all best endeavours are taken to inspect, test and maintain the installed systems and equipment, without complete and correct associated Baseline Data design information relevant to this site having been provided, we cannot assume responsibility for the accuracy of the information provided within". The ESM contractor noted in the yearly condition report the lack of design data as a non-conformance, noting they "require design information to determine operational function of this equipment and verify our maintenance inspection results".

5.3 Differences in performance verifiability across ESM assets

As maintenance obligations become more complex, differences emerge in how effective performance can be verified across different ESM asset types, particularly between systems that are readily observable and functionally testable on-site such as fire doors and those that rely more heavily on documentation, historical design intent and continuity of maintenance oversight such as fire detection and alarm systems.

Assurance outcomes reflect not only the extent of maintenance activity, but the inherent verifiability of different ESM types. Systems that are readily visible, subject to frequent testing and supported by standardised records tend to provide higher levels of confidence. In contrast, systems that rely on infrequent performance-based testing or historical documentation are more difficult to verify, even where maintenance is occurring. As a result, assurance outcomes are shaped as much by the nature of the asset and its testing regime as by the maintenance effort applied.

Detailed asset level observations and typical asset specific deficiencies are provided in Appendix A.

These differences indicate that ESM assets are not equal in terms of their visibility, verifiability or reliance on documentation. Assets that rely on system configuration, cause and effect logic and interfacing with other ESMs present greater challenges, underscoring the value system controls and integration functions.

5.4 Legacy building lifecycle and upstream implications shaping ESM outcomes

Where upstream decision and information is incomplete or inaccurate, lifecycle credibility deteriorates, constraining the ability to trace systems from design intent through to maintenance and testing, even where assets appear to be operational in practice. In this context, ESM outcomes are shaped not only by the presence of current records alone, but by the integrity of identification, design, construction, commission and subsequent alterations.

ESMs are established through design documentation, as-built records, OPs and MDs. These documents form the foundation that defines how ESMs coexist, their intended operation, performance and the assets required to be maintained over the life of the building.

Where ESMs are not correctly installed, documented or captured in the early stages or where subsequent alterations and upgrades are not fully captured and updated in approvals and records, the maintenance of the ESMs begins to blur and over time this can result in maintenance activities being undertaken without clear or current understanding of how a system is meant to perform, be configured or without consideration of the original design intent.

The survey identified instances where systems observed on-site were not reflected in approved documentation, as well as cases where approved documents continued to reference systems that had been modified, replaced or removed. This fragmentation undermines the ability to confidently trace ESMs from design intent through to ongoing maintenance and testing.

When upstream information is incomplete or inaccurate, lifecycle visibility deteriorates and approved documentation becomes a less reliable foundation for maintenance, certification and assurance. This places greater reliance on interpretation by servicing providers and owners, weakening confidence that ESMs are being maintained and tested in a manner consistent with their intended function and design, even where systems appear operational in practice.

The following case study is an example demonstrating this.

CASE STUDY – AS BUILT CONDITIONS

The ESM contractor's most recent quarterly service report noted that, while there is an exit sign at the roller door in the ground level carpark, the roller door did not function when the alarm was activated and lacks both an emergency release or 'press here' button. The contractor recommended reviewing the Fire Engineering Report to confirm the door's status as an exit. According to the Fire Engineering Report, the carpark roller shutter door is to be regarded as an alternative means of egress and must be equipped with an emergency push button for use in emergencies, accompanied by clear signage such as 'In the event of an emergency push button to open door'. Additionally, the door should have a manual open mechanism with signage instructing occupants on its emergency use.

5.5 Implications for OC and governance

OCs ultimately carry responsibility for ESM maintenance, yet findings demonstrate that assurance outcomes are shaped by a broader system involving design documentation, regulatory processes, contractor practices and historical decisions made over the life of the building.

Limited technical capability, reliance on external providers, evolving regulatory frameworks and fragmented records place OCs in a challenging position when attempting to demonstrate compliance and assurance. Over time, this can result in a compliance by certification approach, rather than a lifecycle-based understanding of system performance and risk.

5.6 System-level implications for ESM framework

Taken together, the findings indicate that Victoria's ESM framework performs well in functional terms but is less robust in providing sustained, verifiable assurance of performance over time. Where there is absence of complete records, baseline data or where assets are approaching end of life, a whole of life management approach represents a more proactive means of re-establishing performance requirements enabling risk to be identified, accounted for and addressed in a systematic manner.

The interaction of documentation gaps, misalignment between approved and installed systems and variability in maintenance evidence constrains confidence that ESMs will continue to perform as intended throughout their lifecycle.

The case study on the next two pages supports and contexualises the broader findings and discussion in this report.

CASE STUDY – CONTINUITY LIFECYCLE FAILURE

The subject building is a three-storey structure containing nine sole-occupancy units (SOU), originally constructed between the 1960s and 1970s using predominantly masonry and concrete. No documentation has been located for the original base building; however, it appears to have included an external fire hydrant and hose reel as part of the original construction.

In 2007, the building underwent refurbishment involving alterations to the existing nine SOUs and the addition of a fourth storey with two new SOUs. The upper level was constructed with rendered and painted EPS cladding (50mm EPS on a timber frame). A Certificate of Final Inspection (CFI) with a maintenance determination was issued in August 2007 for SOUs 1–9 (the original building), listing ESM assets such as fire doors and a smoke and heat alarm system. An OP was subsequently issued in May 2008 for SOUs 10 and 11 (from the additional fourth storey).

The maintenance determination on the OP for the 2008 works did not include fire doors or a smoke and heat alarm system, resulting in a misalignment between the CFI (2007) and OP (2008) documentation. Furthermore, neither document referenced the external fire hydrant or hose reel, despite these appearing to be part of the original building's fire protection provisions. This demonstrates a lack of continuity in the recording of ESMs and consolidation of required ESMs resulting from different stages of building development.

The building was later assessed under the Victorian Statewide Cladding Audit and was found to have combustible cladding and be non-compliant with the approved fire engineering solution due to the absence of thermal detectors within apartments. In January 2021, council issued an enforcement notice requiring the installation of a smoke detection and alarm system compliant with AS 1670.1, in accordance with the approved Fire Engineering Report. A Building Permit for the "Proposed Installation of a Detection and Occupant Warning System and Fire Indicator Panel to an Existing Four-Storey Apartment Building" was subsequently issued in November 2023.

A CFI was issued for these works in August 2024, followed by a new Maintenance Determination in September 2024 covering the smoke and heat detection system and building occupant warning system. An updated Maintenance Schedule was also issued, referencing the 2008 OP (for SOUs 10 and 11) and the 2024 Maintenance Determination. While the updated schedule generally aligned with the 2008 OP, it added the two new systems (smoke and heat detection and occupant warning) but did not include other original ESM assets such as fire doors, the fire hydrant or hose reel.

During the May 2025 annual ESM reporting process, the contractor responsible for certifying the Annual Essential Safety Measures Report (AESMR) advised they were unable to issue the report due to the absence of maintenance records for the upgraded smoke and heat detection system since February 2024. The fire maintenance contractor had reported in August 2024 they could not complete scheduled servicing because the smoke alarms had been replaced and upgraded with detectors connected to the new Fire Indicator Panel (FIP). A quotation was provided for servicing the upgraded system, however the contractor noted this may fall under the installer's 12-month warranty. It appears, neither the installer nor the original servicing contractor undertook ongoing maintenance of the upgraded system during this period.

In mid-May 2025, the fire detection and alarm contractor was formally engaged to complete servicing of the upgraded system. Following confirmation of this maintenance, the AESMR was issued in late May 2025. However, the issued AESMR referenced the 2008 OP but did not incorporate the September 2024 Maintenance Schedule. As a result, it omitted the newly added smoke and heat detection and occupant warning systems but did include references to the older smoke and heat alarm system, fire hydrant and hose reel. It was also noted the OP displayed in the building's lobby was from 2008, which applied only to the top-floor addition and not the entire building.

This case study highlights the compounding effects of staged approvals, incomplete documentation and inconsistent ESM records. It illustrates how missing or misaligned determinations can obscure asset accountability and maintenance responsibilities, increasing the risk that essential systems are not properly captured, serviced or verified.

6. Reform opportunities for further consideration

Cladding Safety Victoria supports new reforms being proposed by the Victorian Government that will strengthen the regulatory regime in relation to the quality and maintenance upkeep of ESMs. These include proposals for a new Building Manual which owners corporations will be responsible for maintaining and keeping the documentation current.

Strengthening lifecycle governance, improving documentation alignment and enhancing the clarity and reliability of assurance mechanisms would support more consistent, transparent and defensible outcomes for building safety across the sector.

Specifically, reform opportunities to consider for the future to strengthen the ESM framework could include:

- Improving digital record governance and establishing a single repository of all relevant information including important building information on the quality and maintenance of ESMs and information on other essential compliance-related issues concerning the quality and safety of the building.
- Aligning regulatory documentation relating to the operation and ongoing maintenance of a building's ESMs that will ensure safety, proper maintenance and regulatory compliance for complex multi-unit residential buildings, protecting residents and property values.
- Educating owners corporations to improve their capabilities and competencies through the development of customised information and tools so they better understand their responsibilities and more effectively meet their ESM maintenance and reporting requirements. The requirement for OCs/OCMs to upskill to be able to deliver maintenance activities and reporting would be an important aspect of any such reform, as well as ensuring that monitoring and enforcement is risk-based.
- Owners corporations could be required to register buildings with regulatory authorities and submit updates on ESM maintenance to the regulator either through proposed reform processes such as the Building Manual or other mechanisms that could be explored. A centralised database for registering Class 2 buildings could capture and maintain a range of critical building information that would benefit OCs as well as providing a foundation to improve compliance, monitoring and enforcement across the sector. Information about a building's ESMs and their maintenance would improve transparency about safety, ensure that safety requirements are being met and identify areas of concern for a safety review across areas of concern for further safety review.
- Embedding lifecycle-based assurance frameworks to ensure building safety remains both functionally effective and verifiable over time. A greater compliance focus on wet system maintenance as an express ESM obligation on the owners and OCs of the building. There is clear evidence that complex wet system maintenance is not being undertaken. Building safety will be improved by better focus on water ingress and balcony safety during ESM inspections.
- Consider the merits of requiring the inclusion of key ESM-related documents in Section 32 Vendor's Statement under the *Sale of Land Act* (for example, original building permit, design documentation, with independent validation of the AESMR and milestone testing) to ensure accurate records are available for owners and purchasers.

APPENDIX A

ESM asset grouping	Typical on-site functionality observed	Common observations and verification limitations
Fire detection and alarm systems (FDAS)[7]	All functioning at the time of survey, with alarms and detectors responding to non-intrusive functional testing.	Lack of baseline performance and commissioning data; limited evidence of milestone testing; reliance on summary records without supporting technical reports; inconsistent documentation of FIP configuration, zoning, cause-and-effect logic, alarm sequencing, and interfacing with other ESMs, reducing confidence in verified system behaviour under all emergency.
Sprinkler systems (including pumps where applicable)[8]	Systems observed to be functioning at the time of inspection, including activation of pumps where installed.	Milestone testing (e.g. flow, pressure, pump performance) rarely evidenced; absence of commissioning benchmarks; limited documentation demonstrating verification against approved or modified design intent; uncertainty where alterations, extensions, or system modifications had occurred.
Hydrant systems[9]	Assets typically present and accessible, with evidence of routine servicing.	Variability in verified hydraulic performance, reliance on generic or non–site-specific signage that did not reflect intended system design; missing, faded, or incorrect hydrant and booster signage and block plans, including hand-drawn diagrams of uncertain accuracy; physical access constraints due to obstructions such as stored items or vegetation; observed component issues including leaking valves, damaged or missing caps, aged landing valves, and pump-related concerns; missing, out-of-date, or incomplete service tags; and limited or absent evidence of five-yearly hydrostatic or milestone testing.

7 FDAS is the term used to describe systems designed to detect fire and alert occupants, encompassing both interconnected smoke alarm systems (typically found in smaller buildings or residential settings) and FIPs typically in more complex, larger or multi-occupancy buildings. Depending on the building's class and risk profile, an FDAS may also include Alarm Signalling Equipment (ASE) to transmit signals to the Fire Brigade or operate solely as a local alert system within the building. Where applicable, depending on the configuration of the building's FIP, tests were extended across multiple zones to confirm system cascade and functional interconnectivity such as verifying activation of mechanical systems, release of fire doors and operation of other interfaced devices.

8 Sprinklers also encompass drencher systems, which operate similarly but are typically used for external or higher-risk areas such as facades, providing a curtain of water to protect structures or openings from fire exposure and supress spread of fire from adjacent sources. Pumps, and especially tanks, comprised a small subset within the sprinkler systems. All pumps were tested and confirmed to be operational at the time of the survey. Maintenance records for these assets were not analysed separately.

9 75% of buildings had a hydrant system. Of these buildings, approximately 86% were fitted with a booster assembly and around 26% of those booster-equipped systems were connected to a pump set. A further approximately 18% of buildings were serviced solely by external street hydrants; these buildings have been excluded from references to "hydrant systems" within this report.

ESM asset grouping	Typical on-site functionality observed	Common observations and verification limitations
Hose reels and fire extinguishers[10]	Generally present and within service date.	Recurring obstructions to access, including hose reels located within cupboards containing stored items; reliance on visual presence and routine tagging for assurance; absence of evidence of annual flow testing for hose reels; missing or non-compliant appliance signage; maintenance tags missing, not current or unstamped; instances of extinguishers identified as out of date or due for replacement, including five-yearly hydrostatic pressure testing.
Passive fire protection and penetrations[11]	Deficient penetrations were common, variable visibility and condition often concealed and difficult to determine.	High reliance on original construction documentation; limited evidence of inspection following refurbishments or service penetrations; significant uncertainty where fire-stopping integrity had been altered, damaged or undocumented; constrained ability to verify continuity of compartmentation over time.
Fire and smoke doors[12]	Doors generally present and operable at a basic level.	Inconsistent inspection scope and frequency; limited evidence of verification against performance requirements (for example, clearances, seals and door closers); variable inclusion within servicing contracts; uncertainty where doors had been replaced, adjusted or modified without updated documentation.
Exit signs and emergency lighting	Typically illuminated and functional at the time of survey.	Evidence often limited to routine testing records; limited documentation of discharge duration testing and central battery system performance; reduced assurance where building layouts or occupancy patterns had changed without corresponding updates to testing regimes.
Egress and paths of travel	Paths generally unobstructed at the time of inspection.	Reliance on visual inspection for assurance; recurring issues including physical obstructions within paths of travel, damaged or stiff door hardware, deteriorated surfaces and missing or damaged handrails or balustrades; limited verification of door and gate release mechanisms (including carpark gates and manual overrides); uncertainty where observed conditions differed from documented fire engineering assumptions or design intent, particularly in relation to door requirements.

10 100% of buildings surveyed were equipped with either a combination of fire hose reels and extinguishers or extinguishers only. Fire hose reels were installed in 80% of buildings.

11 In practice, servicing these ESMs is complex, as fire-rated construction is often concealed within walls, floors and ceilings, making direct inspection difficult. Consequently, maintenance activities are largely visual in nature and focus on verifying the integrity of accessible elements and ensuring proper firestopping or sealing around visible penetrations.

12 Approximately 92% of buildings were observed to have either fire doors, smoke doors or a combination of both. Verification of these assets was predominantly undertaken through visual observation.

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