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EVIDENCE BASED DECISION MAKING IN ASSET MANAGEMENT

Making Informed Decisions Based On Accurate Asset Data

Data to Decisions: An Integrated Maintenance Investment Model For Complex Infrastructure Networks

INCLUDES

STATE OF THE ASSET MANAGEMENT SECTOR 2026 SUPPLEMENT

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ERNST KRAUSS

EDITOR IN CHIEF

The general theme for this edition of "The Asset" is about evidence and how we use information about Assets in our care. There have been many papers and opinion pieces written in the past five years or more relating to data and its importance to Business and particularly to Asset Management. The advent and proliferation of Artificial Intelligence systems have made it very clear how much we depend on correct data and responsible transformation into information that is useful in decision making. AI can only create value when it is built on accurate, trusted and well-managed data.

My experience, which is underpinned by current Industry realisation is, that we still have insufficient understanding of data that is required and consequently cannot fully trust data that is stored in our repositories. Evidence-based asset management depends on treating data as an asset in its own right, supported by a defined management framework, strategic objectives, governance, and lifecycle controls. During a recent assignment to implement an Asset Management system for an overseas mega project, I learned more about the way evidentiary data and information can be built. The key is the treatment of data as an Asset that requires its own interconnected and defined management framework.

When we speak about interconnection, we address interoperability. Asset data must move across functions, departments and systems from a single trusted source, rather than being duplicated and fragmented across isolated repositories. Interoperability is central to this outcome. Building Information Management systems demonstrate the value of this approach, particularly when supported by common data definitions, clear information requirements, and agreed methods for storing, accessing and transforming data into decision-ready information. Some time ago, the International Standards Organisation ISO undertook the development of an interoperability standard for data and documentation (ISO 25964) among others for enterprise interoperability.

A key part is the governance of that data management system, which may require to have a new function in an organisation, a person responsible for this critical governance role at the highest level. Asset Information Strategies and Operational Information Strategies provide the foundation for turning raw data into reliable evidence and maintaining its integrity over time. These are but two of the critical plans and documentation that will underpin the ability to develop data into evidentiary information.

One way of achieving this ideal state is to define attributes for all Assets that exist in an organisation. These attributes can be assigned to the various end users and form the basis for evidence-based information. Sounds good? It is – but: are we prepared to reform our current data sets and management? Data management and maintenance costs money just as Asset maintenance does.

If we want to take full advantage of the promise that AI offers, we must make the effort to reconstruct our data and data management. Evidence based Asset Management may otherwise remain a dream for the future and make the investment in AI a failure. Do you agree? What is the status in your organisation? As always, we like to hear from you about your experiences.

This edition of The Asset focuses on evidence: how organisations collect, govern and apply asset information to make better decisions. Over recent years, data has become a central theme in business and asset management. The rapid growth of artificial intelligence has further highlighted a simple reality: AI can only create value when it is built on accurate, trusted and well-managed data.

In practice, many organisations still lack a clear understanding of what data is required, where it resides and whether it can be trusted. Evidence-based asset management depends on treating data as an asset in its own right, supported by a defined management framework, strategic objectives, governance, and lifecycle controls. A recent overseas mega-project reinforced this point: evidentiary information is not created by systems alone; it is built through disciplined data ownership, structure and accountability.

Interoperability is central to this outcome. Asset data must move across functions, departments and systems from a single trusted source, rather than being duplicated and fragmented across isolated repositories. Building Information Management systems demonstrate the value of this approach, particularly when supported by common data definitions, clear information requirements, and agreed methods for storing, accessing and transforming data into decision-ready information.

Strong governance is therefore essential. Asset Information Strategies and Operational Information Strategies provide the foundation for turning raw data into reliable evidence and maintaining its integrity over time. Defining asset attributes, assigning ownership, and aligning data requirements with user needs are practical steps toward this goal. However, this also requires investment: data management carries an ongoing cost, just as asset maintenance does.



WENDY MCPATE

NATIONAL CHAIR

More than a decade ago, I was involved in a maintenance optimisation initiative for a business operating a fleet of power stations.

At first, there was an obvious cost question: were we doing more maintenance than we needed to? But once we got into the detail, that wasn't really the question.

We brought together the people who knew the assets and examined what was actually happening in the field. Where were we seeing failures? What was the maintenance preventing? What wasn't working? Where were we intervening unnecessarily?

The evidence gave us a more nuanced answer. Do less here. Change what we're doing there. Do more somewhere else because the risk and consequence of failure warrants it. The real value was allowing the evidence to change the decision, rather than collecting evidence to justify the decision we thought we should make.

The outcome wasn't simply cheaper maintenance. It was better maintenance: doing the right work, on the right assets, at the right time.

I think about how we would approach that same exercise today.

AI can interrogate far more information, identify patterns across asset histories and performance, and bring evidence to the table much faster. We are already seeing practical applications, from interrogating standards to cleansing and structuring data. The opportunity is to strengthen the evidence on which our decisions are based, while still applying operational knowledge and judgement to decisions about risk.

As our AMC delegation prepares to visit China in October, I am interested in seeing how this is being done in practice. We have heard about remarkable applications of AI, data and technology in asset management. What are they doing differently, and what can we learn from their experience?

This edition gives us another opportunity to learn from evidence, experience and practice, and I look forward to the perspectives our authors bring to that conversation.

TECH 1



ARTICLE 1 – Making Informed Decisions Based On Accurate Asset Data

Leanne Cluley & Jason Ronsisvalle, Reduxo

SUMMARY

In today's increasingly complex built environments, asset management decisions must be grounded in reliable, consistent, and meaningful data. Organisations that rely on incomplete, outdated, or inconsistent asset information often operate reactively, leading to higher costs, increased risk, and reduced asset performance.

Accurate asset data provides the foundation for informed decision making across the asset lifecycle, from planning and maintenance to renewal forecasting and capital investment prioritisation. When supported by robust data governance, validation processes, and a structured assessment framework, asset information becomes a strategic enabler rather than an administrative burden.

This paper outlines why accurate asset data is essential, how organisations can establish a reliable "single source of truth," and how to implement effective asset assessment programs. It also highlights the tangible benefits of data driven decision making, supported by real world case study outcomes presented at AMPEAK26.

1. INTRODUCTION

Asset intensive organisations are under increasing pressure to do more with less — extending asset life, managing risk, meeting compliance obligations, and delivering service outcomes within constrained budgets. In this environment, decisions based on assumption, anecdote, or fragmented information are no longer sustainable.

Data driven decision making shifts asset management from reactive maintenance to proactive, evidence based planning. However, this transformation is only possible when the underlying asset data is accurate, structured, and aligned to organisational objectives.

Accurate data does not simply record what assets exist; it provides insight into their condition, performance, risk, and future funding requirements. When integrated with digital tools and analytics, this information becomes a powerful driver of operational efficiency and long term strategic planning.

2. WHY HAVE ACCURATE ASSET DATA?

Data is more than a collection of records, it is organisational knowledge. Accurate asset data is the foundation of effective asset management because it directly supports planning, risk reduction, safety, reliability and asset longevity. Without reliable information, organisations are forced to make decisions based on assumptions, which increases uncertainty and the likelihood of costly or unsafe outcomes.

High quality asset data enables organisations to move from reactive responses to proactive, planned asset management.

Accurate asset data supports:

- **Robust Asset Management Plans**

Reliable condition, performance, and lifecycle data provide the evidence base for developing meaningful asset management and maintenance plans. This ensures planned maintenance and capital projects are aligned to actual need rather than perception, improving prioritisation and budget allocation.

- **Reduces Risk**

Understanding the condition, age, and criticality of assets allows organisations to identify high risk items before failure occurs. This supports proactive intervention strategies, minimises unexpected breakdowns, and increases reliability.

- **Increases Safety**

Poor asset condition is often directly linked to safety incidents. Accurate data helps identify assets that pose safety or compliance risks, enabling timely rectification and ensuring facilities remain safe for all.

- **Extends Asset Life**

When asset condition and performance trends are clearly understood, maintenance can be timed and targeted to slow deterioration. This prevents premature replacement, maximises return on investment, and supports sustainable asset lifecycle management.

- **Improves Decision Confidence**

With reliable data, decision makers can justify maintenance and capital expenditure based on evidence. This increases transparency, strengthens governance, and builds stakeholder confidence in funding and prioritising decisions.

Without accurate data, decision makers operate in uncertainty. This often results in misallocated budgets, unexpected failures, and increased operational risk. Conversely, high quality data allows organisations to move from reactive problem solving to proactive optimisation.

It enables asset owners, asset management professionals and facilities managers to understand what they have, how it is performing, and what actions are required to get the best possible return on their investment.

3. HOW TO GET ACCURATE INFORMATION

Achieving accurate asset data requires more than a one off audit. It involves establishing a single source of truth supported by structured data governance and validation processes.

Key components include:

- **A Single Source of Truth**

A centralised asset information system ensures consistency across teams and departments. This system should integrate:

- Asset registers
- Condition assessments
- Maintenance history
- Compliance records
- Financial and lifecycle data

When data is fragmented across spreadsheets, legacy systems, and individual knowledge, inconsistencies and errors are inevitable.

- **Standardised Data Frameworks**

Using consistent naming conventions, classification systems, and condition rating methodologies ensures data is comparable and meaningful. Alignment with recognised asset management standards improves interoperability and reporting.

- **Validation and Quality Assurance**

Data accuracy must be maintained through:

- Field verification and condition inspections
- Regular audits and spot checks
- Defined data ownership and accountability
- Ongoing updates aligned with asset management plans, maintenance and capital works

- **Digital Enablement**

Digital tools such as mobile data collection, integrated asset management systems, and analytics platforms help streamline updates and reduce manual error, ensuring information remains current and accessible.

4. HOW TO IMPLEMENT AN ASSET ASSESSMENT

Implementing an asset assessment program is a structured project that requires clear objectives, strong governance, and alignment with organisational strategy.

- **Define the End Goal**

Before commencing, organisations must understand what decisions the data will support. Whether the focus is lifecycle planning, risk reduction, compliance, or capital forecasting, clarity of purpose ensures the right data is collected.

- **Establish a Framework**

An agreed methodology provides consistency and defensibility of ongoing decisions. This includes:

- Scope of assets to be assessed
- Standard condition rating scales
- Risk and criticality criteria
- Data collection formats

- **Apply Strong Project Methodologies**

Like any successful project, asset assessments require:

- Clear roles and responsibilities
- Stakeholder engagement
- Quality assurance processes
- Milestone reviews and reporting

- **Integrate with Ongoing Operations**

An assessment should not be a static snapshot or moment in time. Processes are crucial to ensure data remains current through maintenance updates, refurbishment works, and asset replacements.

Completing a pilot with a lessons learned review ensures a great outcome.

5. BENEFITS

Accurate asset data delivers measurable value by enabling organisations to plan effectively, reduce risk, improve safety, and extend the life of their assets. It transforms asset management from reactive maintenance into a proactive, strategic function supporting the organisations goals and future.

- **Stronger Strategic and Asset Management Planning**

Reliable data provides the evidence base for Asset Management Plans and long term capital strategies. Organisations can prioritise works based on condition, risk, and criticality, ensuring funding is directed where it delivers the greatest operational and service impact.

- **Optimised Maintenance Planning**

Condition and performance data allow maintenance activities to be planned at the right time and at the right level of intervention. This reduces unnecessary reactive maintenance, improves scheduling efficiency, and ensures resources are used where they add the most value.

- **Reduced Operational and Asset Risk**

Accurate information enables early identification of deteriorating or high risk assets. Proactive interventions reduce the likelihood of unexpected failures, service interruptions, and emergency repairs, strengthening overall organisational reliability.

- **Improved Safety and Compliance**

Data driven visibility of asset condition supports the identification of assets that present safety hazards or compliance risks. This ensures corrective actions can be prioritised, reducing exposure to incidents and supporting safer environments for all.

- **Extended Asset Life and Better Lifecycle Outcomes**

When deterioration trends are understood, timely maintenance and minor renewals can slow asset degradation. This extends useful asset life, defers major capital expenditure, and improves whole of life value.

- **Stronger Financial Justification and Governance**

Evidence based data strengthens business cases and funding submissions by clearly linking asset condition and risk to investment need. This improves transparency, supports governance requirements, and builds stakeholder confidence in spending decisions.

6 CONCLUSION

Accurate asset data is a critical enabler of modern asset management. It provides the visibility and insight required to plan with confidence, manage risk proactively, and maintain safe, reliable environments for asset owners.

When organisations invest in structured asset assessments, strong data governance, and digital enablement, they gain more than just improved records, they gain decision intelligence. This intelligence supports the development of robust Asset Management Plans, ensures maintenance is targeted and timely, and allows risks to be identified and mitigated before they escalate into failures or safety incidents.

Perhaps most importantly, accurate data helps organisations shift from a cycle of reactive expenditure to one of planned lifecycle optimisation. By understanding asset condition and performance trends, interventions can be made earlier and more strategically, extending asset life, improving sustainability outcomes, and delivering better long term value from existing infrastructure.

The following case studies demonstrate how organisations have used accurate asset data to reduce risk, improve safety outcomes, and extend asset lifecycles while strengthening financial and operational decision making.

Case Study 1 - The brief was to provide an accurate asset assessment of 54 health facilities in Victoria for upload into their CMMS solution ensuring compliance with the Victorian Asset Management Accountability Framework AMAF[1], the framework is a policy implemented by the Victorian Government that aims to ensure an agency's asset base addresses it service delivery objectives. Working with their consultant and the client to scope the data requirements and the template for uploading the data ensured a smooth process. As each facility was completed, the data was delivered and imported. In addition, we worked with our partner to upload the asset data into a lifecycle costing model which allowed this health entity to create a plan and budget cost with supporting evidence to the health department.

Case Study 2 - Our customer required an asset and facilities audit of their supported housing accommodation ranging from rooming houses, units and apartments to 3-bedroom homes.

Our role was to be independent; we were enlisted to do a condition and asset audit capturing details relating to the infrastructure and major plant. Based on the data provided, they were able to create a lifecycle costing model and implement a maintenance plan.

Case Study 3 - As technology evolves, this increases the requirements for more sophisticated data centres. Providing the supporting infrastructure to keep these 24x7 sites up and running requires maintenance and planning based on accurate asset data. For this multinational data centre operator, we worked in green field sites. From an asset register development point of view these sites are well laid out, the assets consistent, the asset naming logical. Barcoding of the assets still requires a concise approach, and it is important we capture the data and deliver in a format that can be uploaded into existing systems. For this client, we completed sites as they become operational in both Melbourne and Sydney, eagerly observing the changes in technology from building to building. This allows our client to implement asset and maintenance management programs to meet the requirements of the strict KPIs for uptime of the supported assets.

1 Asset Management Accountability Framework

Case Study 4 – This mining organisation stated an accurate asset base is crucial to maintaining a refinery, our client's requirement was to verify SAP FLOCs (Functional Location) and provide further granularity of assets. We conducted a pilot to ensure the process was efficient and to scope, as well as providing a timeline to complete the full project which we then completed.

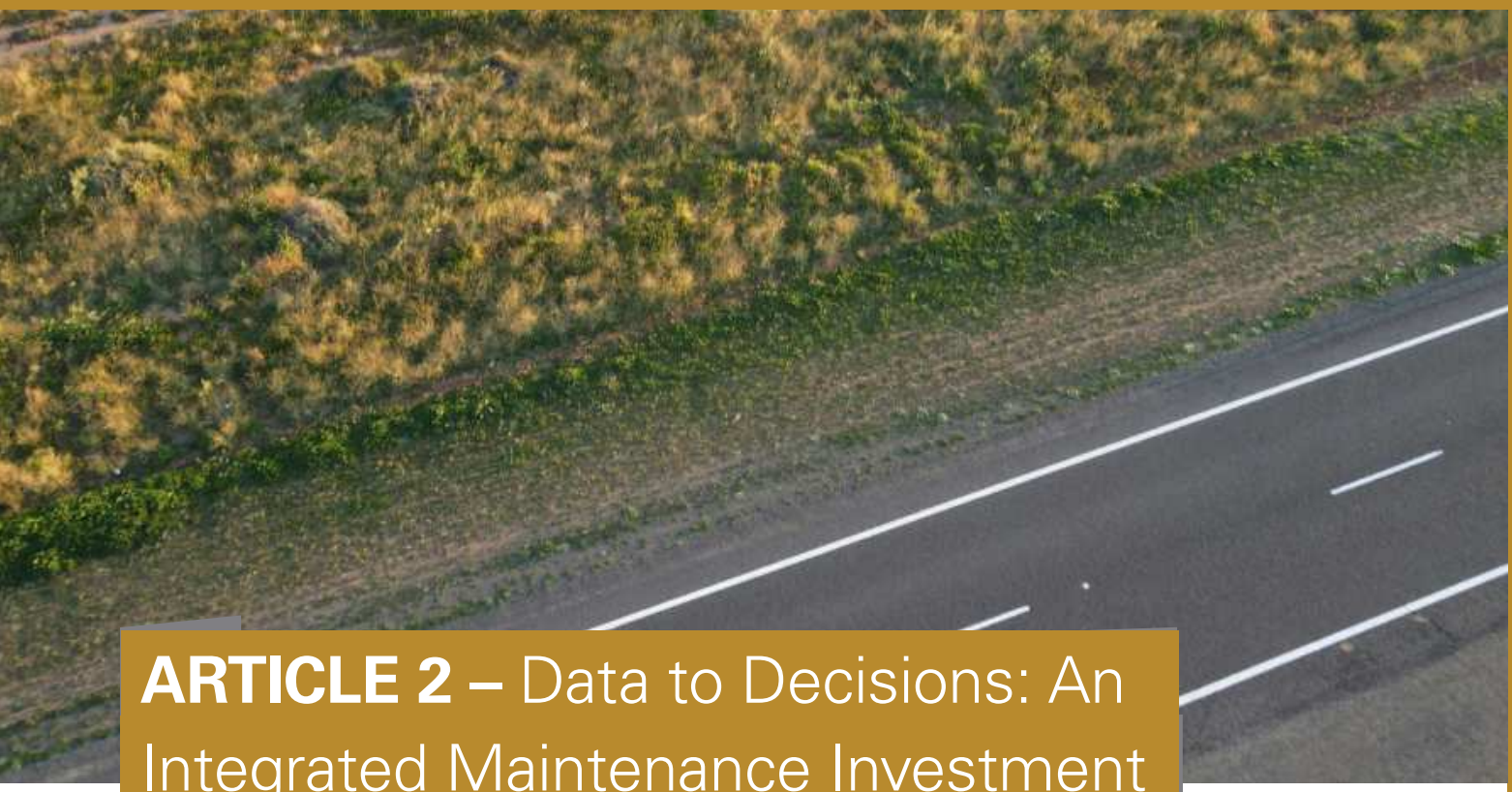
The outcome by area, was a single source of truth in SAP allowing our client to update maintenance plans and lifecycle reporting.

This project was implemented as part of their Centres of Excellence model to ensure a centrally globally common approach to asset management. This includes maintenance strategies and governance through to life cycle management, so that they can assess and act on opportunities at the macro, portfolio level.

Case Study 5 – The project scope was to complete an asset and building condition audit for a major university across Tasmania. We completed a pilot and assisted their Project Manager with scope. We barcoded major plant and equipment and took tens of thousands of photos. Each asset was given a condition rating, and defects were described based on the rating. The scope including educational spaces, offices and student accommodation across multiple campuses. The data was delivered in an agreed format to upload into their asset and maintenance management solution for ongoing management and planning of their infrastructure as apart of their implementation of ISO55001[2]. These standards detail the criteria necessary for establishing, implementing, maintaining, and improving an asset management system.

Together, these examples reinforce a clear message: better data leads to better decisions — and better decisions lead to safer, more resilient, and more sustainable assets.

2 ISO55001 is a critical part of the ISO55000 family of standards for Asset Management.



ARTICLE 2 – Data to Decisions: An Integrated Maintenance Investment Model For Complex Infrastructure Networks

Lalinda Karunaratne, Main Roads Western Australia
Abigal Smeaton, WSP
Shamsur Rahman, Jacobs

SUMMARY

Effectively managing large and complex infrastructure networks requires robust, evidence-based maintenance planning alongside an equitable, risk-driven distribution of investments across diverse assets and maintenance activities. When planning occurs at the asset-class, sub-network, or activity level, it limits the ability to optimise maintenance resource allocation across the entire network's asset portfolio. An integrated, whole-of-network maintenance investment model is of greater benefit to ensure prioritised risk management and supported by informed decision-making, ensuring resilience and long-term value particularly in a constrained funding environment.

Main Roads Western Australia (MRWA), responsible for managing one of the nation's largest and most critical road networks, has developed the Sustainable Funding Model (SFM) to support asset recurrent maintenance investment planning across all its assets, including roads, bridges, and electrical and Intelligent Transport System (ITS) infrastructure valued at $51.8 billion in 2025.

This case study will explore the development and implementation of the digitally enabled, integrated and portfolio-wide recurrent maintenance investment model for strategic funding decision-making in a complex infrastructure network through a structured, iterative approach combining lifecycle modelling, risk-based prioritisation, and facilitates subjective funding scenario analysis using advanced cloud-based digital tools, supported by strong organisational capabilities in Asset Management and data governance. It will also examine the challenges faced, the use of model outcomes for enhanced communication and

alignment among stakeholders, and the lessons learned from implementing a model that aims to achieve sustainable asset stewardship and long-term value for Western Australia's road transport network.

Keywords: Asset management; lifecycle modelling; risk-based prioritisation; scenario analysis; digital innovation; data governance; stakeholder alignment, road maintenance.

1. INTRODUCTION

Effectively managing large and complex road infrastructure networks requires maintenance planning that is transparent, evidence-based, and explicitly linked to long-term affordability and equity outcomes in infrastructure Asset Management where each generation paying its fair share of the cost to deliver a service (Edgerton, 2016).

At the network scale, long-term planning is strengthened when asset owners use structured plans that integrate condition, lifecycle strategies, and financial forecasts; for example, the US Federal Highway Administration (FHWA) describes it "as a focal point for information about the assets, their management strategies, long-term expenditure forecasts, and business management processes" (FHWA, 2025).

According to the Global Forum on Maintenance & Asset Management (GFMAM), this whole-of-system perspective aligns with broader asset-management bodies of knowledge that emphasise alignment and integration across disciplines, noting that the objective is to facilitate the exchange and alignment of maintenance and asset management knowledge and practices (GFMAM, 2024).

Where planning and budgeting are undertaken separately by asset class, sub-network, or activity, asset owners can struggle to trade-off across the full asset portfolio; consistent with this, the American Association of State Highway and Transportation Officials (AASHTO) highlights the need for analytical approaches that cross the boundaries of asset type, work class or objective to support trade-off decision-making beyond asset-by-asset silos (AASHTO, 2011).

A whole-of-network approach also reflects the reality that investment decisions are inherently interconnected across assets and objectives: As explained in AASHTO Transportation Asset Management Guide, resource allocation is an interconnected process of decisions about how to allocate funds to different assets (AASHTO, 2020).

Accordingly, an integrated, whole-of-network data-rich maintenance investment model is essential to improve transparency, make cross-asset trade-offs explicit, and support risk-informed decisions that protect resilience and long-term value in a constrained funding environment.

MRWA manages a significant State road network spanning diverse geographies, asset types and operating contexts. To support the transition from reactive maintenance practices to proactive (including condition-based and predictive), evidence-based maintenance planning, MRWA developed SFM that integrates asset lifecycle modelling and risk-based prioritisation help facilitating subjective scenario analysis.

This paper presents the SFM as a prospective, asset portfolio-wide, digitally enabled approach that improves decision-making, strengthens stakeholder communication, and provides a repeatable method for strategic maintenance investment. It also aims to articulate how the work extends established asset management practice and offers generally applicable guidance for other organisations.

2. BACKGROUND

2.1. Asset Base

MRWA plans, builds, maintains and operates WA's state road network—one of the world's most geographically dispersed—spanning over 19,000 km across 2.5 million km² land area and valued at $51.8 billion as at June 2025 – a growth of over 70% in value in 6 years. As a statutory authority, it delivers safe, reliable roads, bridges and paths, partnering across the state government's Transport Portfolio through an integrated, customer-focused system.

MRWA also manages 1,327 road bridges statewide—288 timber and 1,029 non-timber (e.g., concrete/steel)—spanning rivers, floodways and transport corridors. The portfolio is maintained through risk-based inspection, renewal and strengthening programs to enhance safety, resilience and service levels across the network.

The electrical and Intelligent Transport Systems (ITS) asset portfolio covers lighting (for roads, paths and aesthetic features), traffic signals, tunnel operational

systems and field ITS devices (e.g., variable message signs, lane-use management signs, ramp metering, CCTV). The portfolio has grown almost 40% since 2018 (from approximately from 4,103 to 5,575 sites with an additional 661 currently in construction awaiting handover), requiring risk-based inspections, planned renewals and obsolescence management to sustain safety and availability.

2.2. Asset Management Challenges

MRWA is facing significant strategic challenges that are impacting the future needs of infrastructure and services. Recurrent maintenance activities are increasingly constrained because of limited increases to funding levels while the network and expectations have expanded—driving a growing mismatch between what's needed and what can be delivered. This is compounded by an aging profile of existing assets and sharply rising delivery costs (notably traffic management and general cost escalations).

Figure 1 shows % growth in asset value and cost index relevant to road maintenance in comparison to the funding allocated to road maintenance activities.

As a result, without intervention, growing cost and complexity pressures increase the likelihood of higher reactive maintenance demand, squeezing out planned preventative work and creating upward pressure on future maintenance backlogs. Ageing pavements and timber bridges heighten risk and cost exposure, while the expanding, more complex electrical/ITS portfolio (with shorter useful lives) increases failure points and availability pressure. Increasing demand highlights the importance of optimising inspection effort through risk-based prioritisation and the need to ramp delivery/market capability adds further strain.

3. SFM OVERVIEW

The SFM provides a unified, repeatable mechanism to estimate and prioritise future recurrent maintenance needs across MRWA's asset portfolio, spanning all roads (including drainage and roadside assets such as barriers), bridges and other structures, and electrical and ITS assets (Figure 2). The SFM approach considers risk and organisational objectives, with flexibility to incorporate factors in the future that impact performance expectations from assets and their maintenance regimes. Guided by high-level modelling principles, the model is iterative by design: early versions concentrate on using available data with progressive improvements to data and cleansing processes. Governance structure comprises a multi-disciplinary working group, structured engagement with regions and asset custodians, and formal review with external funding agencies through a combined Steering Committee that includes the Department of Treasury and Finance. Assurance activities include documentation of assumptions, traceability of inputs, and auditable model outputs that support transparent decision-making and stakeholder alignment (MRWA, 2025a).

The principles for SFM are:

- Prospective: Identifies future maintenance requirements (forward ten years) including all recurrent maintenance expenditure to maintain assets to acceptable condition/performance based on legal, safety and service requirements.
- Risk-based: Considers current asset performance, utilisation, condition, expected useful life based on criticality, safety, preservation and reputation.
- Transparency: Provides visibility to overall network recurrent maintenance requirements by asset class or asset type.
- Cost Escalation: Allowance for future escalation of cost due to external factors including resources rise and fall and inflation.
- Single Source: All recurrent maintenance requirements are available in a single source through integration of multiple corporate data systems and procedures.

Maintenance work that requires major capital outlays such as bridge and other large structures replacements, road extensions and widening, upgrades, realignments, pavement reconstructions are out of scope for SFM but will play a clearer role from a whole of life investment (operational and capital expenditure) in future developments of the SFM.

3.1. Maintenance Definitions in SFM

To ensure comprehensive and consistent adoption of the recurrent asset maintenance the following definition is given in the principles of SFM:

"Any activity performed on an existing asset with an intention of enabling the asset to perform to the

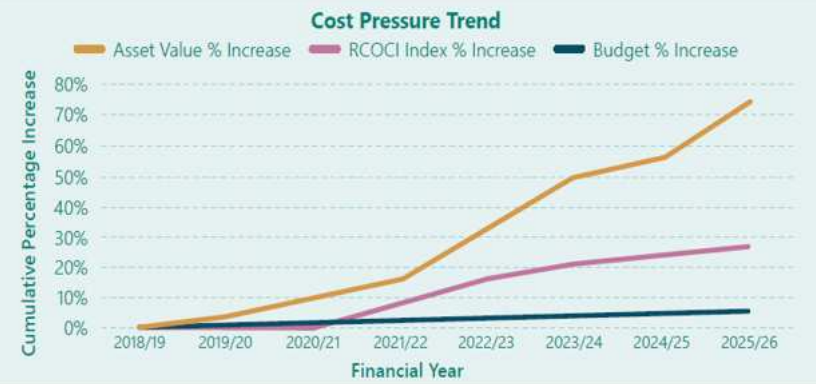


Figure 1: Changes in asset value, cost index and budgets

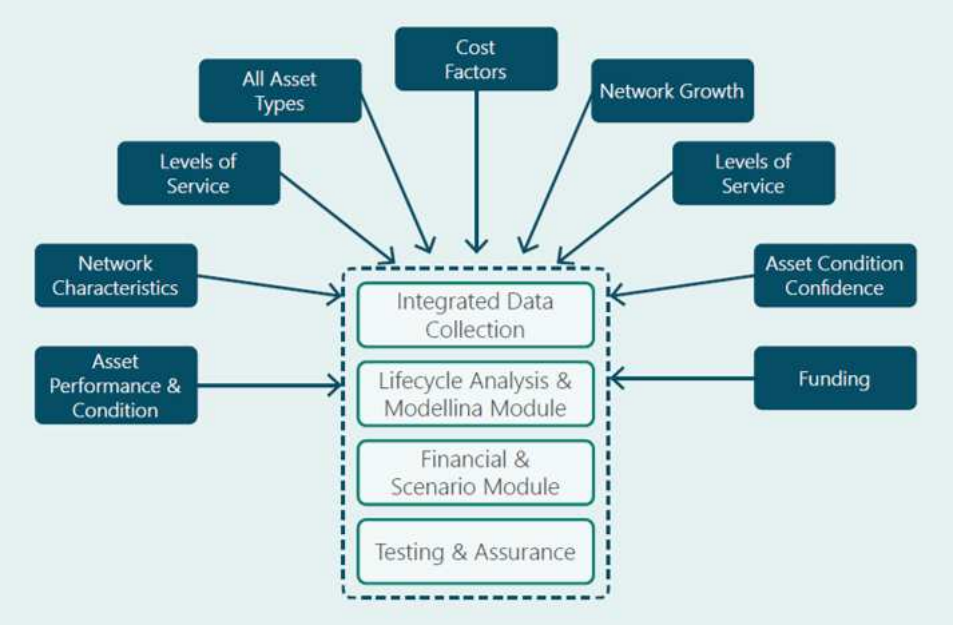


Figure 2: SFM model landscape

required level of service; this includes routine and cyclic maintenance and minor renewal or upgrading."

Other key maintenance definitions are detailed in Table 1.

The types of maintenance activities identified above are categorised based on their intent to prevent the functional failure of assets or to correct defects (conditional or functional) by restoring assets to a serviceable state in line with customer or service requirements/standards. Maintenance 'repairs' and 'renewal' categories are meant to signify that repairs (typically operating expenditure) return an asset to the agreed level of service and renewal (typically capital expenditure) is based on cost / benefit assessment for achieving service objectives.

4. MODELLING METHODOLOGY

The SFM employs a structured modelling methodology utilising:

1. Lifecycle modelling to forecast treatment needs and timing based on asset deterioration and minimisation of total lifecycle cost;
2. Risk-based prioritisation that considers asset criticality, safety, preservation and reputation; and
3. Predictive modelling based on historical maintenance activities and expenditure

The modelling approaches used for major asset classes and maintenance activities are tabulated in Table 2.

Validation of each model draws on subject matter expert reviews, cross-checks against historical activity patterns, and current service level obligations.

4.1. Pavement and Surfacing Model

The Pavement and Surfacing Model uses an optimisation-based simulator based on long-standing Main Roads lifecycle modelling principles and

Table 1: SFM Maintenance definitions

Maintenance activity		**Definitions**
Reactive	Breakdown	Maintenance activities (unplanned) performed after an asset has failed (functionally) to restore the asset to a state (specified standard) in which it can perform its required function.
Planned	Corrective	Maintenance activities are performed when an asset is close to failure (conditionally) or unsafe to use and intended to restore the asset to a state (specified standard) in which it can perform its required function.
	Preventative	Scheduled (planned) maintenance activities performed at predetermined intervals, or corresponding to prescribed criteria, and intended to reduce the probability of failure or the performance degradation of an asset and to retain an asset to a specified condition.
Renewal	Rehabilitation	Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life.
	Replacement	Replacement of an existing asset that has reached the end of its useful life (or as a result of obsolescence) with a new asset capable of providing the same or agreed alternative level of service as the existing asset.
Indirect / Overhead		Work performed that indirectly supports maintenance activities.



Table 2: SFM modelling principles for major asset classes and activities

Asset class	Modelling technique	Details
Road Pavement and Surfacing	Total lifecycle cost	Treatment needs forecast based on pavement and surface deterioration and minimisation of total lifecycle cost
Bridges	Condition assessment and historic repair patterns	Forecasts based on asset inventories, inspection data, condition metrics, historical repair patterns, and emergency maintenance trends
Electrical assets	Statistical growth (e.g. Weibull) and risk-based replacement	Forecasts based on asset-specific statistical growth and risk-based replacement program.
Longitudinal Road Marking	Inventory and repainting cycles	Prediction based on inventory data and road-level prioritisation of repainting cycles
Barriers, Drainage, Signage assets	Historical maintenance and expenditure	Prediction based on average historical maintenance activities and expenditures over a set number of years
Indirect Maintenance Activities	Historical expenditure	Prediction based on average historical expenditures over a set number of years
Routine Maintenance	Time to complete crew activities	Prediction based on historical average time to complete specific crew tasks and associated expenses

deterioration models to forecast long-term road segment deterioration and identify the lowest cost maintenance strategies, modelling key road condition parameters such as roughness, rutting, deflection, curvature, ravelling, and defect intensity. Each year, the simulator applies deterioration functions, tests feasible treatments, calculates discounted costs, and prunes suboptimal options. It evaluates a full suite of treatments—ranging from reactive "do nothing" options to resurfacing and rehabilitation—resetting surface or pavement ages as appropriate. Outputs include detailed year by year treatment decisions, cost and condition summaries, and performance statistics.

4.2. Models based on historical maintenance and expenditures

For models based on historical maintenance activities and expenditures such as the Barriers, Drainage and Signage sub models, the SFM applies a consistent, structured modelling framework that forecasts future maintenance needs using historical maintenance achievement data (fixed defects), asset inventories, defect records (not fixed), achievement expenditures and cost indices. Each sub model begins by building an asset inventory, then analyses historical defects to establish patterns of need, achievements and backlog, excluding invalid defect closures. Historical achievement costs are used to derive unit rates through a two-stage process: calculating annual historical unit rates and then developing future unit rates by applying appropriate cost indices. Future defect counts are estimated

using a defect occurrence rate based on historical patterns and applied to future asset holdings. Finally, future maintenance needs are calculated by multiplying projected defects by future unit rates. Despite differences in asset specific details, the sub models follow the same workflow—Inventory → Historical Needs → Historical Costs → Unit Rates → Future Defects → Future Cost Forecast.

4.3. Longitudinal Road Marking Model

The longitudinal road marking model estimates future maintenance needs and costs for longitudinal line marking across the state by integrating multiple data sources—including asset inventory, lane based length calculations, regional checks, repainting cycles from a machine learning model, and planned audiotactile installations — to generate activity schedules and cost forecasts. It consolidates more than 40 activity codes (i.e. road marking types) into 12 standard categories, assigns maintenance cycles using machine-learning model outputs or defined assumptions. The model then schedules activities either as smoothed averages for older installations or at exact cycle intervals for newer ones, calculates costs using region specific contract schedules rates, and adds reinstatement costs where required (e.g. after resurfacing). Outputs include projected line kilometres, annual costs, and regional breakdowns, based on assumptions such as predicted maintenance cycles, and a fixed cycles for audiotactile lines.

4.4. Indirect Maintenance Models

The indirect maintenance models estimate future operational, support and overhead maintenance costs by analysing post 2020 historical expenditure data, filtering for relevant maintenance activities, standardising task numbers, mapping regions, converting transactions to financial years, and normalising costs to a common base year. The models then aggregate and average normalised costs across regions, treatment codes and expenditure categories, applying these averages uniformly across future years to project costs under the assumption that historical spending patterns reflect future activity levels. Projections reapply indexation using the applicable wage and other indices, generating outputs such as regional activity costs, treatment level breakdowns, and program level summaries.

4.5. Routine Maintenance Model

The routine maintenance model forecasts routine maintenance crew costs by integrating historical defect data with expenditure records to determine cost rates per defect type and project future maintenance needs. It standardises and filters defect records, calculates median times to complete for each region and defect type, and assigns time values for costing, before apportioning regional expenditure based on effort shares to derive cost per defect rates. The model then analyses how defects were treated in the model's reference year to estimate the proportion handled by crews, applies these proportions to identified defects to project future workload, and assumes future activity levels for a given crew remain stable year to year. Final cost projections are escalated using published forecasts of indexation figures, with outputs including regional cost summaries, defect volumes, treatment splits, and cost per defect metrics.

4.6. Structures (Bridge) Model

The structures model forecasts future maintenance needs and costs for bridges by integrating detailed asset inventories, inspection data, condition metrics, historical repair patterns, and emergency maintenance trends. It processes historical bridge management and inventory data, applies filtering to include only active structures, and prepares component level quantities for preventative maintenance. Using regression-based emergency repair analysis, and defined maintenance cycles, the model estimates annual requirements for preventative treatments, inspections, and repairs across timber and nontimber bridges. Costs are calculated using unit rates, traffic management factors, and escalation indices, with outputs providing region level costs, quantities, backlog trajectories, and inspection volumes to support transparent long-term planning.

4.7. Electrical Model

The electrical modelling framework produces 10-year maintenance and replacement

forecasts using a structured, asset by asset approach that combines statistical growth forecasting, asset specific unit rates, and risk-based replacement programming. Sixteen asset categories are modelled using a consistent four phase workflow covering asset growth projections, routine maintenance costing, periodic replacements, and operational expenses. Additional miscellaneous costs, such as contract management, tunnel operations, end of life replacements, and specialist performance testing, are also captured. Budget smoothing is applied to selected periodic maintenance programs to stabilise annual funding requirements. Finally, the results are consolidated by aggregating model outputs and applying indexation, Collectively, the framework enables transparent, auditable, and scalable forecasting that integrates multiple corporate data sources and prioritises high-risk assets to support defensible long-term investment planning (MRWA, 2025b).

5. MODEL ARCHITECTURE AND DATA PIPELINES

The SFM is deployed within an enterprise cloud workspace, where a storage account stores all input, staging and output datasets used by the model. A dedicated cloud-based data intelligence platform serves as the primary computational engine, running modelling scripts, managing workflows and cataloguing outputs into delta tables for reporting. Version controlled modelling scripts are maintained in a cloud-based code repository, enabling integrated development and deployments. Automated workflows orchestrate end to end execution of the model pipelines, generating updated results as outputs. The resulting datasets feed directly into reporting dashboards used for visualising model outcomes and funding allocations, providing a complete cloud-based ecosystem for data ingestion, processing, automation and reporting. Figure 3 shows the schematics of the deployed cloud architecture.

This implementation enables the integration of corporate data systems (asset registers, condition information, maintenance work histories and expenditure) with

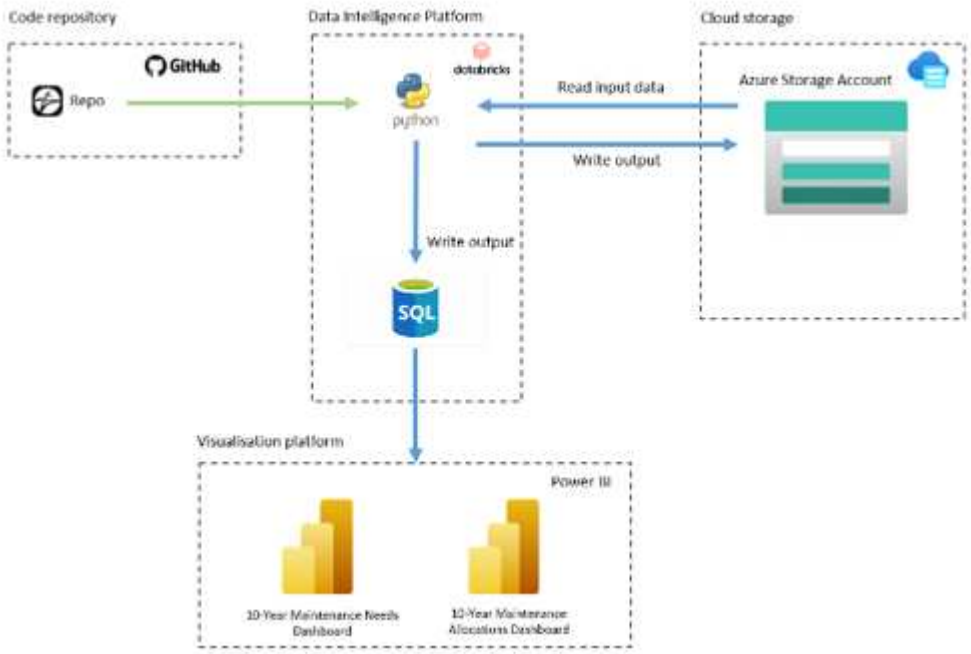


Figure 3: Schematics of SFM cloud architecture

regional datasets and domain specific models to construct a consistent portfolio view. Interactive dashboards and cloud-based collaboration environments facilitate shared understanding of model inputs, assumptions, and outputs. Data governance defines ownership, access controls, audit trails, and refresh cycles for key datasets. Quality management encompasses lineage tracking, reconciliation to source systems, and confidence tiers by asset class and activity. The digital ecosystem supports iterative model development, accelerates review cycles, and provides an accessible communication channel across MRWA and external stakeholders.

6. DISCUSSION

6.1. Implementation and Change Management

Implementation of SFM is an ongoing process which follows an iterative build–review–refine cycle with milestones for scope definition, data onboarding, model calibration, and facilitate scenario analysis function in the future. Change management focused on stakeholder engagement with regional asset custodians, aligning terminology and expectations, and establishing feedback mechanisms to incorporate practitioner knowledge. It also includes capability uplift targeting modelling, analytics, and governance competencies within the modelling team. The accompanying documentation and training supported consistent use and interpretation of outputs. Another critical enabler was aligning strategic planning artefacts (e.g. Strategic Asset Management Plan) and operational budgeting processes to the SFM's structure, with the aim of strengthening the traceability from corporate objectives to annual work programs.

6.2. Decision Impacts and Insights

The SFM enables a step-change from less integrated at a whole-of-network level budgeting and maintenance activities to proactive, consistent, evidence-based maintenance planning and execution. It delivers measurable improvements in asset portfolio-wide visibility through improved transparency and confidence in prioritisation choices and facilitated constructive dialogue with asset owners, maintainers and funding agencies. The dashboards and structured outputs helped communicate complex technical content in accessible forms, accelerating review cycles and enabling clearer trade-off discussions. Early adoption demonstrated better alignment of programs to service levels and risk tolerance, and a repeatable pathway for incremental inclusion of additional asset classes as data and models mature.

The SFM provides, for the first time at a consistent, portfolio-wide scale, a single network wide quantification of recurrent maintenance requirements across roads, structures, and electrical/ITS assets. Previously fragmented activity or asset class planning has been replaced with an integrated forecast of deterioration, intervention need, and future maintenance debt under different funding envelopes.

The model results highlight the scale of potential challenges, the quantum of maintenance backlog and impact to deterioration rates across pavements, bridges, and electrical/ITS assets. These insights provide decision-makers with a structured understanding of where funding constraints can be absorbed and where reductions introduce unacceptable increases in risk profiles.

Greater investment in maintenance reduces overall risk and enhances asset performance and preservation. By allocating additional resources to maintenance activities, MRWA can proactively address issues, slow deterioration, minimise unexpected failures, and maintain asset conditions over time. This approach leads to more stable maintenance needs and supports the reliable operation of critical infrastructure. For pavements, critical rehabilitation sites can be addressed earlier, easing pressure on reactive maintenance crews. For structures, funded inspections and targeted treatments significantly reduce the need for propping and emergency works. For electrical and ITS assets, consistent end-of-life replacements lower failure risk across rapidly growing, short-life portfolios that are critical to providing essential safety benefits and congestion management services to Main Roads customers.

Beyond the technical outputs, the SFM has strengthened strategic

communication and stakeholder alignment. Dashboards and geospatial visualisations have made complex modelling outcomes accessible, enabling more constructive evidence-based discussions with regions and funding agencies about service levels, risk tolerances, and investment choices (Figure 4). The iterative build–review-refine process has also enhanced internal capability and established a repeatable method that can be iteratively expanded as data and models mature.

In demonstrating defensible, repeatable outcomes at scale, the SFM produces a clear benefit in moving from reactive to proactive investment. It provides decision makers with a defensible, transparent basis for long-term maintenance funding and represents a significant step forward in delivering sustainable, long-term asset stewardship.

6.3. Lessons Learnt

Beginning with the highest-value asset classes helped to build early momentum and confidence, while early investment in data governance and common terminology proved essential for establishing a consistent foundation. Similarly, the use of dashboards as artefacts helped to promote shared understanding rather than serving solely as reporting tools. In addition, codesigning validation activities with internal stakeholders helped to build trust across functions. Furthermore, planning for iterative expansion and sensitivity analysis ensured the model could adapt as unit rates, condition information and growth assumptions evolved. Finally, the use of a physically isolated, dedicated team—supported by a focused project manager—helped to maintain concentrated effort, enabling an efficient and effective model development process.

6.4. Contribution to Wider AM Community

The SFM operationalises best practice AM principles by linking lifecycle, risk, and facilitates scenario analysis in a single, portfolio-wide model. It demonstrates how digital tooling and data governance can make those principles repeatable at scale, especially for maintenance decision making for complex linear

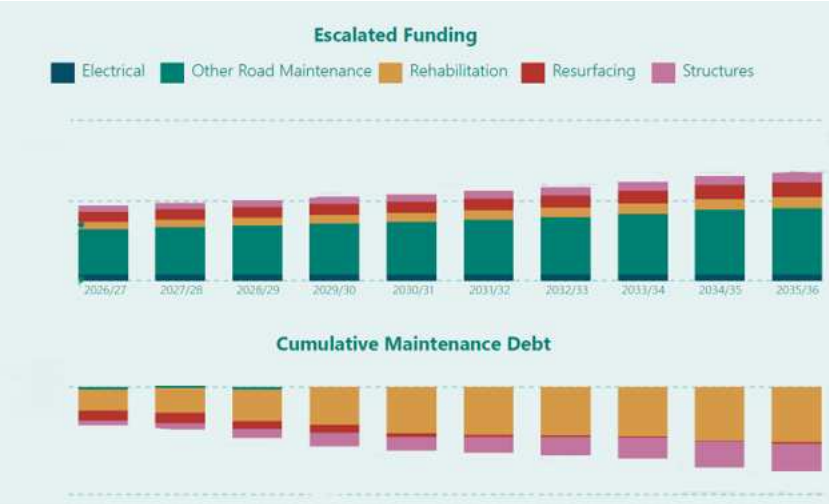


Figure 4: Illustrative example of SFM output showing growth of maintenance under a low investment funding scenario. Adapted from (MRWA, 2026)

infrastructure networks.

The approach is applicable beyond roads and bridges to energy, water, and rail networks, facilities portfolios: any portfolio with heterogeneous assets and constrained budgets can adopt a lifecycle–risk–scenario framework with appropriate local calibration, governance, and stakeholder engagement.

6.5. Future Work

Future iterations will expand asset coverage, strengthen crew routine maintenance cost capture, and deepen reliability modelling for complex systems (e.g., ITS). Automation of data ingestion, advanced sensitivity analysis, and structured interfaces to strategic planning will further reduce cycle time and increase transparency. Benchmarking against peer agencies and continued alignment with evolving State Government's AM framework and ISO 55001 guidance will sustain maturity and relevance.

7. CONCLUSION

The Sustainable Funding Model developed by MRWA provides a practical, digitally enabled method for asset portfolio-wide recurrent maintenance investment planning across a large, complex transport network. By integrating lifecycle modelling and risk-based prioritisation with strong data governance and stakeholder engagement, SFM enhances transparency, trust and decision quality. The approach advances established asset management guidance by demonstrating repeatable, at-scale implementation and offers generally applicable lessons for other sectors managing heterogeneous asset portfolios under funding constraints.

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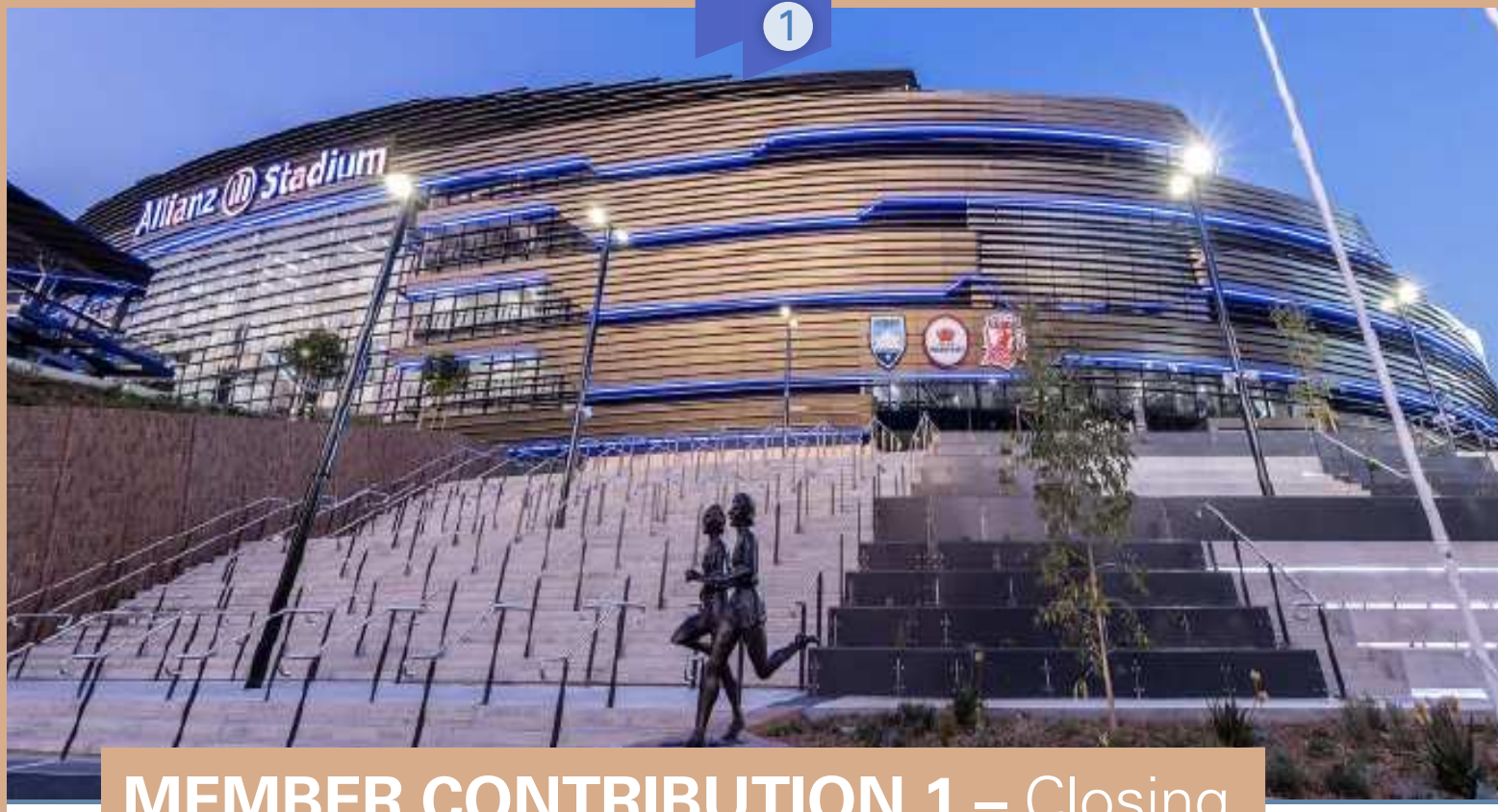
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MEMB 1



MEMBER CONTRIBUTION 1 – Closing The Evidence Gap: Building Trusted Information From Day One

Reliable asset information is fundamental to effective asset management. Whether planning maintenance, assessing risk or prioritising capital investment, organisations rely on accurate information to support the evidence-based decision making principles of ISO 55001.

Yet maintaining the integrity of that information from design through construction remains one of the industry's biggest challenges.

Every undocumented design change or missing construction record creates uncertainty for the asset owner. By the time an asset reaches handover, the gap between what was designed and what was actually built is often filled with assumption rather than evidence. The result can be higher maintenance costs, more complex warranty claims and reduced confidence in decisions made throughout an asset's operational life.

Recognising this challenge, John Holland has adopted Cupix's Spatial Intelligence platform across complex healthcare, stadium and transport infrastructure projects to verify construction against design as work progresses. Rather than relying on fragmented documentation, the company's Digital Engineering team is creating a verified, time-stamped and geo-tagged record of what has actually been installed - a Defensible Record that strengthens confidence at handover and supports informed asset management decisions for years to come.

Importantly, this verification occurs during design coordination rather than after project completion, allowing issues to be identified while they remain relatively inexpensive to resolve.

On the Sydney Football Stadium project, digital verification identified structural, service and access coordination issues that traditional two-dimensional

drawings could not easily reveal. Resolving these conflicts before installation helped avoid costly rework while improving confidence in the accuracy of the final as-built record. Across other major projects, 360-degree site captures now flow directly into the Common Data Environment, replacing manual documentation with an accurate, searchable record linked to project progress.



As Mitchell Erickson, Group Manager - Digital Engineering at John Holland, explains:

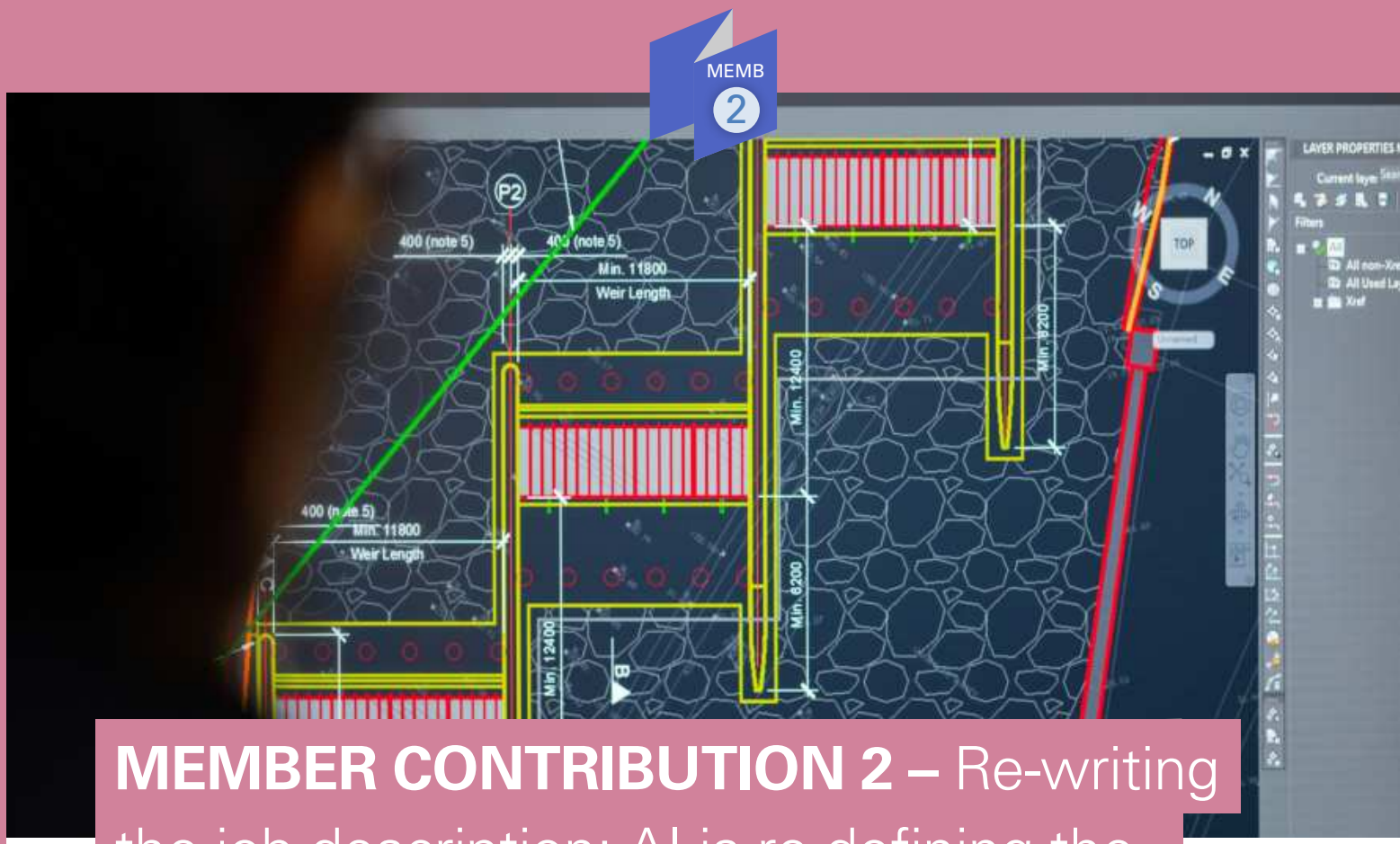
> "Buildings don't have a five-minute lifespan, so should an item fail further down the track, it can actually be retraced, replaced with minimal impact to other services and other systems."

For asset owners, the value extends well beyond construction. Verified asset information provides greater confidence when planning maintenance, validating warranties, investigating failures, supporting future capital renewal decisions and demonstrating compliance throughout the asset lifecycle. As organisations place increasing emphasis on lifecycle performance, resilience and evidence-based decision making, capturing trusted information before handover becomes a lasting operational advantage.

Download the full John Holland case study, How John Holland turns site reality into action on complex infrastructure projects with Spatial Intelligence, to learn how verified spatial capture is improving design coordination, creating defensible asset records and delivering better lifecycle outcomes.

Download the case study: How John Holland turns site reality into a defensible record

Request a Cupix Demo | Explore Our 3D Digital Twin Platform



MEMBER CONTRIBUTION 2 – Re-writing the job description: AI is re-defining the future for project professionals

Dr. Steven McCann & A/Prof. Guillermo Aranda-Mena, School of Property, Construction and Project Management, RMIT University

Prof. Alemayehu Molla, Information Systems, Department of Information Systems and Business Analytics, RMIT University

This article examines how AI is reshaping project professionals in Australian infrastructure projects. It highlights current and planned AI uses, the distinction between decision support and human accountability, and the emerging need for AI literacy, governance, assurance, ethical judgement and clear human-AI decision boundaries.

Australia is preparing to spend hundreds of billions of dollars[1] on infrastructure this decade. At the same time, Artificial Intelligence (AI) is moving from an experimental tool to everyday organisational technology. This is a significant development for the project profession in Australia, where it is estimated that some 575,000 people will be working in project-oriented roles by 2027[2] .

[1] Infrastructure Australia, (2021), "A National Study of Infrastructure Risk: A report from Infrastructure Australia's Market Capacity Program", Australian Government

[2]Project Management Institute, (2017), "Project Management Job Growth and Talent Gap 2017–2027", https://www.pmi.org/learning/careers/job-growth [date last accessed: 20.07.26]

The OECD[3] defines AI as a machine-based system that can generate outputs such as predictions, recommendations, content or decisions that influence physical or virtual environments. In major infrastructure projects, AI is either operational or planned for future deployment to process large datasets, support reporting, assist with requirements management, analyse risks, monitor safety-related conditions and improve access to broader organisational knowledge.

Public documents from Sydney Metro and the Melbourne Metro Tunnel show AI-enabled systems are being used in areas such as tunnel boring, obstacle detection, hazard analysis and site safety monitoring. This demonstrates that AI is shifting project work away from routine information generation towards judgement, assurance, governance and accountability. As AI transforms these activities, it also changes the capabilities needed to manage infrastructure responsibly.

The most obvious uses of AI are in work involving large volumes of information. This includes where project teams use AI to draft documentation, summarise data, produce reports, support risk analysis, develop requirements and identify patterns that would typically be difficult to achieve through unaided human intelligence or using conventional software support tools. Transport for New South Wales, for instance, has committed to using AI to process large volumes of enterprise-grade data and information. Its strategy[4] links these tools to improved safety, reliability, resilience and disruption management. AI technology scheduled for deployment includes an internal AI chatbot[5] for staff use, and in Victoria, Toolbox Spotter[6] was used by Metro Trains Melbourne during construction to detect and identify objects to improve safety in real time on project sites.

A key distinction for AI use is between decision support and decision responsibility. AI can provide draft text, analysis, recommendations or alerts. But humans remain responsible for deciding whether outputs are accurate, relevant, complete and safe to rely on, and requires professional judgement for contextual understanding and ethical decision-making.

This matters because AI systems can generate convincing but inaccurate information. Systems may also reproduce bias, rely on low-quality data, overlook organisational context or develop recommendations that are difficult to explain. In safety-critical infrastructure, these weaknesses can affect public safety, regulatory compliance, contractual obligations and stakeholder confidence.

Some tasks cannot be delegated. Safety-related decisions are an example. AI may support driverless train systems, obstacle

[3] OECD, (2025), "Governing with Artificial Intelligence: The State of Play and Way Forward in Core Government Functions", OECD Publishing, Paris

[4] Transport for New South Wales, (2024), "Transport Technology Strategy", https://www.transport.nsw.gov.au/system/files/media/documents/2024/Transport-Technology-Strategy-February-2024.pdf [date last accessed: 20.07.26]

[5] Dickinson, E., (2024), "TfNSW to build internal generative AI chatbot", IT News, https://www.itnews.com.au/news/tfnsw-to-build-internal-generative-ai-chatbot-612815 [date last accessed: 20.07.26]

[6] Arnott, A., (2019), "Metro Trains signs deal with Laing O'Rourke to deploy AI", Inside Construction, https://www.insideconstruction.com.au/section/technology/metro-trains-signs-deal-with-laing-orourke-to-deploy-ai/ [date last



detection, hazard controls or site-safety alerts, but accountability for safety remains human-led. Ethical reasoning is another example. AI cannot independently assure transparency, explainability, fairness or contextual sensitivity. Stakeholder engagement also remains fundamentally human. Trust, consultation, role clarity, empathy and professional relationships cannot be fully automated in any meaningful way.

Future project professionals will less likely be valued for manually compiling information and more likely for interrogating it. This assumes AI literacy but not necessarily coding expertise. It requires the ability to work across data, governance, assurance, risk and people. Project professionals will need to understand the strengths and limits of AI tools, recognise hallucinated or misleading outputs, and know when expert human judgement is required.

Training will be crucial. It is anticipated that AI will transform the built environment. Those who prepare for AI use will be more likely to trust and collaborate with these systems than teams without adequate preparation. However, trust should not run on autopilot.

Existing industry frameworks still provide useful foundations but these need to more explicitly account for AI-enabled practice. Competencies should include data-quality assessment, AI governance, assurance of AI-assisted outputs, explainability, bias recognition, hallucination detection, requirements traceability and clear human-AI decision boundaries. Progress towards these objectives for the project profession is being made but there is more to do.

If you, the reader, are an industry practitioner and wish to participate in future AI asset management research with RMIT University, please contact Dr. Steven McCann: steven.mccann2@rmit.edu.au for details.

Disclosure: ChatGPT was used to assist with language editing. All technical content, analysis, interpretations and final preparation were completed and verified by the authors.



MEMBER CONTRIBUTION 3 – Stewardship Across Eras: Melbourne's Metropolitan Railway Through an Asset Management Lens

From the Met to MR5, and the shift to asset intelligence

Shane Scriven, SAS Asset Management

SUMMARY

A metropolitan railway is one of the longest lived public assets a society builds. Track, structures, signalling, stations and rolling stock are commissioned to serve for decades, and the decisions made about them echo for generations. Melbourne's suburban network offers an unusually clear case study, because over roughly forty years its custodianship has passed through public ownership, a fragmented franchising experiment, a stable private franchise, and a wholesale physical transformation, and it now stands at the threshold of a new operating contract and a new analytical paradigm. Read as a continuous asset management story rather than a sequence of politics and brands, that history yields a single, durable lesson: the institutions and incentives change, but the obligation to steward long lived assets does not. This article traces that arc and argues that the next era, defined by artificial intelligence and a public appetite for free travel, will reward the operators and owners who treat asset intelligence as an amplifier of good asset management, not a substitute for it.

A network conceived as permanent

Before any private operator entered the picture, Melbourne's railway sat entirely in public hands, through Victorian Railways, then VicRail, then the Metropolitan Transit Authority and its enduring "The Met" brand, and finally the Public Transport Corporation. The achievement of that era is easy to undervalue from the present. A genuinely integrated network was built and electrified, the City Loop was

delivered, and trains, trams and buses were coordinated under a single custodian. These are the marks of an organisation treating the network as a permanent, integrated asset rather than a collection of services to be run year to year.

The weakness of the model was structural, and it is one every public asset owner will recognise. In a vertically integrated public operator, renewal is funded from the same constrained budget as daily operations, and the cost of deferral is invisible in the short term. Track, signalling and rolling stock degrade slowly and forgivingly, right up until they do not. Deferred renewal does not announce itself. It quietly converts into a future liability that a later custodian inherits, usually at a worse price than if it had been addressed on schedule. The central tension of public infrastructure is that the asset is built to last a century while it is funded in annual cycles by governments whose horizons are far shorter than the assets they hold. By the late 1990s, with a maturing asset base and mounting pressure on the public balance sheet, the Kennett Government moved to a fundamentally different model.

The franchising experiment and the limits of contracting

In 1999 the network was split in two and franchised, as Bayside and Hillside, operated by National Express and Connex respectively. The intent was sound from an asset management perspective. Franchising introduced contractual performance accountability that public operation had never demanded, alongside private capital and operating discipline. These were real gains.

The catch was equally real, and it is the most transferable lesson of the period. Franchise terms are short. Rail assets last decades. The incentives never fully align. When you split a network you split the asset data and the stewardship with it, and as a franchise approaches its end the commercial case for renewal weakens, so the next operator inherits the deferral. The fragility of the arrangement became plain in 2002, when National Express withdrew and the state stepped back in, before the network was reunified under Connex in 2004. The enduring principle is one asset owners forget at their peril: you can contract out the work, but the asset risk stays with the owner. A franchise transfers activity, not accountability for the long term condition of the asset base.

Performance regimes and the maturing franchise

The handover to Metro Trains Melbourne on 30 November 2009 began a more stable era. The operator was, and remains, a consortium of MTR Corporation, John Holland and UGL. Across the two franchise rounds commonly labelled MR3, from 2009, and MR4, from 2017, franchising matured into something workable: a stable and accountable operator across a growing network, with progressively stronger performance regimes, including a raised punctuality target and new penalties for failures such as cleaning and graffiti removal under MR4.

For asset managers, this era poses a subtle and important question. Performance regimes shape behaviour, but they measure the wrong thing for long term stewardship. Key performance indicators capture service, whether trains run on time and stations are clean, but they do not capture asset condition or remaining useful life. A fixed term contract rewards running the assets hard against the metrics, not investing in their long term health, and accountability for the asset itself remains split between operator and owner. It is entirely possible to run a network beautifully against its indicators while the underlying condition of the asset base quietly slides. Choosing to measure condition and remaining life, and not only service, is an asset management decision rather than a reporting one, and it is the decision that separates a contract that protects the asset from one that merely operates it.

A step change in complexity and value

The MR4 period also delivered the largest physical transformation the network has seen in a generation, and it did so while the railway kept running every day. The Metro Tunnel, twin nine kilometre tunnels with five new central stations at Arden, Parkville, State Library, Town Hall and Anzac, opened to passengers on 30 November 2025, with a full timetable switch on 1 February 2026. The audited forecast final cost was about 12.58 billion dollars. A fleet of seventy High Capacity Metro Trains entered service, delivered by the Evolution Rail consortium, and high capacity signalling, a moving block system, was retrofitted onto live lines on the Cranbourne and Pakenham corridors. The Level Crossing Removal Project reshaped the surface network around them.

The asset management consequence is a step change in both complexity and value, handed

to an operator mid contract. The wins are obvious: a far higher capacity, modernised asset base, and a generation of new assets that produce data legacy infrastructure never could, including telemetry, condition signals and near real time health. The challenges are just as real. Commissioning risk is acute when brand new assets have no operating history to baseline against. New high technology assets must run alongside ageing legacy ones with quite different failure behaviours. And whoever operates next inherits a network that is larger, more complex and more valuable than the one tendered last time. That transformed and data rich asset base is precisely what sets up the next era.

The next era: asset intelligence and the case for free travel

Two developments now converge on Melbourne's railway, and asset management sits at the centre of both.

The first is the data itself. A network reshaped by new rolling stock, modern signalling and new infrastructure generates information at a scale earlier eras could not imagine. This is the foundation for a genuine paradigm shift, from schedule based and reactive maintenance to artificial intelligence enabled asset intelligence. In practice that means condition based and predictive maintenance that reduces failures and unplanned downtime, anomaly detection across high volume signalling and telemetry data, digital twins and remaining useful life modelling that curb over maintenance, and AI assisted prioritisation of renewals and whole of life decisions. The honest framing matters here. Artificial intelligence does not replace asset stewardship. It amplifies good asset management, and it ruthlessly exposes poor data and weak asset information governance. An organisation without a clear line of sight from organisational objectives to asset decisions, the discipline that ISO 55001:2024 and the GFMAM Asset Management Landscape describe, will not be rescued by an algorithm.

The second development is social, and it has put a sharp economic question on the table. During a recent fuel price shock, the Victorian Government made public transport free across the state, and after that period it stepped fares down to half price for the remainder of the year. Victorians have, in the government's own words, embraced free public transport, and the appetite for it to continue is now part of the policy conversation. For asset managers, the important point is that this is not really a transport question. Free public transport is a subsidy question, and the size of the subsidy required depends on what it costs to run the network.

This is where the two developments meet. The state already pays a substantial operating subsidy to the franchisee. The affordability of free or near free travel therefore turns on the whole of life cost of the network, and that cost is exactly what intelligent asset management drives down. Predictive and condition based maintenance reduces failures and the expensive disruption they cause. AI optimised renewal prioritisation extends asset life and defers or avoids capital. Better asset information lowers the cost to serve per passenger kilometre. A lower cost base means a smaller subsidy buys the same level of service, which moves free travel from aspiration toward fiscal plausibility. Used well, the same analytical capability can also size and target the subsidy through demand and utilisation modelling, so that government funds an appropriate level rather than writing a blank cheque. The asset management case for free public transport is simply this: it is only sustainable if the asset base beneath it is run intelligently and cheaply, because otherwise the subsidy balloons.

What the next custodian inherits

The MR designation refers to the Melbourne Train Refranchising programme, and MR5 is the live re tender now under way. As of February 2026 three consortia were shortlisted, Go Places Melbourne, RATP Dev JH Downer, and Melbourne Grow, for a contract reported at up to fifteen years, with no operator yet selected and the value being established through the procurement itself. The current franchise runs to the end of 2026.

Whoever wins inherits the richest asset dataset in the network's history, a transformed and more

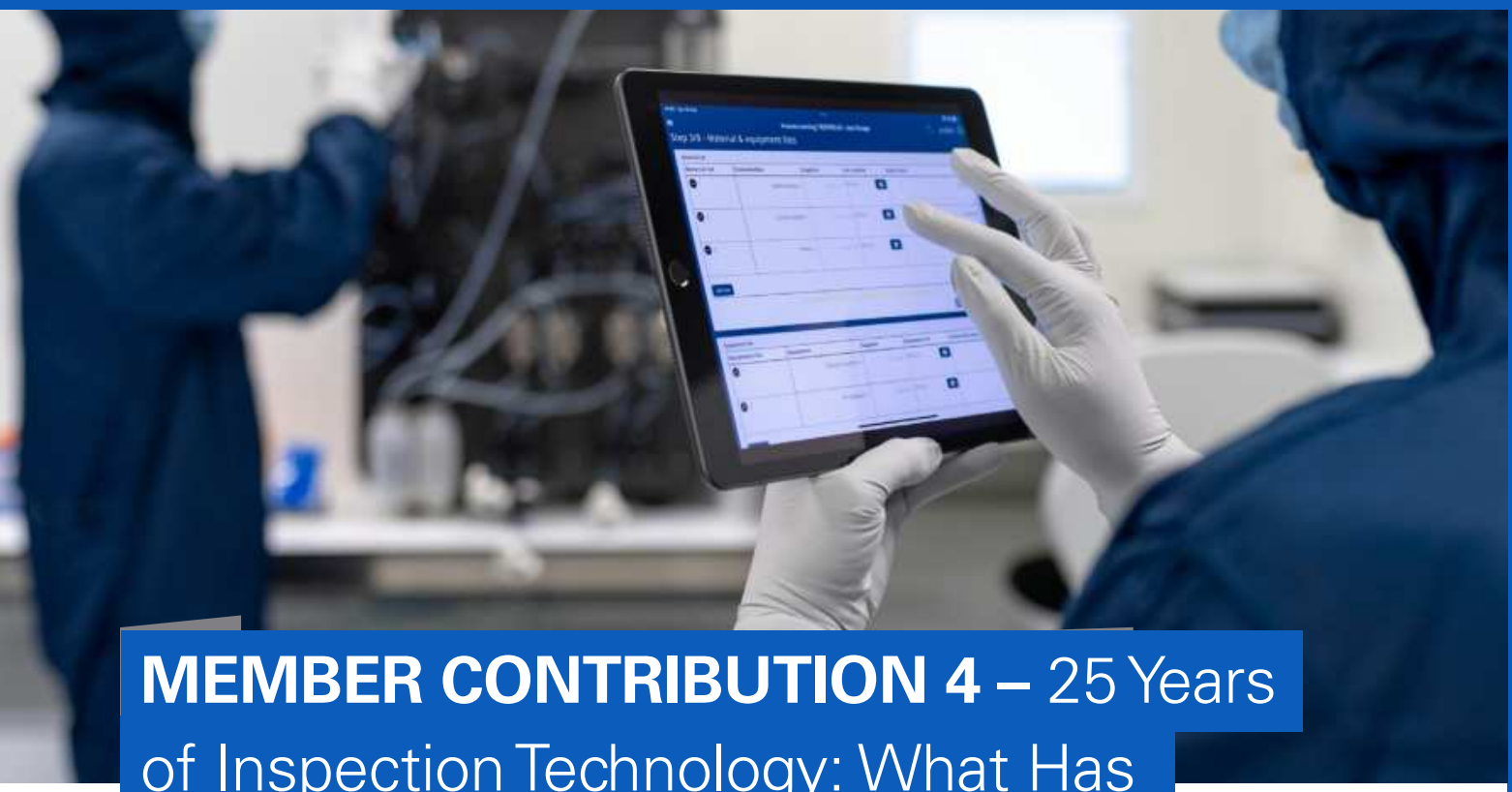


complex asset base, and a public that has tasted free travel. The opportunity is to turn that data into foresight. The risk is that data quality, fragmented asset information, and the integration of legacy and new assets undermine the very intelligence the new assets make possible. The capability that decides the outcome is unglamorous and familiar: disciplined asset information governance, condition data you can trust, lifecycle planning, and the alignment of a long franchise with long asset lives.

Conclusion

Melbourne's railway has passed through public ownership, fragmented franchising, a stable private franchise, and a wholesale transformation, and across every era the constant has been the obligation to steward long lived assets through institutions and incentives that change far faster than the assets themselves. The public era showed that an integrated asset built well is a gift to the future, and that deferral is a debt to it. Franchising showed that activity can be contracted out but asset risk cannot. The Metro Trains era showed that measuring service is not the same as measuring condition. The transformation showed how quickly complexity and value can be added to a network, and how much that raises the bar for whoever holds it next. The era now beginning will be defined by whether the sector can convert an unprecedented volume of asset data into genuine asset intelligence, and whether that intelligence can lower the cost of running the network enough to fund the public ambition of free travel. The technology is new. The discipline it rewards is not.

SAS Asset Management. We provide advanced analytics, expert asset management services and maturity assessments to help asset owners realise their value.



MEMBER CONTRIBUTION 4 – 25 Years of Inspection Technology: What Has Changed, What Hasn't, and What Still Matters

Naaman Shibi, Techs4Biz Australia

Cast your mind back to 1999. Most workplace inspections were done on paper. Clipboards, carbon copies, filing cabinets. A completed checklist was folded, handed to a supervisor, and often never looked at again unless something went wrong. Deficiencies lived in a drawer. Follow-up was whoever remembered to follow up.

A lot has changed since then. And some things, frustratingly, haven't changed at all.

WHAT HASN'T CHANGED

The underlying human behaviour problem

Technology has made it easier to conduct an inspection correctly. It has not made people more inclined to conduct one correctly when they are under time pressure, fatigued, or operating in a culture where cutting corners is quietly accepted.

Checkbox fatigue is real. An inspector who was inclined to tick everything as compliant on a paper form is equally capable of ticking everything as compliant on a tablet. The medium changed. The incentive structure often didn't.

The research on this is fairly consistent. Digital tools improve safety outcomes most significantly in organisations that already have strong safety cultures. In organisations where safety is treated as a compliance exercise rather than a genuine priority, digitising the process tends to produce faster compliance exercises, not better safety outcomes.

The gap between finding and fixing

This is perhaps the most persistent failure point in inspection practice, across every era of technology. Deficiencies get recorded. They do not always get resolved. In the paper era, findings disappeared



into filing systems. In the early digital era, they disappeared into spreadsheets or email threads. Even with sophisticated corrective action workflows, organisations still struggle with overdue actions, disputed ownership, and the gradual accumulation of open findings that nobody is actively managing.

The technology has improved the visibility of this problem considerably. It has not solved it. Solving it requires management commitment, clear accountability, and a willingness to treat an unresolved finding as a genuine organisational failure rather than an administrative backlog.

The quality of the inspection itself

A well-designed digital form can prompt an inspector to check specific items, photograph specific components, and record specific measurements. What it cannot do is replace the knowledge, experience, and judgement of a competent inspector who knows what a failing weld looks like, understands the operational context of the equipment they are assessing, and can identify a risk that is not on the checklist. AI image recognition is beginning to address part of this gap, particularly for repetitive, visually consistent defect types. But for complex assessments in dynamic environments, the inspector's expertise remains the irreplaceable input. Technology is a tool to support that expertise, not a substitute for developing it in the first place.

Resistance to adoption

Every generation of inspection technology has faced the same adoption challenge. PDAs were too complicated. Smartphones were too fragile for site environments. Mobile apps require too much training. AI felt threatening. The specific objections change with each technology cycle; the pattern of resistance does not. Organisations that invest in change management alongside technology deployment consistently achieve better outcomes than those that deploy software and assume people will adapt.

The fundamentals of what a good inspection is

Strip away every layer of technology, and an inspection is still, at its core, a structured observation made by a competent person against defined criteria, with a mechanism for acting on what is found. That was true in 1999 and it is true now. The best inspection programs today are the ones that have kept that principle clear while using technology to make every part of the process faster, more consistent, and more accountable.

WHAT THIS MEANS PRACTICALLY

If you are evaluating inspection technology, or trying to improve an existing program, the 25 - year arc of this industry suggests a few things worth keeping in mind.

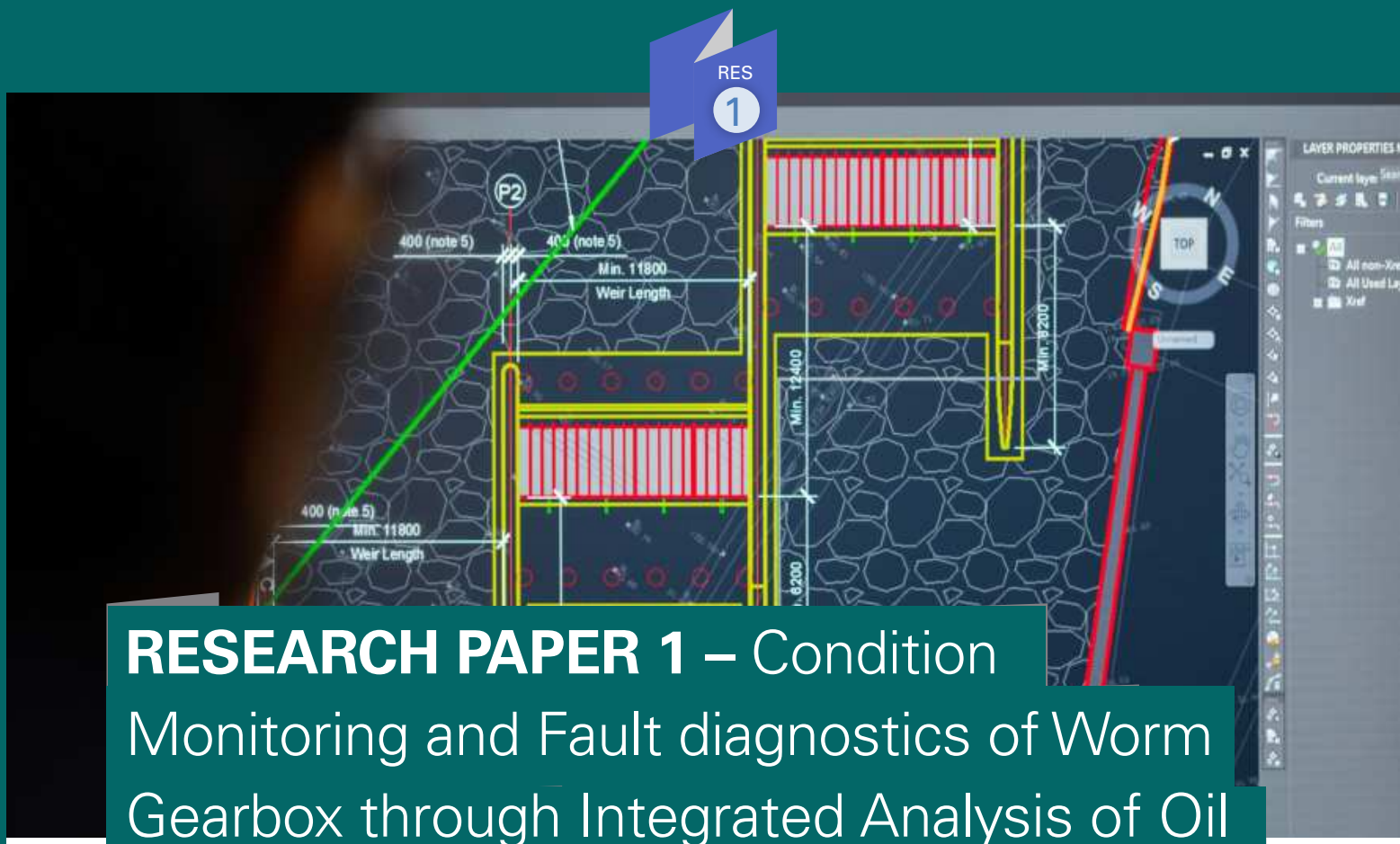
The technology is genuinely better than it has ever been. The gap between what is technically

possible and what most organisations are actually doing is significant, and closing that gap is worth the investment. But technology selection is not the most important decision you will make. The most important decisions are about the quality of your inspection criteria, the competence of your inspectors, the clarity of your corrective action ownership, and the degree to which your leadership actually treats inspection findings as information worth acting on.

Organisations that get those things right tend to get value from every technology generation. Organisations that don't tend to find that each new platform produces the same results as the last one, just faster. Twenty-five years of technological development have undoubtedly improved the speed, visibility, and traceability of inspection programs. Information that once sat in filing cabinets is now available in real time, and organisations have access to levels of operational insight that were previously impossible to achieve. Yet the core challenges remain remarkably familiar. Effective inspections still depend on competent people, clear processes, timely corrective actions, and leadership commitment. Technology can support each of these elements, but it cannot replace them.

Perhaps the most enduring lesson from the past quarter century is that successful inspection programs are built on discipline rather than software alone. The tools continue to evolve, but the fundamentals of identifying hazards, assessing risk, and acting on findings remain as important today as they were a generation ago.

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RESEARCH PAPER 1 – Condition Monitoring and Fault diagnostics of Worm Gearbox through Integrated Analysis of Oil Properties and Wear Particles

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SUMMARY

This study targets to decorate the performance and lifespan of single-speed worm gearboxes by integrating effective condition monitoring techniques. Specifically, two methods are employed: oil properties analysis and ferrography analysis, which incorporates both quantitative and qualitative methods. The running hours of the gearbox increase, viscosity has a tendency to lower while total Acid Number (TAN) values rise. Moreover, the ferrographic method is used to evaluate the awareness of wear debris inside the oil. Through the years, the attention of both large and small particles will boom, indicating heightened wear severity and underscoring the want for gearbox safety. Qualitative analysis in which microscopic images discovered the presence of various wear debris inside the lubricating oil, such as normal rubbing wear particles, black oxide, cutting wear, rolling fatigue wear, and rolling-sliding wear.

Primarily based on these findings, the study proposes a condition-based maintenance plan that incorporates recurring oil analysis to come across early signs and symptoms of damage and prevent failures inside worm gearbox.

Keywords: Worm Gearbox, Oil Analysis, Ferrographic Analysis, Predictive Maintenance

1. INTRODUCTION

The characterization of wear debris performs an important function in assessing system condition, as failures often get up due to the build-up of wear particles. Ferrography is a vital method for setting apart and analysing wear particles found in lubricating oil, making use of a bi-chromatic microscope. The wear severity index of oil samples became decided the use of direct analysing Ferrography, even as analytical Ferrography turned into employed to assess wear tendencies. Those findings contribute to fault prognosis and offer insights for optimizing oil maintenance techniques [1-2]. Vibration analysis and oil assessment are employed to estimate gearbox fitness both of which help to protect unplanned gear failures and keep away from unnecessary planned maintenance. The wear rate under different speed and torque situations can be assessed by using evaluating the awareness of iron particles and the oil quality index which can be received through an online sensor suite [3-4].

The combination of analysis of oil properties and wear tracking strategies has formed a robust method for dealing with gearbox fitness. This paper provides a complete description of improvement of setups designed for gearbox situation tracking. Information associated with oil properties, vibration and wear analysis provides detailed diagnostics of the device [5]. To limit gearbox downtime and prevent performance degradation, a reliable tracking device able to presenting early warning of malfunction or ability damage is crucial. Condition monitoring of systems is crucial, yet relying entirely on historic data won't accurately predict imminent failures. [6].To increase device lifespan, especially for single-speed worm gearboxes in which temperature-induced degradation affects oil properties, oil evaluation and Ferrography are employed. This study evaluates key parameters, together with viscosity index, total acid number (TAN), particle count, wear severity index, and particle morphology through direct and analytical Ferrography. An experimental setup monitors these parameters over time, organising a correlation between oil properties and gear wear. The findings goal to tell the improvement of a condition-based maintenance approach to enhance gearbox durability[7].

Modern maintenance practices emphasize the execution of predictive maintenance strategies to state equipment reliability issues. Direct Reading (DR) Ferrography is a predictive maintenance method that provides insights into both lubricant condition and the state of equipment components that interact with oil during regular operation. A study involving a worm gearbox is presented to illustrate the effectiveness of DR Ferrography [8-9]. An experimental setup simulates the worm gearbox operating under standard industrial conditions. DR Ferrography proves to be a valuable technique for identifying wear particles in lubricating oil. The results demonstrate that wear debris analysis, including particle concentration and wear severity index, can effectively indicate equipment performance, enabling early detection and prediction of component failure [10] .An experimental setup was developed to evaluate the performance degradation of lubricating oil in sliding pairs, specifically within a worm gearbox. The objective is to identify the oil's deterioration process and its impact on gear performance. The study uses a single-speed gearbox powered by a 1 hp AC motor to assess the behavior of Servo HP 140 oil under standard operating conditions. Sample of oil were collected at various intervals and analyzed for kinematic viscosity and Total Acid Number (TAN). The results show a decreasing trend in viscosity and a rise in TAN, indicating the effects of friction and oxidation on oil performance. [11-12]. Oil analysis typically involves two key approaches: quantity and quality analysis. The qualitative method focuses on the morphological characteristics of wear debris, while the quantitative method evaluates the size and wear concentration [13]. In addition to oil analysis, vibration analysis is also a valuable technique for assessing gearbox health. A test rig with a robust, solid base was developed to withstand vibrations during analysis. Vibration measurements were conducted using an FFT analyzer, with vibrations monitored at different locations on the test rig over varying gearbox operating hours. Direct reading and analytical Ferrography were employed to investigate wear in the device [14]. Direct reading Ferrography quantified the attention of both large and small particles, which were used to estimate the wear Particle concentration (WPC) and wear Severity Index (WSI). Analytical Ferrography offered designated insights into the wear debris' morphology, consisting of their length, shape, and origin. Abnormal noise was detected

from the device, prompting further oil analysis. The results found out a drastically high wear severity index, indicating a considerable growth in normal rubbing wear as showed through the ferrography evaluation [15-16].

While numerous researchers have investigated various condition monitoring techniques, few have combined these methods to identify the most effective solution. This study aims to assess how deviations in oil properties influence the lifespan, rate of wear, and overall performance of a single-speed worm gearbox. Both quantitative and qualitative analyses were conducted on the wear particles found in the gearbox's lubricating oil. By integrating the findings from these analyses, the study seeks to pinpoint the specific actions necessary to prevent unexpected system failures.

2. METHODOLOGY

Figure1.indicates the flowchart of methodology used for research work. The study begins with problem identification, focusing on key issues related to machinery health, such as wear and lubrication degradation, and emphasizes the importance of condition monitoring to prevent unexpected breakdowns. A literature survey is conducted to review existing condition monitoring techniques,

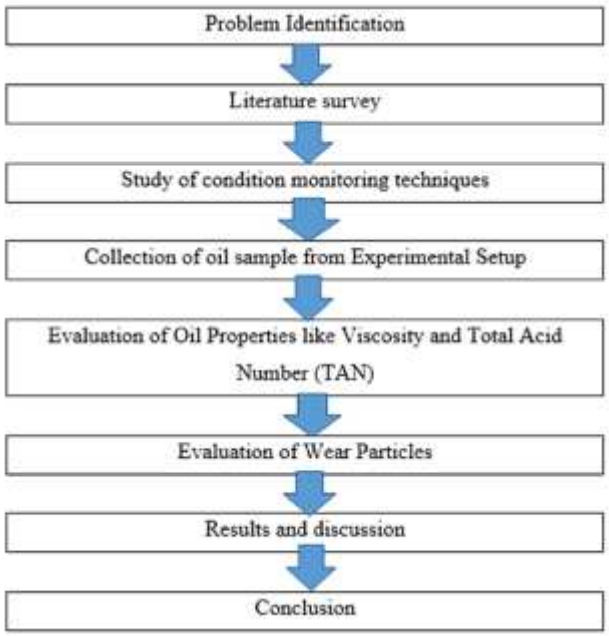


Figure 1: Flowchart of Methodology

drawn regarding the condition of the machinery, and recommendations are provided to improve maintenance strategies and prevent failures through regular monitoring.

3. EXPERIMENTATION

3.1. Experimental Setup

To study the effect of oil property variations on wear in a worm gearbox and to inform maintenance decisions, a test rig was developed, as shown in Figure 2. The setup consists of a single- acting worm gearbox powered by a 2 HP alternating current motor, with the gearbox's output shaft connected to a rope brake dynamometer to vary torque. A universal coupling is employed to prevent shaft

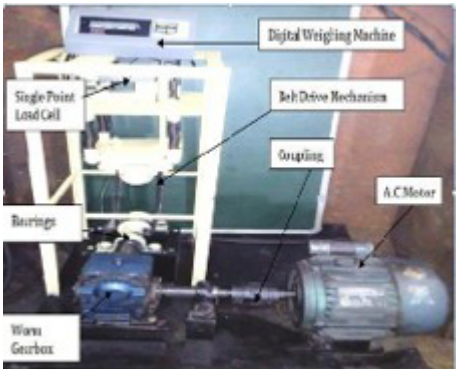


Figure 2: Experimental setup

misalignment, connecting the motor shaft to the gearbox input shaft. Lubricant samples of Castrol EP 90 oil were collected from the single-stage gearbox at 100-hour intervals for analysis. All samples were taken while the system was in operation under controlled, known situations and consistently collected from the same location.

3.2. Analysis of oil properties

In oil property analysis, viscosity and Total Acid Number (TAN) are key factors that influence oil performance and have a significant effect on the wear rate of a gearbox. Kinematic viscosity is measured at 40°C using a Kittiwake unheated viscometer, while Total Acid Number is evaluated

with the Kittiwake Oil Test Centre to assess the oil's overall condition and its impact on system performance. Table I indicates readings for oil properties.readings.

3.3. Analysis of wear particles

DR Ferrography is a method used to analyse wear particles in lubricating oils by separating and quantifying them through a Ferrography apparatus. It provides immediate readings of wear particle concentrations, distinguishing between large and small particles, and calculates a Wear Severity Index.

Table 1: Readings for oil properties

Sr. No.	Oil running hours	Kinematic Viscosity at 40 (Cst)	Total Acid Number (TAN) (mg KOH/g)
0	0	157.7	0.2
1	50	155.6	0.3
2	150	152.3	0.4
3	250	145.8	0.5
4	350	141.2	0.6

This method is crucial for evaluating the extent of wear in machinery, facilitating early fault detection and informing maintenance strategies. Table II indicates the reading of wear particles.

Table 2: Reading of wear particles

Sr. No.	Oil	Large size	Small size particle s (DS) ppm	Wear particle Concentration (WPC) ppm	Wear
1	50	51.4	32.6	84	24.44
2	150	90.2	65.9	156.1	32.56
3	250	135.5	97.3	232.8	40.68
4	350	182.6	137.4	320	51.76

The Wear particle concentration and Wear Severity Index are estimated by

WPC = (DL+DS)

WSI = (DL+DS)*(DL-DS) = (DL^2 – DS^2)

3.4. Analysis of wear pattern

Quality ferrographic analysis offers a detailed examination of the wear debris morphology, which helps identify specific wear mechanisms. The qualitative analysis involves two main steps:

1. Ferrogram Slide Preparation: An oil sample collected after 350 hours of operation was used to prepare a ferrogram slide. This slide was then examined under a bi-chromatic microscope to identify the shapes and characteristics of the wear particles present.

2. Microscopic Imaging of Wear Particles: Microscopic images of the wear particles were captured at various locations along the slide using magnifications of 10x and 50x. These images revealed a variety of wear pattern in the oil, including normal rubbing wear particles, black oxide, cutting wear, rolling fatigue wear, and rolling- sliding wear.

4. RESULTS AND DISCUSSION

4.1. Evaluation of oil properties

The results from both oil properties and wear analyses provide a comprehensive view of the wear mechanisms affecting the worm

gearbox. The viscosity analysis demonstrated a decreasing trend over the operational hours, which is indicative of increased friction and wear within the system. Total Acid Number (TAN) showed a continuous rise, suggesting oxidation and the onset of corrosive wear as the oil degrades over time. This trend highlights the diminishing effectiveness of the oil and the potential for increased component wear if not addressed promptly.

Figure 3 presentS the trend of Viscosity@ 400C (cSt) over time. The above figure shows that as the running hours increase, a clear decreasing trend in viscosity is observed, attributed to friction. This indicates increased wear caused by friction, leading to a reduction in viscosity.

Figure 4 shows the TAN (mg KOH/g) over time. Total Acid Number (TAN) is a critical parameter for monitoring of oil condition, as it helps determine the residual useful life of the oil. The results show a continuous decrease in oil viscosity due to friction, while TAN increases progressively due to oxidation, which contributes to corrosive wear.

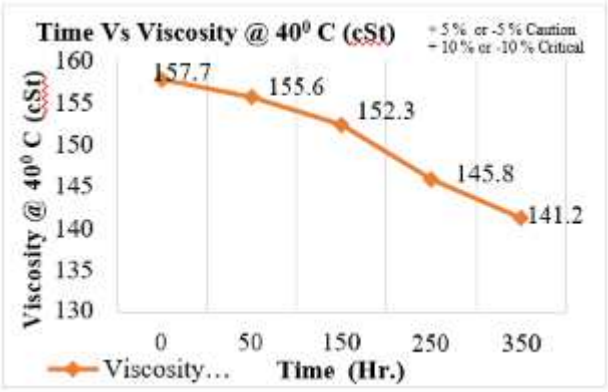


Figure 3: Change in Viscosity@ 400C (cSt) over time

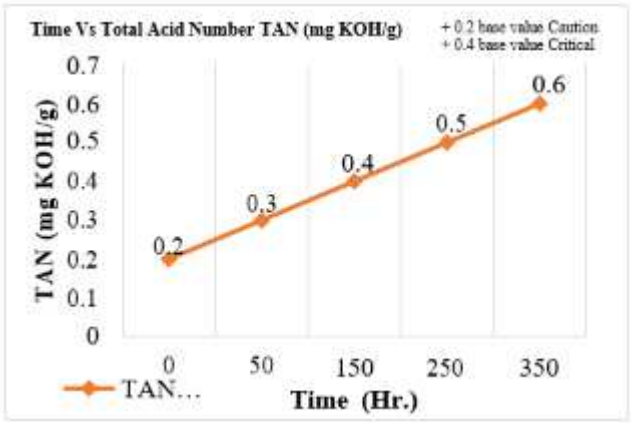


Figure 4: Total Acid Number (mg KOH/g) over time

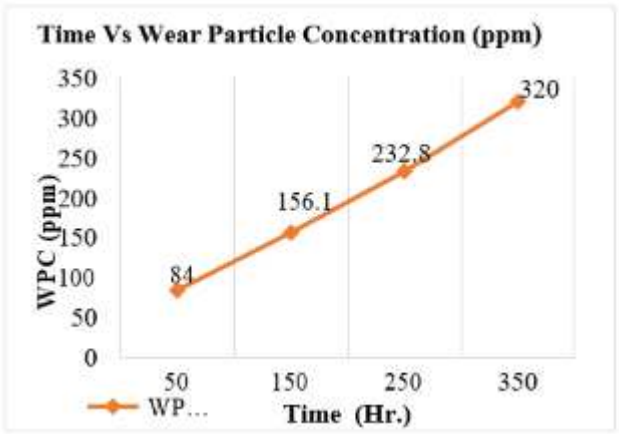


Figure 5: Wear Particle Concentration (ppm) over time

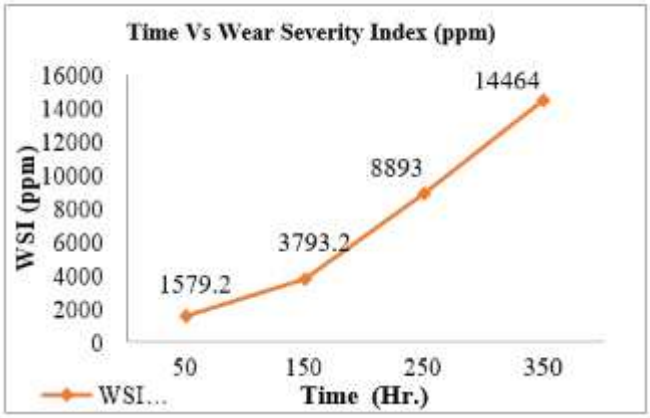


Figure 6: Wear Severity Index (ppm) over time

4.2. Evaluation of wear particles

Figure 5 shows the wear particle concentration over time. The concentration of wear particles exhibits an increasing trend due to adhesive and abrasive wear mechanisms. Adhesive wear arises when two contacting surfaces bond and then separate, resulting in material loss. In worm gearboxes, several factors contribute to this wear: high contact pressure, where intense pressure between the worm and worm wheel can cause localized welding of surfaces; material compatibility, where adhesive wear can happen if a softer material adheres to a harder one under high loads; and insufficient lubrication, which can lead to metal-to-metal contact, increasing friction and promoting particle adhesion. Abrasive wear involves the material removal from a surface because of the mechanical action of hard particles or rough surfaces.

Figure 6 shows the Wear Severity Index over time. The wear severity index shows an increasing trend over time, indicating a rise in wear particles within the worm gearbox. Direct Reading Ferrography, the concentration of both large and small wear particles was quantified. The calculated Wear Severity Index (WSI) showed a noticeable increase, correlating with the oil's degradation and the systems wear progression. In worm gearboxes, this type of wear is influenced by several factors: contaminants in lubrication, where hard particles like dust or metal debris can enter the lubrication system and cause wear as they move between gear surfaces; and surface roughness, where a rough initial finish of the worm and wheel increases wear rates due to a higher likelihood of scratching and scuffing.

4.3. Evaluation of wear pattern

Figures 7 to 10 demonstrate forms of wear patterns created during successive use of gearbox.

Figure 7 to 10 wear patterns created during successive use of gearbox. The ferrogram slide analysis, supported by microscopic imaging, confirmed the presence of various wear particles

such as normal rubbing wear, black oxide, cutting wear, and rolling-sliding wear. The presence of black oxide and cutting wear particles indicates more severe wear mechanisms, likely due to excessive friction and oxidation.

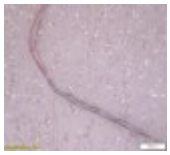


Figure 7: Cutting wear



Figure 8: Black oxide



Figure 9: Rolling fatigue wear



Figure 10: Rolling and sliding wear

5. CONCLUSION

Based on the current research on Condition Monitoring and Fault diagnostics of Worm Gearbox through Integrated Analysis of Oil Properties and Wear Particles the following conclusions can be drawn:

- The Total Acid Number (TAN) increased over time under controlled operating conditions due to oxidation, leading to oil deterioration and reduced performance. The viscosity of the oil showed a decreasing trend, indicating increased friction within the system.
- The findings highlight that monitoring these parameters can significantly improve the identification of wear patterns and oil degradation, leading to more informed maintenance decisions.
- Direct Reading (DR) Ferrography is an effective technique for discovering early signs of wear in a worm gearbox without the need for disassembly.
- Excessive wear patterns can lead to the failure of the lubricating oil system and simultaneously damage metallic components.
- This integrated approach is crucial for developing condition-based maintenance strategies that extend gearbox life, reduce unexpected failures, and optimize lubricant use, thereby contributing to overall operational efficiency and cost savings.

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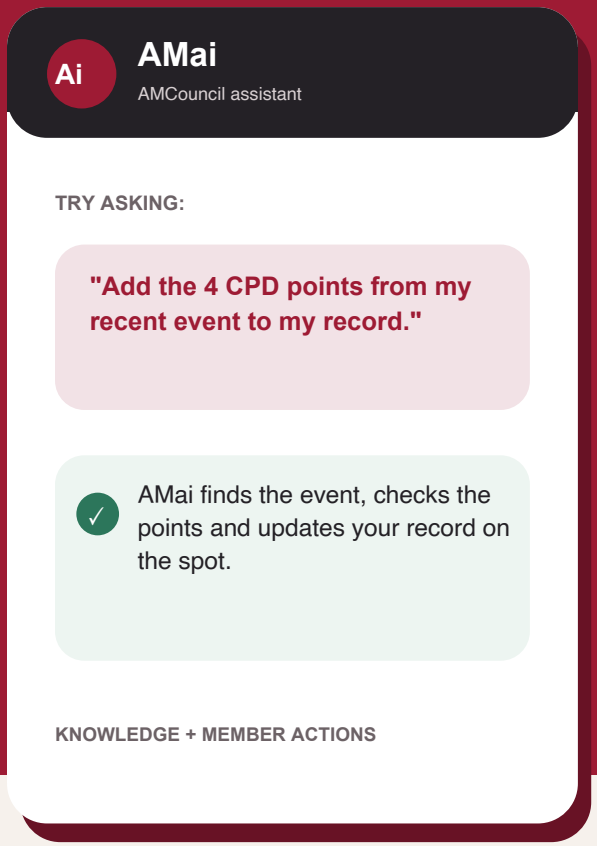
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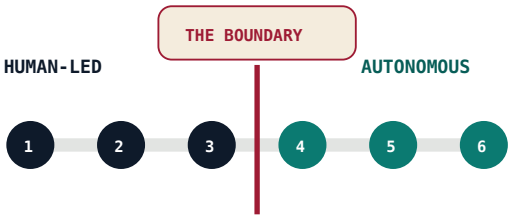
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STAR PROFILE – Dara Parvas CPAM



Why asset management?

I've always enjoyed solving engineering problems, but what really attracted me to asset management was the opportunity to look beyond the purely technical side. To me, asset management is an art form that bridges management and engineering. It is a lot like surgery, which sits at the intersection of medical science, extreme dexterity, creativity, and real-time problem-solving. You are working on living, complex systems where you have to understand how assets create value over their entire lifecycle, making decisions that balance performance, risk, and cost. I love that every project is different, which means there is always a new challenge and something new to learn.

How long have you been working in the asset management sector?

I've been working in the sector for about five years in total, with the last three years being here in Australia. During this time, I've had the opportunity to work across manufacturing, rail, transport, and facilities. Working in different industries has given me a much broader perspective, showing me that while every organisation operates differently, the core principles of good asset management remain exactly the same.

What is your speciality?

My background is in mechanical engineering, and my focus is engineering asset management for infrastructure and facilities. I specialise in analysing asset performance, developing maintenance strategies, and lifecycle planning. Ultimately, I love using data to support practical decisions that improve reliability and deliver long term value.

What drew you to explore this particular speciality?

Early in my career, I realised that some of the most critical engineering decisions aren't about designing new assets from scratch, but about extracting the absolute best value from the ones we already have. That shift in perspective really appealed to me. Asset management beautifully brings together engineering, business, and long term planning, making it both incredibly challenging and rewarding.

What is the most exciting trend you've noticed in asset management today?

I'm excited by how technology is reshaping the profession. AI, IoT sensors, and smarter data utilisation are giving organisations unprecedented insight into asset performance. A trend that completely amazes me is the concept of zero touch maintenance in data centres, where smart, self healing systems and predictive robotics handle tasks with minimal human intervention. These technologies aren't replacing engineers, they are empowering us to make better decisions and shift our focus from reacting to problems to actively preventing them.

What is your proudest career achievement?

Without a doubt, it has been building my engineering career in Australia after moving here from Iran. Like many skilled migrant engineers, finding that first opportunity without local experience or an established professional network was incredibly daunting. There were times when it felt like every door was closed.

Fortunately, I met some incredible people along the way, including a mentor who believed in me, offered invaluable guidance, and kept me motivated. That support, combined with a lot of persistence, helped me get my foot in the door. Since starting my journey in Australia about three years ago, I've worked on major infrastructure projects across rail, transport, and facilities, and achieving my Certified Practitioner in Asset Management (CPAM) has been a milestone I'm incredibly proud of. Looking back, the journey itself is what means the most, serving as a constant reminder of what can be achieved with determination, the right mindset, and a supportive community.

What's next for you?

My goal is to keep growing both professionally and personally. I'm currently working towards becoming a Chartered Engineer through Engineers Australia, and I want to continue deepening my knowledge in asset management, reliability, and emerging technologies. I'm excited to see where our profession is heading, and I look forward to contributing to projects that improve the resilience and performance of Australia's infrastructure.

When you're not busy at work, what do you enjoy doing to unwind/relax/explore?

Outside of work, I love spending time with my wife, working out, camping, and fishing. I also enjoy travelling, listening to music, reading about cars, and collecting and servicing mechanical watches, which is a fantastic way to satisfy my engineering curiosity on a micro scale. Spending time in the great outdoors and working with my hands are my favourite ways to switch off, recharge, and return to work with a fresh perspective.



STAR PROFILE – April Jewell CSAM



Why asset management?

I trained as a mechanical engineer, so I came in through the plant floor; outages, statutory works, the physical reality of keeping generation assets running safely. What kept me here was realising that asset management is where the technical detail actually meets the big strategic decisions. It's the discipline that connects a bearing temperature to a boardroom investment case and looks after an asset across its whole life rather than one job at a time. Being part of the energy sector going through the energy transition, the whole-of-lifecycle, decision-focused view is exactly where I want to be.

How long have you been working in the asset management sector?

Close to 13 years, all with EnergyAustralia. I started in plant engineering and project delivery including outage projects and the decommissioning of Wallerawang Power Station and progressively moved into the systems, governance, and strategy side, including a stint in Sustainability. My focus has been formally on asset management systems for the last several years.

What is your speciality?

Asset management systems and data governance, the ISO 55000/55001 side of the discipline. In plain terms, I work on making our asset information trustworthy and then turning it into decisions: maturity assessments across our gas and coal fleet, a Levels of Service framework, and the data governance foundations that everything else relies on. I sometimes describe it as connecting the boardroom to the boiler room.

What drew you to explore more about this particular speciality?

A stint as Lead Sustainability Analyst was the turning point. I was suddenly advising the Board and Executive on climate risk and investment, and I could see how completely those decisions depend on the quality of the asset information underneath them. I'd spent years on the plant side knowing how much good knowledge sits with the people closest to the equipment, and how little of it reliably makes it up to where the big calls get made. Closing that gap, through better systems and data governance, became the thing I most wanted to work on.

What's the best career advice you've ever received and who gave it to you?

Honestly, I've had very little good career advice over the years. As a woman in a male-dominated industry, it's been hard to find advice that felt relatable, or to see real-world examples of how a career like mine could map into the roles I aspire to. What's made the difference has been the people around me rather than any single piece of advice. My current manager and good friend, Jennifer Ratsep, is one of the strong leaders who has helped keep me in the business, through her friendship, mentoring, and a shared passion for engineering and asset management. That, along with my own belief and determination, is what's allowed me to stick it out.

What makes a great asset manager?

Translation, more than anything. A great asset manager can take something highly technical; a maturity score, a data quality gap, a risk profile, and communicate it so it lands with a decision-maker and drives action. Alongside that: genuine systems thinking, the confidence to make sound calls on imperfect information, and real curiosity about parts of the business outside your own patch. The best ones I've worked with are equally comfortable in a plant room and a boardroom and never treat the standard as a box-ticking exercise.

What is the most exciting trend you've noticed in asset management today?

The rise of data as a genuine asset in its own right. We're moving from reactive, experience-based decisions toward proper data-to-decision pipelines, structured data architecture, real data quality tooling, and increasingly analytics and AI supporting risk-based investment. It's exciting because it finally lets us prove the value of good asset management, rather than just asserting it, and it puts the engineer's knowledge on a footing where the Executives must take notice.

What is the biggest challenge facing up-and-coming asset managers today?

The breadth of it can be genuinely overwhelming, the discipline spans engineering, finance, data, risk and strategy, and it's easy to feel you have to master all of it before you're allowed an opinion. Layered on top is the data problem: there's more information than ever, but far too little of it is trustworthy or well governed. Learning to work confidently with imperfect data, while being taken seriously as the person translating between the technical and the strategic, is a real early-career hurdle.

What advice would you give to an up-and-coming asset manager today?

Don't wait until you feel ready, back yourself and learn on the way. Say yes to the lateral moves; the unfamiliar roles build breadth that becomes your biggest asset later. Invest early in communicating to executives because technical brilliance that never lands with decision-makers is wasted. Pursue the certifications, even while working full-time, it's daunting and completely worth it. Finally, find people who'll actively champion your ambition, then become that person for someone else.

What is the biggest challenge facing the asset management sector today?

For asset management systems specifically, it's data governance maturity, most organisations know their data matters but haven't yet put the ownership, quality, and stewardship structures in place to trust it. In our part of the world that sits on top of an even bigger challenge: managing an ageing thermal generation fleet through the energy transition, where you're balancing safe, reliable operation of legacy plant against decarbonisation and workforce change. Retaining hard-won asset knowledge as that workforce turns over is a quiet but serious risk.

What is your proudest career achievement?

Building and delivering the fleet-wide asset management system maturity program, and the broader "boardroom to boiler room" body of work that grew out of it, taking maturity assessments, a Levels of Service framework and data governance foundations from concept to something the business actually uses. Presenting papers at AMPEAK 2025 & 2026 and being recognised with the 2026 AMC Rising Star Award meant a great deal, and earning CSAM alongside it all feels like a genuine milestone. But the part I'm proudest of is that it's real, embedded work, not a report that sat on a shelf.

What's next for you?

Stepping into a formal leadership role is the near-term goal, I completed an MBA majoring in leadership with exactly that in mind. Beyond that, continuing to mature asset management and data governance across the fleet, and staying closely involved with the Asset Management Council. I also want to keep mentoring the next generation of engineers and asset managers, and particularly to back women coming through in engineering, being the champion for their ambition that made such a difference for me.

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Figure 1 – Application requirements



World Partner's CAMA2

To align with the revision of the ISO55001 Standard and the 3rd Edition of the GFMAM AM Landscape, the CAMA Exam has undergone a major reworking – all new questions, all new material. Those who want to 'upgrade' their existing CAMA to CAMA2 can visit WPiAM for more information.

CHAPTER **NEWS**

ADELAIDE

AMCouncil's Adelaide Chapter hosted a lunchtime event during July exploring the people, experiences and perspectives that shape effective asset management.

The session brought together speakers from across the water, energy, resources and agribusiness sectors to share personal career journeys, practical lessons and reflections on risk, culture, safety, decision-making and organisational objectives.

Carly Price-Hopgood from SA Water shared insights from the Havelock North drinking water contamination incident and the lessons it continues to offer about risk, assets, culture and communication. Ali Walsh from SA Power Networks reflected on the importance of asset management objectives and the value created when they begin to embed across an organisation. Emily Mboya from BHP shared reflections from her career journey and the experiences that have shaped her as an asset management professional.



The presentations were followed by a panel Q&A moderated by Novia Zhao, giving attendees the opportunity to explore the themes of the day in more depth and reflect on how diverse experiences can strengthen asset management practice.

Thank you to Carly, Ali, Emily and Novia for generously sharing their insights and experiences, and to the Adelaide Chapter committee, in particular Phil and Arka, for bringing this event together.

Thank you also to everyone who attended and contributed to the discussion. Events like this are an important reminder that effective asset management is not only about systems, processes and assets, but also about people, culture and the decisions we make together.

BRISBANE

Thanks to everyone who joined the Brisbane Chapter's Christmas in July Trivia & Networking Event!

It was great to see asset management professionals come together for an evening of networking, friendly competition, and plenty of Christmas spirit. A special thank you to our sponsors, Detection Services and Rockfield Technologies Australia, for helping make the event possible.

The Brisbane asset management community continues to be a fantastic group of people, and it was wonderful to reconnect with familiar faces and meet some new ones.









CHAPTER **NEWS**

The Asset Management Council Brisbane Chapter also hosted a technical site visit to Aurizon's Rail Welding Facility at Yeerongpilly during August, with all 15 registered delegates attending.

The visit gave participants a behind-the-scenes look at the facility and the important role it plays in supporting safe and reliable rail operations. Site Manager Andrew Kumar led the group through the facility, while Peter Hermann and Sanjna Reddy shared insights into rail performance, degradation, renewal strategies and the way asset condition data informs renewal planning.

The formal visit was followed by a networking lunch, giving delegates the opportunity to continue the discussion with Andrew, Peter, Sanjna and fellow asset management professionals.

A big thank you to Viktor Santesson at Aurizon for arranging and hosting the visit, and to Andrew Kumar, Peter Hermann and Sanjna Reddy for sharing their time and expertise.



MELBOURNE

The Asset Management Council's Melbourne Chapter welcomed members and industry colleagues to a lunchtime technical event during July exploring Asset Investment Planning: Critical Success Factors for a Strategic Business Function.

Presenter Rory Gibbons drew on more than a decade of experience implementing Asset Investment Planning frameworks across public and private sector organisations. Through practical insights and case studies, Rory highlighted the importance of strong project fundamentals, asset criticality and communicating investment outcomes in language that resonates with different stakeholders.

The session also explored common challenges organisations encounter when developing their Asset Investment Planning practices and practical ways to strengthen decision-making, coordinate investment activities and create greater value from asset portfolios.





NEW ZEALAND

The recent NZ Asset Management Symposium – Collaborating for Greater Impact brought together asset management professionals from across New Zealand for a day of practical insights, shared experience and conversation.

The program demonstrated the breadth of asset management in action, with presentations spanning long-term planning, capability and community building, maritime fleet renewal, electrification, condition data, risk-based decision making and emerging technology.

Speakers and sessions included Jessie Lea on moving from projects to long-term planning; Wendy McPate on building capability, community and the future of asset management; CDR Phil Bradshaw and CDR Robyn Locke on the Maritime Fleet Renewal Programme; James Kilty

on New Zealand's electrified future; Nathan Cammock on electrifying Auckland's ferry fleet; and Dawn Inglis on consistent condition data for New Zealand roads.

The program also featured Philip Conroy and Christopher Butt discussing risk-based decision making and asset management planning for the RNZN, and Alex Castellanos exploring the automated visual assessment of copper conductors.

A highlight of the day was the panel discussion, Both Sides of the Fence – What Public and Private Asset Managers Can Learn from Each Other, which brought different perspectives together around common asset management challenges and opportunities.







SYDNEY

The AMCouncil Sydney Chapter came together (joined by the Canberra Hub on live stream) in July for AI in Action: Practical Applications for Asset Management Decision-Making, an engaging evening focused on how AI is being applied to real asset management challenges.

Hosted at Ausgrid's Roden Cutler House, the event featured three practical presentations exploring the use of AI, machine learning, computer vision and natural language processing across asset management decision-making, inspection imagery, condition assessment, failure classification, data governance and auditable asset analytics.

Thank you to our presenters, Dr Kevin Hang, Lili Chen and Dr Xi Chen, for sharing their insights and examples of AI moving beyond theory and into operational asset management environments.







CHAPTER **NEWS**

MAINTENANCE & RELIABILITY SYMPOSIUM

Maintenance for Resilience was the theme of the Asset Management Council's Maintenance & Reliability Symposium, held in Sydney on 27 August 2026.

By the end of the day, one thing was clear: while the assets, industries and challenges may differ, many of the same principles underpin resilient maintenance and asset management.

From ageing rolling stock to a brand-new transmission grid, and from corrosion and coatings to artificial intelligence, spare parts and energy dependency, the discussions repeatedly returned to two fundamental threads: balancing cost, risk and performance, and taking a whole-of-life approach to asset stewardship.

Perhaps the line that best summed up the day was: Design sets the ceiling, and maintenance keeps the promise.

The symposium brought together practitioners from across transport, infrastructure, energy, aviation, engineering and maintenance to share practical experiences of what resilience looks like in the real world.

Shane Day from Downer explored the challenge of keeping ageing rolling stock moving safely and reliably, including the very real consequences of deferring necessary maintenance.

Dr Margarita Vargas from Anti Corrosion Technology examined fabric maintenance and the importance of designing corrosion out from the beginning, while Adam Hockey from DuluxGroup and the Australasian Corrosion Association discussed protecting structural steel and the important distinction between an asset's design life and its coating life.

Juliano Cícero Santos and Muhammad Tayyab from ACEREZ provided a different perspective: how maintainability can be built into a new transmission network before operations even begin. Their presentation highlighted the value of considering maintenance, workforce capability and long-term asset performance during planning and design rather than after commissioning.

Braeden Knox from WSP looked at the critical step between strategy and execution: translating asset management objectives into practical maintenance tactics. His presentation also highlighted the significance of one deceptively simple field within a maintenance plan — frequency.

Karl Howard from I-care Group and Simon Murray from Your Maintenance Coach explored the transition from reactive to predictive maintenance and the growing role of AI, while also reinforcing that technology alone does not solve maintenance problems. The underlying processes, data, people and decision-making disciplines still matter.

Mitchell O'Shea from Brisbane Airport shared lessons in spares management, obsolescence and the organisational culture needed to make good spares management sustainable.

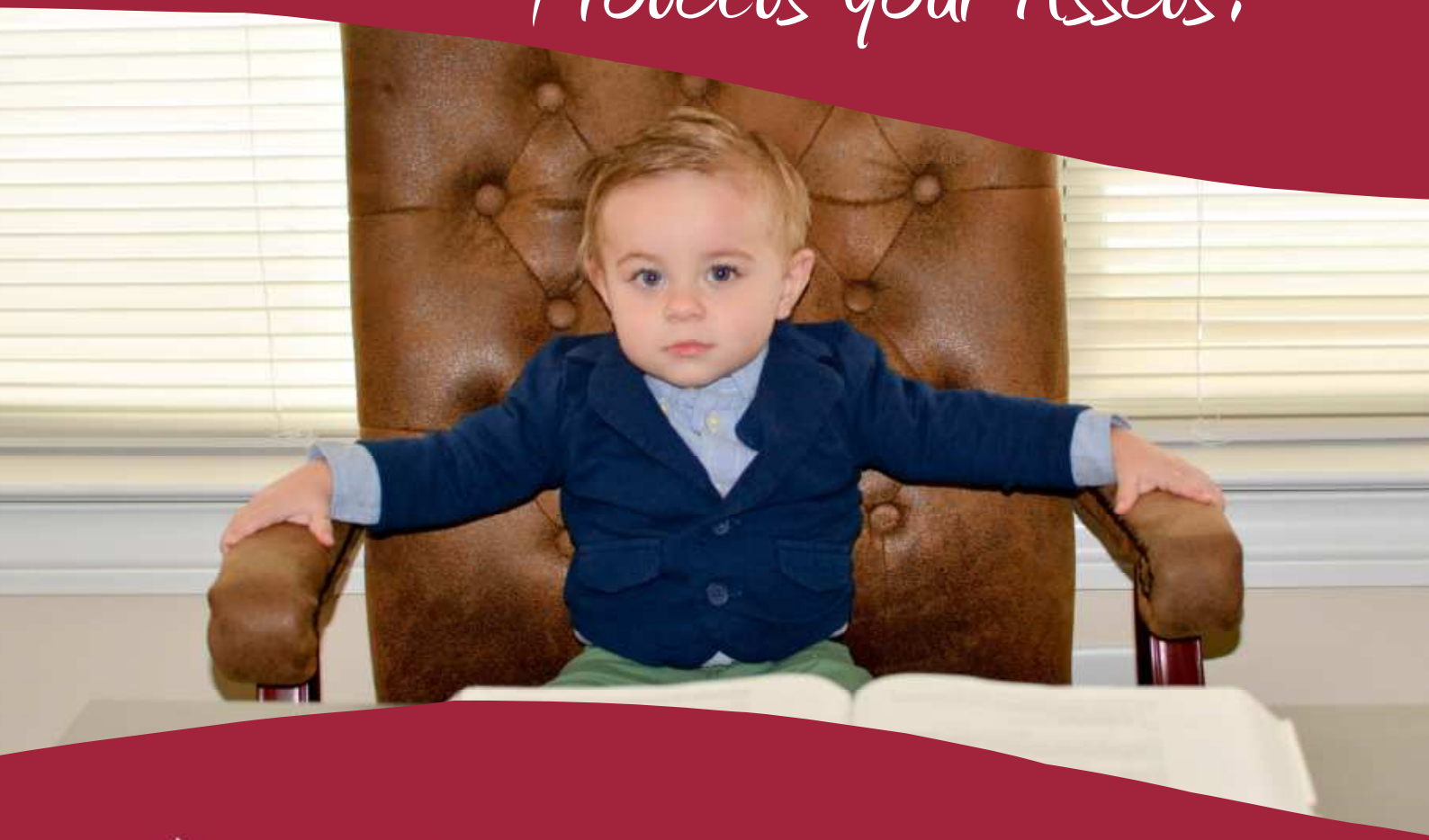
Erik Vandenberg from Verbrec examined system disruption and energy dependency, reinforcing how quickly maintenance, operational resilience, infrastructure dependencies and asset management become interconnected.

A few figures that stayed with us:

- Several examples from the day put the scale and importance of maintenance decisions into perspective.
- $100 billion — the estimated annual cost of corrosion across Australia and New Zealand, much of which is preventable.
- $120,000 per year to maintain a $4,000 pump — until someone challenged the assumptions in the OEM maintenance manual.
- 30 to 90 days — an example of maintenance intervals being extended based on evidence rather than continuing simply because "that is how it has always been done".

These examples reinforced an important message from across the symposium: good maintenance is not about doing more maintenance. It is about making better, evidence-based decisions about what needs to be done, when, why and at what cost and risk.

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ASSET MANAGEMENT COUNCIL



THE STATE OF

ASSET MANAGEMENT SECTOR

Priorities, Capability and Readiness in the Australian Profession

2026

Prepared as an independent research report for the Asset Management Council.

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Insight chapters are listed within Page 15.



Executive Summary

EXECUTIVE SUMMARY

This is the 2026 edition of the State of Asset Management sector report commissioned by the Asset Management Council, the professional body for Asset Management in Australia. Continuing a programme of research into the profession, it is built on a survey of the Council's members and professional community, conducted in early 2026 and analysed independently. Where possible, findings are compared with the 2024 State of Asset Management study, so the report shows not only where the profession stands today but how it has moved over the past two years.

Its purpose is to understand what matters most to asset management professionals today and where they believe the profession is heading, ensuring the findings deliver lasting value to the sector.

The professionals who responded are senior and committed. Two in three hold a manager-level role or above, more than a third have sixteen or more years in the field, and 93% expect to still be working in asset management in five years' time. This is not a profession in doubt about its own value. It is a profession confident in its craft and frequently frustrated by the organisations it serves.



That frustration is the report's central finding. When AM professionals describe the biggest obstacles to good asset management, they do not point at technology, data or tools. They point upward and inward, at leadership understanding, organisational culture, and the perennial struggle for resourcing and recognition.

The single most cited bottleneck to implementing an asset management framework is leadership and executive buy-in, just as it was in 2024. For two years running, members have located the main obstacle in people and organisations, not in tools or techniques. The single most common career challenge is budget and funding limits. And yet, where asset management initiatives are given room to run, the benefits are real and widely reported: just under two-thirds of respondents whose organisations have invested in asset management point to clear, realised gains. The defining tension of the profession in 2026 is not a knowledge gap. It is a permission gap.

EXECUTIVE SUMMARY

9 in 10
expect to remain in the profession over the next five years

26%
want to develop Strategic AM skills vs 17% for AI skills

37%
are confident their asset information is accurate

Three further themes run through the findings.

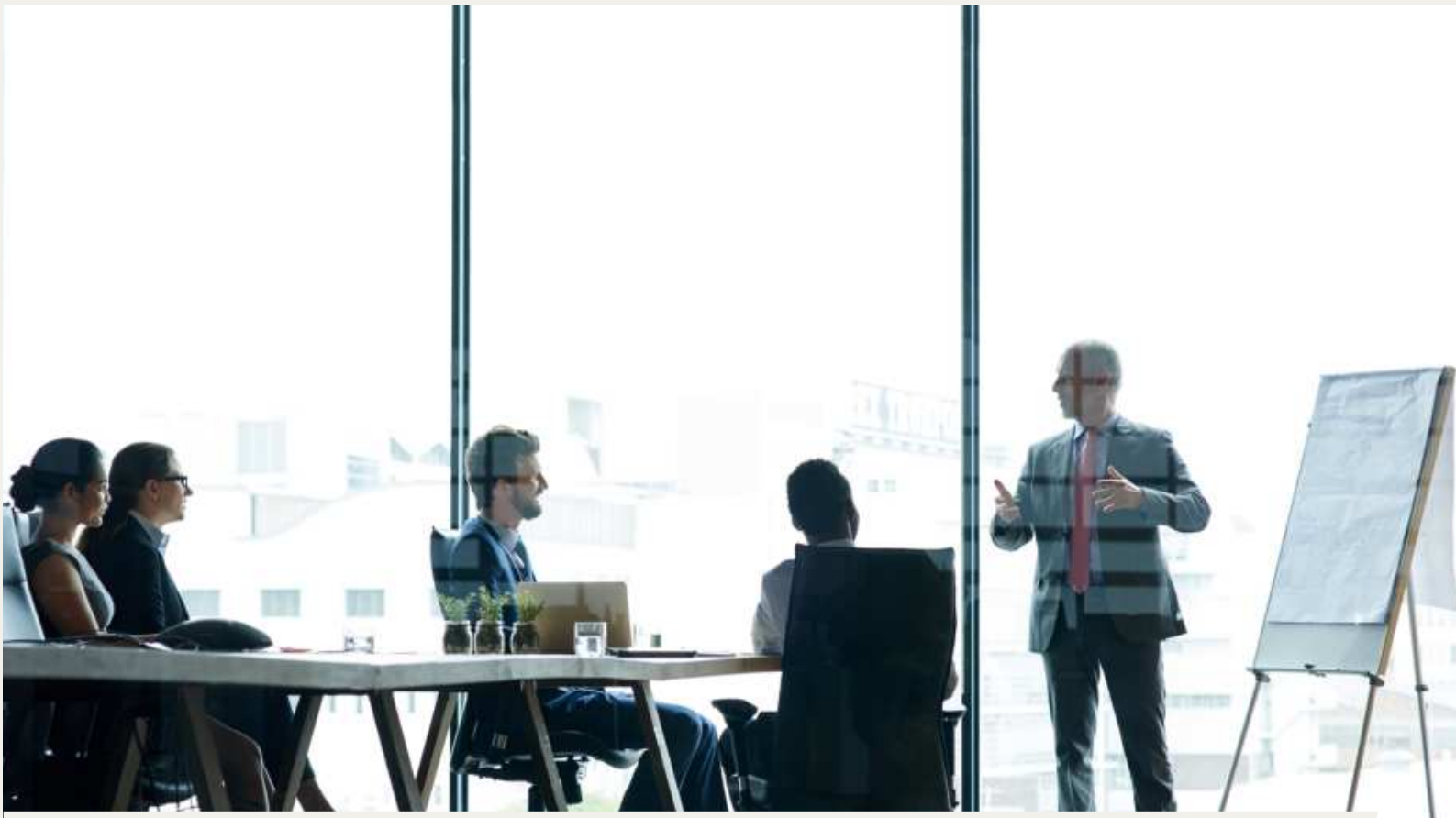
The comparison with 2024 shows a profession in motion. Formal adoption of asset management systems rose from 67% to 76%, the group with no system and no plans nearly halved, use of AI edged up from 35% to 41%, and organisations with a climate risk policy grew from 70% to 80%. What did not move is just as telling: leadership buy-in topped the bottleneck list in both waves, confidence in asset data softened slightly rather than improved, and the profession's development ambitions pointed in the same direction both times. The story of the two years is real structural progress running ahead of the organisational conditions needed to convert it into value.

The first is a development gap the trend data would not predict: the skill most want to develop is around strategic asset management and strategic asset management plan (SAMP), named by a quarter of all respondents, while only 17% cite AI and machine learning (ML) in asset management, despite a large majority (85%) recognising digitisation and AI as the top trend shaping the sector. The profession sees where the sector is heading but is choosing to build its strategic core first.

The second is a capability paradox: the skill gaps most often named are standards, processes and asset management fundamentals, yet standards is the area they least want to develop personally, while strategic asset management and the data and AI skills the sector's dominant trend demands draw their ambition. The same skill gap pattern was also evident in AM Council's 2024 research.

The third is a quiet confidence problem: only 37% say they are confident the information they receive about their own assets is accurate, down slightly from 42% in 2024, a foundation issue that sits beneath every ambition for analytics, AI and evidence-based decision-making.

These themes align with several independent national research reports across Australian asset management, namely, a sector moving from maintenance-centred practice toward strategic, data-enabled, and resilience-focused management, and one whose progress depends on getting people, data, and governance right before technology.



Report Highlights

REPORT HIGHLIGHTS

ASSET MANAGEMENT COUNCIL

At a glance, the profession in 2026:

9 in 10 AM practitioners expect to remain in the asset management profession over the next five years

85% agree that digitisation and AI is the dominant perceived trend in AM, but this awareness has not yet translated into widespread practical integration

1 in 3 say leadership support and buy-in is the biggest bottleneck in implementing an AM framework

76% say they have implemented an AM system, up from 67% in 2024. A further 15% say they are planning to do it soon

53% say they are only somewhat confident in the accuracy of the asset management information they receive, while 37% feel more confident and 10% are not confident at all





REPORT HIGHLIGHTS

At a glance, the profession in 2026:

41%

say they are now using artificial intelligence and machine learning in their organisations, up from 35% in 2024

1 in 4

say the biggest asset management skill gap in their organisation is standards, AMS and processes, and fundamental AM knowledge gaps

28%
vs 8% men

of women in the AM sector say career progression is a challenge they face in their careers, compared with 8% of men. This is by far the biggest challenge among women in the sector and among the lowest for men

68%

say their organisation is only somewhat prepared to meet disruption, while 22% say they are very well prepared. Only 10% say they are not prepared at all

46%

fewer than half have asset data integrated with finance, leaving decisions exposed to blind spots and costly errors.





About the Research

ABOUT THE RESEARCH



This report aims to map the current state and near-term direction of asset management as a profession in Australia. Rather than benchmarking organisations against a maturity model or cataloguing technical practice, it takes the perspective of the practitioner: what asset management professionals are dealing with now, what they are most interested in, what is getting in their way, and what they need to do their jobs well as the sector changes.

The research was designed around the questions that matter most to the Asset Management Council and its members, and, where possible, repeats questions asked in the 2024 study so that change can be measured, not just described. It explores where professionals find knowledge and what topics most engage them; the trends they believe will shape the sector; their main professional and organisational challenges; whether their organisations have implemented asset management systems and what benefits have followed; their confidence in asset data and the technologies they use; the skills they want to build and the career challenges they face; and how prepared their organisations are for disruption, including climate risk.

ABOUT THE ASSET MANAGEMENT COUNCIL

The Asset Management Council is the professional body for asset management in Australia. It exists to advance the practice of asset management and to support the professionals who deliver it, through a body of knowledge, professional certification, education, events, and a community of practice that connects members across industries and career stages.



The Council's members work across the full breadth of asset-intensive sectors, from utilities, transport and resources to defence, facilities, infrastructure and government, and at every level from frontline engineering to executive leadership. What unites them is a shared conviction that the disciplined management of physical assets is fundamental to the services communities depend on and to the organisations that provide them.

This report is part of the Council's commitment to representing the asset management profession and advancing the sector as a whole. By listening systematically to the experiences shaping the field, the Council can deliver insights of value across the sector, target its advocacy, and remain relevant as the profession evolves.

About this Report and its Independence

This report was produced as an independent research and analysis exercise on behalf of the Asset Management Council. The thematic coding and written analysis were conducted independently, and the findings and interpretations presented here are those of the research, not of any commercial sponsor. The report carries no third-party advertising and no vendor has influenced its conclusions, which is a deliberate choice in service of the Council's standing as an impartial professional body.

The greatest debt is owed to the members of the Asset Management Council who gave their time to respond, and in particular to those who answered the open-ended questions at length and with candour. Their words appear throughout this report, and they are the source of much of its value.

METHODOLOGY AND ACKNOWLEDGEMENTS

The findings in this report are drawn from an online survey of the Asset Management Council's members and professional community, conducted in early 2026. The survey covered demographics and career profile, areas of professional interest, organisational practice, technology and data, skills and career development, and organisational resilience including climate risk.

111
validated responses

59%
manager-level role or above

36%
sixteen or more years in AM

A total of 115 responses were received. Three respondents based outside Australia and New Zealand were excluded as outside the scope of this report, giving a validated analysis base of 111. Where individual questions were not answered by every respondent, percentages are calculated on the number who answered that question; these bases vary and are stated throughout. Open-ended questions attracted response rates ranging from roughly 60% to 85%.

The sample is senior and experienced: 59% of respondents hold a manager-level role or above, and 36% have sixteen or more years in asset management. Around a quarter are women, and a quarter work overseas as well as in Australia or New Zealand. Findings should therefore be read as representative of the Council's engaged professional community rather than of the entire asset management workforce. This is a meaningful distinction: the people in this sample are, by definition, more connected to professional infrastructure than the average practitioner, which makes their candour about gaps all the more notable.

Subgroup differences were examined across the six core banners agreed for this study: age, gender, career stage, expectation of remaining in the profession, organisation size, and whether the respondent works overseas. Because the overall sample is modest, subgroup analysis has been kept deliberately proportionate. Differences were tested for statistical significance using chi-square and Fisher's exact tests as appropriate, with rank-based tests applied to ordered scales. Only differences significant at the conventional threshold are described as significant; smaller or suggestive differences are described with deliberately cautious language such as appears to, suggests, or is more common among. Of the comparisons run, the differences that reached significance cluster coherently around organisation size and seniority, which strengthens confidence that they reflect real patterns rather than statistical noise.

Responses to open-ended questions were analysed through thematic coding: each response was read and assigned to one or two themes drawn from the data itself, with the full respondent-level coding retained so that every assignment can be reviewed. This coding was performed by a single analyst; for a published edition, a second independent coder would be best practice.

Two limitations deserve emphasis. First, with a base of 111, the report can speak confidently about the profession as a whole and about its largest patterns, but small subgroup differences should not be over-interpreted. Second, each wave is a point-in-time study; the research's value compounds as it is repeated across successive years, allowing the Council to track how the profession's priorities and challenges shift over time.

ABOUT MEMBER VOTES



Several questions in this survey asked respondents not for facts about their organisations but for their views: their top priority for the year ahead, the trends they believe matter most, the biggest bottlenecks they face, and the skills they most want to build. In effect, these questions invited respondents to vote on the issues shaping the profession.

These member votes are treated in this report as a distinct and important body of evidence. They are not measures of organisational practice but expressions of professional judgement, gathered from a senior and experienced community. Where a clear majority of respondents converge on a single concern, that convergence is itself a finding, and one the Council can act on with confidence. Where respondents are divided, the division is reported plainly. Throughout the insight chapters that follow, member votes are distinguished from organisational facts so that readers can see clearly when they are looking at what organisations do and when they are looking at what professionals believe.

RESPONDENT PROFILE

The following profile describes the 111 validated respondents. It is a senior, experienced and engaged sample, and the analysis throughout the report should be read with this profile in mind.

CAREER STAGE IN ASSET MANAGEMENT

n = 111

Early (1–8 years)	**44 · 40%**
Experienced (9–15 years)	**27 · 24%**
Advanced (16+ years)	**40 · 36%**

AGE

n = 111

35 and under	**15 · 14%**
36 to 50	**55 · 50%**
51 and over	**41 · 37%**

GENDER

n = 111

Male	**82 · 75%**
Female	**27 · 25%**
Prefer not to answer	**1 · 1%**

ORGANISATION SIZE (EMPLOYEES)

n = 110

Small (fewer than 500)	**34 · 31%**
Medium (501–5,000)	**37 · 33%**
Large (more than 5,000)	**39 · 35%**

WORKS OVERSEAS AS WELL AS IN AUSTRALIA

n = 111

No	**84 · 76%**
Yes	**27 · 24%**

EXPECTATION OF REMAINING IN THE PROFESSION OVER NEXT 5 YEARS

n = 110

Yes	**102 · 93%**
No	**8 · 7%**

Respondents also span a wide range of industries and seniority. Two-thirds hold a manager-level role or above. The strong representation of decision-makers means the findings reflect the views of people with direct influence over asset management strategy and practice.

ABOUT THE 2024 COMPARISON

This is the 2026 wave of the State of Asset Management research. The most recent previous wave was conducted in 2024. Where possible, comparisons throughout this report are made to the 2024 State of Asset Management study.

Two considerations apply when reading the research comparisons.

1. The 2024 study drew a larger response with 188 respondents
2. While the two samples are closely matched in terms of demographics, the 2026 sample is somewhat more experienced and slightly older.

The table below compares the two respondent groups across key demographic groups. The two samples are close on gender, organisation size, overseas work and loyalty to the profession. The one substantial difference is seniority: the 2026 sample is more experienced and slightly older, with advanced-career members (16 or more years) rising from 27% of respondents to 36%.

Comparisons are presented as directional unless the difference is large enough, or consistent enough across related questions, to be read with confidence.

2024 TO 2026 COMPARISON

MEASURE	2024	2026
Total responses	~188	111
Advanced career (16+ years)	27%	36%
Early career (1–8 years)	43%	40%
Aged 51 and over	35%	37%
Aged 50 and under	65%	63%
Male / Female	73% / 24%	75% / 25%
Organisation size (Small / Medium / Large)	32% / 32% / 34%	31% / 33% / 35%
Works overseas	24%	24%
Expect to remain in profession (5 years)	94%	93%



The Insights

The Top Ten Insights

The story these ten insights tell is a consistent one. This is a profession that knows its own worth and can prove it, yet keeps hitting the same constraint around permissions. The biggest obstacles found are leadership buy-in, culture and organisational maturity, and their proudest achievements come from exactly the same territory.

The insights that follow trace that story from its centre outward. They begin with the obstacle itself, and the evidence that asset management delivers where it is given room to run. They move through the profession's people and capability tensions: a workforce reaching for strategic skills, a gap between the trends AM professionals foresee and the foundations they are still securing, and a quiet lack of confidence in the data underpinning every analytical ambition.

They end with the wider landscape of fragmented systems, an environment where climate policies outpace practice, formalisation becomes the norm, and the question of how the profession will build its knowledge and craft in an AI-shaped decade. Where the survey connects to broader evidence, publicly available research is cited in full in the External Sources section

01 **The biggest obstacle to asset management is organisational, not technical**

02 **Where asset management is given room to run, the benefits are real**

03 **People challenge: retaining experience, and clearing the path upward**

04 **The capability paradox: fundamentals first, but AI everywhere**

05 **AI dominates the conversation but only partly the practice**

06 **A quiet confidence problem sits beneath the data ambitions**

07 **The systems landscape is fragmented, not absent**

08 **On climate, the policy exists but the embedding is uneven**

09 **Formalisation is now the norm, and accreditation momentum has an owner**

10 **Knowledge in the AI era: where the profession will build its craft**

MEMBER VOTES | ORGANISATIONAL PRACTICE

ASSET MANAGEMENT COUNCIL

01 The biggest obstacle to asset management is organisational, not technical

34% name leadership and executive buy-in as their biggest bottleneck, the top obstacle of all

Asked where the biggest bottlenecks lie in implementing an asset management framework, respondents pointed overwhelmingly at people and organisations rather than at tools or techniques. Leadership support and executive buy-in were the most frequently cited bottleneck, named by 34% of those who answered, followed by process maturity and governance at 31%, AM knowledge and awareness at 30%, culture and change resistance at 28%, resource and capacity constraints at 23%, and budget and funding limits at 22%. Data quality and integration ranked below these organisational barriers, at 14%, while technology and tool implementation came last at 10%.

This ordering tells the profession's advocates that the case for asset management is not being lost on technical grounds. It is being lost, or never properly made, in the boardroom and the management layer. AM Professionals describe leadership that confuses asset management with maintenance, executives who treat it as a cost centre rather than a value driver, and a persistent difficulty securing investment in foundational work that lacks visible glamour.

The same theme dominates the related question of the top priorities for 2026. Standards, frameworks and organisational maturity were the most common priority of all, named by 29%, ahead of data quality and integration at 26% and capital and long-term planning at 23%. The profession's own stated agenda is not chasing the frontier; it is securing the foundations and the mandate to deliver them.

> *"Leadership confusion around asset management and maintenance."*
>
> MEMBER, ON THE BIGGEST BOTTLENECK

> *"Being recognised by a client for the value we generated through the AM education and implementation support we could provide. We aligned the C-suite with the rest of the organisation and vice versa, achieving a wider understanding of the reasons for Asset Management."*
>
> MEMBER, ON THEIR BEST 2025 ACHIEVEMENT

The fuller bottleneck ranking sharpens the point. After the leading organisational barriers, the next tier includes stakeholder alignment and silos at 20%, data quality and integration at 14%, and short-term priorities at 13%. Technology and tool implementation comes last, at just 10%. The dominant marketplace narrative around asset management focuses on platforms, integrations and analytics, but the survey found those concerns at the bottom of the list of what is actually holding them back.

A reinforcing pattern from the 2026 priorities. Beyond the top three, the survey revealed a familiar spread of operational and organisational priorities, including cost control and efficiency, capability and staffing, and asset condition, aging and risk. Sustainability and climate resilience sat notably low, well below where the trend data may have predicted, a tension this report returns to in Insight 08. And although digitisation and AI are the dominant industry trends identified in Insight 05, they ranked well down the list of immediate workplace priorities. AM professionals understand the direction the sector is heading. They are deliberately choosing to secure the foundations first.

Achievements occupy the same space as the bottlenecks. Respondents were also asked about their best asset management achievement of 2025. The top answers came from precisely the same territory where the biggest barriers sit: developing asset management plans and frameworks (26%), client engagement and leadership (22%), maintenance and reliability work (19%), and operational readiness and risk (17%). ISO 55001 and audit-related achievements were the least common, at 6%. Where respondents claim to have made progress in 2025, they have done it by solving the organisational problem; where they remain blocked, the same constraints still bind. The bottleneck list and the achievement list describe the same battlefield.

"Risk aversion, funding constraints, leadership commitment."

MEMBER, ON THE BIGGEST BOTTLENECK

"Getting funding from the board for the stuff that's not flashy - data cleaning, anyone?"

MEMBER, INFRASTRUCTURE SECTOR

CHANGES SINCE 2024

This is one of the most stable findings across the two waves. Leadership and executive buy-in was the single most cited bottleneck in both 2024 and 2026, and technology, data and tools sat near the bottom of the list in both years. For two years running, the survey has identified the main obstacle to good asset management in people and organisations rather than in tools or techniques. Workplace priorities, by contrast, did move: in 2024 they were spread relatively evenly across maintenance, planning, standards, data and climate, with no single concern dominating. By 2026 they had converged on standards, frameworks and organisational maturity, together with data quality, a profession consolidating its foundations rather than spreading effort across many fronts.

WHAT THIS MEANS FOR THE PROFESSION

The lesson is one of advocacy and translation. The most valuable capability the profession can build may not be more technical content but better tools to make the case for asset management to the people who hold the budget: board-ready value narratives, executive briefings, and language that connects reliability and risk to the financial outcomes leaders care about. The profession does not need to be convinced; the people it reports to do. National research points the same way, with one industry study finding that only 23% of asset-intensive organisations believe their asset management strategy is fully aligned with and understood across the wider business. [1]

02 Where asset management is given room to run, the benefits are real

63%* of those whose organisations invested in asset management, report clear, realised benefits

If the first insight is a story of obstruction, the second is its necessary counterpart: the obstruction is not justified by the results. Among those whose organisations have pursued asset management initiatives, nearly two-thirds (63%) report clear, realised benefits. Formalisation is now the norm rather than the exception: 76% say their organisation has implemented an asset management system, with a further 15% planning to do so. At the same time, 32% of those who described benefits said their organisation was still in its early stages or seeing limited benefits, underscoring that implementation takes more than installing a system.

"Yes, extensive value realisation with increased quality of service delivery."

MEMBER, ON BENEFITS REALISED

"Condition-based maintenance reduced reactive work by 30%, improving asset performance and staff productivity."

MEMBER, DESCRIBING A REALISED BENEFIT

What members report when asked to describe the benefit, in their own words. When the open responses are grouped thematically, the most common benefit category is governance, alignment and strategy (38%), followed by cost efficiency and budgeting (21%), maintenance optimisation (21%), data quality and visibility (20%), digitisation and systems adoption (20%) and collaboration and culture change (18%). Improved reliability and uptime (11%), client-facing or external benefits (4%) and training and capability uplift (2%) appear less often. The pattern is telling: the benefits members most readily name are organisational rather than technical, which is the same direction the bottleneck data points in.

*Base: respondents whose organisation has implemented an asset management system (Q48, n=84). Benefits identified from open-ended responses to Q49; respondents not answering Q49 are treated as not reporting benefits. Derived measure: 53/84 = 63%.

A meaningful minority are still waiting. Around 28% of those who answered the benefit question described their organisation as at an early stage of realising benefits, or noted that systems have been documented but never fully embedded. This is a caution about implementation lag: investment in a system does not guarantee the conditions for that system to deliver. Read alongside the leadership and culture bottlenecks in Insight 01, the pattern is consistent. The constraint on benefit realisation is not the system itself.

> *"Documentation for the system was released but nothing was ever embedded in the business, so we have an asset management system that doesn't work as intended."*
>
> MEMBER, ON PARTIAL BENEFITS

> *"The adoption of the strategy has seen people start to use the same language. We now have agreement that services require assets and that assets are there to provide services. This is a huge step forward."*
>
> MEMBER, ON THE VALUE OF A SHARED FRAMEWORK

The juxtaposition of this insight with the first is the report's central argument. The benefits of asset management are demonstrable and broadly experienced. The barrier is not evidence; it is the willingness of organisations to look at the evidence and act on it.

CHANGES SINCE 2024

Formal adoption of asset management systems rose over the two years, from 67% of organisations in 2024 to 76% in 2026, while the group with no system and no plans to implement one dropped from 11% to 9%. The achievements AM practitioners were proudest of also shifted in emphasis. In 2024, formal accreditation milestones, particularly ISO 55001 certification, featured prominently among standout achievements. By 2026, accreditation was named far less often, and survey respondents more frequently pointed to developing asset management plans and frameworks, and to client engagement and leadership work. The profession appears to be moving past first accreditation as the headline achievement and toward the harder, less visible work of embedding practice and winning organisational support.

WHAT THIS MEANS FOR THE PROFESSION

The profession holds, in its own collective experience, a powerful evidence base for the value of asset management. Systematically capturing and sharing these benefit stories, quantified wherever possible, would give practitioners exactly the proof they say they lack when making the case to leadership. The discipline's best advocacy material is its own track record.

MEMBER VOTES | SIGNIFICANT BY AGE

ASSET MANAGEMENT COUNCIL

03 People challenge: retaining experience, and clearing the path upward

28% of women name career progression and a sense of ceiling as a career challenge, against just 8% of men

The widest divergence in the survey appeared between men and women on the question of career challenges. More than a quarter of women (28%) named career progression and a sense of ceiling as a challenge in their careers, against just 8% of men. It is by far the most cited challenge among women in the sector, and among the least cited for men, a gap that points to a progression barrier sitting squarely within the cohort the profession will increasingly rely on.

A second people signal sits at the senior end. Loyalty to the profession remains striking, with 93% expecting to still be working in asset management in five years, but within that is a generational warning worth monitoring. Among those aged 51 and over, nearly one in five (18%) does not expect to remain, compared with effectively none of those aged 50 or under, a statistically significant difference. Because the over-fifties make up 37% of this senior group, the profession can expect a steady outflow of experience over the coming years.

A progression barrier is being reported within the cohort that should be stepping up, just as the experience above it prepares to move on. Knowledge transfer is not only about capturing what departing experts know, it is also about clearing the path for those who come next. A profession that constrains advancement below while losing judgement at the top is narrowing its own pipeline from both ends.

> *"Identifying my successor."*
>
> MEMBER, ON THEIR CURRENT CAREER CHALLENGE

AM Professionals acknowledge the retention challenge themselves. When asked about skill gaps and challenges in their own careers, respondents returned to succession, identifying and developing replacements, transferring decades of judgement, and holding on to the contextual knowledge that does not fit neatly into a procedure manual. This remains a window of opportunity rather than a wall. The most experienced AM professionals are still in their roles today, and the opportunity to capture and transfer what they know exists now.

Career challenges by organisation size. Beyond the gender gap, the career challenge data shows different pressures by organisation size. Those in large organisations were most likely to name asset management maturity and culture as a challenge at 28%, while those in small organisations were most likely to cite technology change and AI adoption pressure at 21%. Medium-organisation workers reported the fewest challenges overall, with about a quarter saying they faced no particular career challenges. The picture is one of distinct, scale-shaped career pressures rather than a single shared concern.

> *"There will be lots of matured workers retiring in the near future and I see a big gap in filling in for the leadership roles - their experiences will be lost."*
>
> MEMBER, ON THE BIGGEST SKILL GAP

CHANGES SINCE 2024

The career challenges shifted toward money. In 2024, career progression and a sense of ceiling, together with gaps in training and development, were the most prominent challenges. By 2026, budget and funding limits had become the single most cited career challenge, with progression and training still prominent behind it. The gender gap in career progression reported in this chapter is a 2026 finding that warrants attention in its own right. The overall movement is toward funding pressure pressing more directly on individual careers, not only on organisational programmes.

WHAT THIS MEANS FOR THE PROFESSION

The response to both findings is structural rather than reactive. Structured mentoring that pairs experienced practitioners with emerging professionals, capture of contextual knowledge before it leaves, and clearer, more transparent pathways into senior roles answer the retention and progression findings at once: the same pathways that transfer knowledge downward also open the way upward, and the 28% of women reporting a ceiling are a named audience for them. The retention figures rest on a small number of departing members, so the direction, not the precise percentage, is the reliable finding.

MEMBER VOTES

ASSET MANAGEMENT COUNCIL

04 The capability paradox: fundamentals first, but AI everywhere

26% name standards and processes as the organisation's biggest skill gap, yet only **5%** rank standards as the skill they least want to develop

Two findings about skills sit side by side and, together, form one of the report's most revealing tensions. When AM professionals look at their organisations and ask where the biggest asset management skill gap lies, the most common answers are not advanced technology. They are standards, asset management systems and processes, named by 26% of respondents, and fundamental asset management knowledge gaps, close behind at 25%. Strategic planning and lifecycle skills follow at 22%, then digital, data, and analytics at 19%, with leadership and senior buy-in, and asset management culture and change, each at 16%. Talent loss and workforce churn rank lowest at 6%, suggesting the immediate concern is not turnover but capability and cultural conditions within the current workforce.

But when the same respondents were asked which of their own skills they most want to improve in 2026, a revealing twist appeared. The most sought-after development area is strategic asset management and the strategic asset management plan, named by 26%, aligning with the top area of professional interest. Standards, by contrast, is the area least wanted to develop personally, named by just 5%, despite standards and processes being the single biggest skill gap they identify in their organisations. And when ranking the trends shaping the sector, digitisation and AI still towers over everything else, selected by 85%, more than thirty percentage points clear of the next trend, so the appetite for data and AI capability remains strong even where it is not the first development priority.

The profession, in other words, names standards, processes and fundamentals as its organisations' biggest gaps, yet standards are the very thing individuals least want to develop for themselves. Both judgements are understandable: standards can feel like something an organisation should provide rather than something a professional must self-teach. The risk is that the gap most often identified is the one least likely to be closed by individual effort, leaving the foundational discipline that makes any technology useful under-built.

> *"Getting the basics right to feed AI."*
>
> MEMBER, ON THEIR TOP PRIORITY FOR 2026

The full development picture, beyond the AI headline. Members listed the specific skills they most want to improve through a wide and revealing set of choices. Strategic asset management and the strategic asset management plan leads the field at 26%, followed by leadership and influence at 22%, digital tools and integration at 21%, and a broad tier covering change and stakeholder management, AI and machine learning, decision and investment-making, data analytics and predictive methods, and condition and reliability.

Standards and the 2024 updates sit at the very bottom at 5%. The long tail confirms that the profession is not chasing one capability. It is building in several directions at once, with strategic practice and data skills near the top of a deep stack of practical development priorities.

> *"Combining field experience with data management. We do not cross-pollinate well."*
>
> MEMBER, ON THE BIGGEST SKILL GAP
>
> *"Many know the buzzwords or confuse it with application."*
>
> MEMBER, ON THE FUNDAMENTALS SKILL GAP

Development priorities vary by career stage and organisation size. Within these aggregate figures, several segments stand out. Those aged 35 and under were notably more likely to name condition and reliability as a development priority (45%), pointing to the topics younger practitioners are working through as they build their technical foundation. Those aged 36 to 50 were more drawn to leadership and influence (37%), consistent with their position approaching senior roles. Those from small organisations were comparatively low on leadership development (7%) but high on data analytics (29%), reflecting the practical, technically focused pressures of working without the structural support of a large team. These differences should shape how the Council frames its development offerings: the appetite is broad, but the audience is not homogeneous.

The interest data reinforces the paradox. When asked separately about their areas of professional interest, Strategic Asset Management led at 85% - the highest rated topic in the survey by a wide margin. Operations and Maintenance (68%), Life Cycle and Health of Assets (66%), and Continuous Improvement (64%) made up the next tier, all firmly rooted in the fundamentals organisations need most. The frontier topics AM professionals say they personally want to develop are real, but they sit on top of a profession whose stated centre of gravity is, and remains, the discipline's strategic and operational core.

CHANGES SINCE 2024

This paradox was evident in 2024 as well. In both waves, strategic asset management and planning were the areas AM practitioners most wanted to build, while standards, despite ranking among the most cited organisational skill gaps, remained one of the least sought-after areas for personal development. The interest data shows where the energy is moving. Strategic Asset Management remained the clear leading area of professional interest in both years (89% in 2024, 85% in 2026), but the steepest growth was in digital; interest in Digital Asset Management rose from 43% to 51%, and in Continuous Improvement from 56% to 64%. Artificial intelligence appeared as an area of interest for the first time in 2026 and was immediately selected by 41% of respondents.

WHAT THIS MEANS FOR THE PROFESSION

The opportunity is to build data and AI capability on a foundation of asset management fundamentals rather than treating them as separate subjects. The members who articulate the tension most clearly see the answer too: the value of AI depends entirely on the maturity of the practice beneath it. Education and development that teach data and AI through the lens of sound asset management would meet both needs at once.

MEMBER VOTES | ORGANISATIONAL PRACTICE

ASSET MANAGEMENT COUNCIL

05 AI dominates the conversation but only partly the practice

85% rank digitisation and AI the top trend, but only **41%** of organisations actually claim to be using AI

No theme runs hotter through this survey than artificial intelligence. Digitisation and AI is the most cited trend shaping the sector by a wide margin (85%), and a recurring thread in the descriptions of both opportunity and anxiety. Yet actual adoption tells a more measured story. Among the three-quarters of those who answered the technology question, established tools lead: sensors for asset monitoring are used by 70% and predictive analytics by 55%. Artificial intelligence and machine learning sit lower, at 41%, with digital engineering and BIM at 33%.

The gap between conversation and practice is the honest state of AI in asset management today. The profession is enthusiastic, somewhat anxious, and only partway through adoption. AM professionals are alert to AI's promise for knowledge capture and predictive insights, and equally alert to its risks, particularly the danger of less-experienced practitioners trusting outputs they cannot yet evaluate.

The shape of the trend ranking. Outside of AI, the trends form a long and unusually even tail. Technological change was named by 52%, the energy transition by 50%, reduced resource availability by 48%, climate risk by 43%, cyber security by 41%, changing community expectations by 33%, business continuity by 29%, the role of government capital by 26% and demographic change by 22%. No clear second tier emerges. Outside AI, the profession does not converge on a single dominant concern but holds a broad, distributed set of them. Each member appears to assemble their own picture of the future from a common set of components.

Scale is the real divide on technological change. If trends do not split the profession into tribes, they do reveal one clear and statistically significant fault line: organisational size. 70% of members in small organisations named technological change as a top trend, against 54% in medium organisations and just 34% in large ones. The most plausible reading is that scale brings the resources to absorb technological change as routine. Large organisations have dedicated technology functions, change-management capability and the budget to adopt new tools in a planned way, so technological change registers as business as usual rather than a defining pressure. Smaller organisations, without that infrastructure, experience the same change as a more immediate and disruptive force.

ASSET MANAGEMENT COUNCIL

"Development of the use of AI in developing change. Understanding where the line is in AI assistance and human quality assurance."

MEMBER, ON THEIR TOP PRIORITY FOR 2026

"Advancing AI and machine-learning tools for data processing."

MEMBER, ON THEIR TOP PRIORITY

A quiet generational pattern within the technology adoption data. Sensors and predictive analytics dominate adoption across the board, but the design-linked digital tools split sharply by age. Building information modelling (BIM) and digital engineering are used by 42% of those aged 50 and under, against just 16% of those over 50. Drones for asset condition monitoring follow the same pattern, used by 52% under 50 and 29% over. AI and machine learning, by contrast, are used broadly across age groups. The implication is not that older AM professionals are slower to adopt, but that the specific tools that intersect with design and field workflows are landing more naturally with the cohort that will inherit them.

CHANGES SINCE 2024

Use of artificial intelligence and machine learning edged upward, from 35% of technology users in 2024 to 41% in 2026, the clearest sign that adoption is gradually catching up with the attention the topic attracts. Sensors and predictive analytics remained the most widely used technologies in both surveys, while newer tools such as blockchain stayed almost entirely absent from routine practice in both years. On the trend question, digitisation and AI was offered as a named option for the first time in 2026; in 2024, technological change led the list at 67%. With the new option in place, technological change moved to 52%, a shift that reflects AM practitioners now naming digital and AI change specifically rather than under a broader heading. And despite all this attention, AI remained a negligible source of professional knowledge in both waves, named by 2% in 2024 and 3% in 2026.

WHAT THIS MEANS FOR THE PROFESSION

Independence is the profession's advantage in navigating AI. AM professionals weighing the gap between its promise and its practical demands need impartial guidance on where these tools genuinely help, what foundations they require, and how to govern them safely. The national evidence is sobering: one industry study found that while 72% of asset-intensive organisations are exploring AI applications, 76% of those initiatives fail to achieve their expected returns, usually due to implementation, governance, and organisational issues rather than the models themselves. [1] Tied to trusted data and a clear business case, vendor-neutral judgement is what turns enthusiasm into return.

ORGANISATIONAL PRACTICE

ASSET MANAGEMENT COUNCIL

06 A quiet confidence problem sits beneath the data ambitions

37% are confident the information they receive about their organisation's assets is accurate

Beneath every ambition for analytics, AI and evidence-based decision-making lies a more basic question: do AM professionals trust the asset information they are given? For most, the answer is only partial. Just 37% say they are confident or very confident that the information they receive about their organisation's assets is accurate. The majority (53%) are only somewhat confident, and 10% are not confident at all.

This matters because data confidence is the foundation on which the entire analytical agenda rests. AM professionals themselves recognise it: improving data quality and the ability to turn data into decisions was the second most common priority for 2026. The appetite for better information is clearly present; the trust in current information is not yet there. Compounding this, fewer than half (46%) say their asset management data is integrated with their organisation's finance system, leaving a persistent disconnect between the operational and financial views of the asset base.

There is a clear lesson in sequencing in this finding. Organisations investing in sophisticated analytics or AI on top of data they do not trust are building on sand. The unglamorous work of data governance and quality is the precondition for everything AM professionals say they aspire to.

> *"There's a difference between data and insights. We collect a lot of data, but we're not always able to translate it into actionable intelligence."*
>
> MEMBER, ON THE DATA CHALLENGE

The confidence distribution, looked at more closely. Within the 37% who said they were confident or very confident, only 5% said they were very confident. The majority of confidence ratings sit at the somewhat confident level, and the strongest expressions of trust in asset information are rare. This is a particularly low rate of strong confidence for a profession whose entire output depends on the quality of the information it is given.

Smaller organisations report higher confidence. Counterintuitively, members in small organisations were the most likely to say they were very confident in their asset information, at 13% against 5% across the full sample. The most likely reading is not that small organisations have better data quality, but that they have simpler asset portfolios and more direct visibility of the underlying records. As complexity grows, so does the gap between what the data shows and what practitioners can verify for themselves. This is a useful caution against assuming that bigger systems and richer data automatically translate into higher trust.

> *"Implementing and sustaining the right level of data governance to manage risks and enable operational efficiency."*
>
> MEMBER, ON THEIR TOP PRIORITY FOR 2026

CHANGES SINCE 2024

Confidence in the accuracy of asset information held broadly steady across the two years, and if anything softened slightly: the share of those who claim to be confident or very confident in their asset data moved from 42% in 2024 to 37% in 2026, and the very confident share from 7% to 5%. Strong confidence was rare in both years. The data trust challenge is a persistent condition of the profession, not a recent development, which strengthens the case for treating data governance as a standing priority rather than a one-off fix.

WHAT THIS MEANS FOR THE PROFESSION

Data quality is as much a leadership responsibility as a technical one. Practical governance frameworks and standards that lift the trustworthiness of asset information are the most direct way to make the profession's analytics and AI ambitions achievable, and, as Insight 07 shows, the fragmented systems environment makes that governance work harder and more necessary.

ORGANISATIONAL PRACTICE

ASSET MANAGEMENT COUNCIL

07 A disconnect between assets and finance

46% fewer than half of members say their asset management data is integrated with their organisation's finance system

Fewer than half of members (46%) say their asset management data is integrated with their organisation's finance system. For most, the operational picture of the asset base and its financial picture are built on separate foundations, and they frequently do not meet. The result is another boundary where records drift apart, another version of the truth to reconcile, and weaker confidence in the numbers that underpin investment, budgeting and risk decisions. This disconnect is likely a driver of the lower data-confidence problems cited elsewhere by AM professionals.

The gap also follows a clear size pattern. The 46% figure across the full sample conceals a sharp difference when compared to medium-sized organisations: only 35% of those in small organisations report that their asset and finance data is integrated, against 62% in medium organisations, while larger organisations are closer to small ones at 40% integration. Larger and smaller organisations were both found to be less likely to integrate than the mid-sized cohort. Mid-sized organisations may have both the volume of activity to justify integration and the systems agility to deliver it; very small organisations may lack the business case, and very large ones the agility.

> *"Various systems that aren't integrated."*
>
> MEMBER, DESCRIBING THEIR SOFTWARE ENVIRONMENT

The systems landscape is crowded, not empty. Asked what AM software their organisations use, respondents named a strikingly wide range of options with no single dominant player. SAP leads at 26%, with IBM Maximo close behind at 23%, meaning even the two market leaders together serve less than half the profession. TechnologyOne accounts for 12%, around 13% use a mix of platforms with no single system carrying the load, and 10% use bespoke in-house builds. Beyond them stretches a long tail of generic CMMS tools, Excel and spreadsheets, Power BI, Ellipse, Dynamics 365, GIS platforms, Hexagon, Eptura and others, each in the single digits, with 7% using no purpose-built asset management software at all.

Organisations are not short of systems; they are managing a proliferation of them, often poorly connected. Several consultants reported working across whatever system each client happens to run, and those in contracted environments described a different application on almost every engagement. The problem is rarely an absence of tools — it is the number of them, and the boundaries between them.

> *"Each contract currently has their own version of an asset management application."*
>
> MEMBER, ON FRAGMENTATION IN CONTRACTED ENVIRONMENTS

> *"Integration of asset information in one application."*
>
> MEMBER, ON BOTH THEIR TOP PRIORITY AND BIGGEST BOTTLENECK

CHANGES SINCE 2024

Both halves of this picture held steady across two years. Asset-to-finance integration was at 53% in 2024 and 46% in 2026, a movement within the survey's margin of error, suggesting the disconnect between operational and financial data is a persistent feature, not a passing one. The software landscape was equally stable: SAP and IBM Maximo were the two leading platforms each time, with neither approaching dominance (SAP cited by 24% in 2024 and 26% in 2026; Maximo by 21% and 23% respectively), and a long tail of smaller and in-house systems persisted throughout. Fragmentation is a structural feature of the sector, not a transitional stage on the way to consolidation.

WHAT THIS MEANS FOR THE PROFESSION

The goal is not about a particular platform but a single, trusted view of assets. In a market this fragmented, that view will rarely come from consolidation onto a single product; it has to come from integration discipline: principles for connecting asset and finance data and for managing a multi-system environment as the normal condition rather than a temporary one. The Australian software landscape reflects the same reality, with global enterprise suites such as IBM Maximo, SAP and HxGN EAM sitting alongside public-sector platforms like TechnologyOne and Brightly Assetic, and no single product dominating. [2][3]

ORGANISATIONAL PRACTICE | SIGNIFICANT BY SIZE & SENIORITY

ASSET MANAGEMENT COUNCIL

08 On climate, the policy exists but the embedding is uneven

80 vs 48% of organisations have a climate policy, but small organisations lag far behind large ones on disclosure

At headline level, climate risk appears well established in the profession: 80% say their organisation has a climate risk policy, 71% report climate risk in their annual reports, and 77% of those in asset-owning organisations say their organisation plans to make assets more resilient to climate impacts. But two of the strongest subgroup differences in the entire survey complicate this reassuring picture.

The first is a size gap. Small organisations lag well behind larger ones: only 48% in small organisations say their organisation reports climate risk in its annual report, against 85% in large organisations, a statistically significant difference. The same gap appears in climate policy, where 63% of small organisations have one, compared with 89% of medium and 86% of large organisations.

The second is a seniority gap that points in a thought-provoking direction: the most experienced are the least likely to say their organisation reports climate risk (54% of advanced-career, against 86% of early-career), a significant difference that may reflect either the organisations they work in or a harder-earned scepticism about how much formal policy translates into action.

Plans to make assets more resilient to climatic impacts follow the same pattern: 59% in small, 81% in medium and 85% in large. Small organisations are not just behind on one climate indicator; they are behind on all of them. Across policy, disclosure and resilience planning, the same group lags consistently.

> *"Kind of in patches. There is a listing developed and funding advocated for, but it tends to be more recovery than planning."*
>
> MEMBER, ON THEIR ORGANISATION'S CLIMATE RESILIENCE

How AM professionals describe their climate resilience approach. Among those who provided detail on how their organisation is approaching climate resilience, the most common framings were risk management and standards (30%), comprehensive resilience planning (28%), specific hazards and measures (19%) and early-stage or partial planning (16%). Energy efficiency and transition work, and reporting and governance, each appeared in 14% of responses. Digitalisation and monitoring as a resilience approach was named by just 5%.

The pattern points to a profession that frames climate resilience primarily through risk and planning lenses, with technology-led adaptation responses still rare.

Disruption preparedness is moderate, not strong. Asked directly how well prepared their organisation is to handle disruption, 68% said somewhat prepared, 22% very well prepared, and 10% unprepared. This pattern, of moderate confidence rather than firm readiness, runs alongside the climate findings. AM professionals can point to policies, disclosures and plans, but the underlying sense of preparedness is qualified.

ESG reporting visibility is striking. When asked whether their organisation is a member of the UN Global Compact, reports under GRI or tracks the Sustainable Development Goals, two-thirds (66%) said they did not know. Only 8% said yes and 26% said no. This is one of the more pointed findings in the survey, and the most likely reading is not absence of organisational commitment but absence of visibility: ESG reporting is often handled by separate teams with limited interface to asset management practitioners. The people who manage the assets on which these sustainability commitments depend often cannot see the commitments themselves.

"Climate change and resilience will be actively included in the forthcoming asset management plan."

MEMBER, ON THEIR ORGANISATION'S CLIMATE APPROACH

"Timely management of climate risk."

MEMBER, NAMING IT AMONG THEIR TOP PRIORITIES FOR 2026

CHANGES SINCE 2024

Formal climate policy continued to spread, with the share of organisations with a climate risk policy rising from 70% in 2024 to 80% in 2026, the clearest gain among the climate measures. Disclosure of climate risk in annual reports was broadly stable, moving from 67% to 71%, and among asset-owning organisations, plans to make assets more resilient to climate impacts held steady at 75% and 77%. Preparedness for disruption was unchanged, with 69% describing their organisation as somewhat prepared in both waves. The one measure that moved sharply moved in the wrong direction: the share of those who did not know whether their organisation participates in formal sustainability reporting rose from 54% to 66%, a statistically significant increase. Rather than a retreat from sustainability commitments, this suggests ESG reporting is moving further out of the asset management practitioner's line of sight and into specialist teams. Policy adoption continued to outpace the harder work of disclosure and operational embedding.

WHAT THIS MEANS FOR THE PROFESSION

The widest gap is at the small-organisation end, where resources and specialist knowledge are thinnest. Practical, accessible climate-risk guidance scaled for smaller asset owners would address a measurable and significant divide. The national direction is unambiguous: National infrastructure bodies report that the physical impacts of climate change are already threatening transport agencies and will grow in frequency and intensity, while Infrastructure Australia advocates a whole-of-system, all-hazards approach to resilience. [4][5] The experience gap is also worth heeding as a caution against assuming that the presence of a policy means the presence of practice.

ORGANISATIONAL PRACTICE | SIGNIFICANT BY CAREER STAGE

ASSET MANAGEMENT COUNCIL

09 Formalisation is now the norm, and accreditation momentum has an owner

76% of organisations have implemented an asset management system, with 15% more planning to

The profession has crossed an important threshold: formal asset management is now standard practice. Three-quarters (76%) say their organisation has implemented an asset management system, and a further 15% plan to. Only 9% have no system and no plans for one. This is a profession that has, in large part, moved past the question of whether to manage assets systematically and on to the harder questions of how well, and to what end.

ISO 55001 accreditation tells a more divided story. 38% are in accredited organisations and 11% plan to seek accreditation, but half have no plans to pursue it. What makes this finding interesting is who carries the momentum. The appetite for accreditation is concentrated, to a statistically significant degree, in the mid-career cohort: those with nine to fifteen years in the field are markedly more likely than either their junior or their most senior colleagues to be in organisations planning to accredit. This is the cohort now moving into the decision-making roles where such commitments are made.

Accreditation is a means rather than an end. The value lies in the discipline it imposes and the maturity it signals, not in the certificate itself, and the profession's relative caution about pursuing it reflects a healthy focus on substance over symbol.

> *"It is a journey rather than an accreditation-focused exercise."*
>
> MEMBER, ON HOW ASSET MANAGEMENT SYSTEMS SHOULD BE APPROACHED

Accreditation is heavily concentrated in larger organisations. The 38% overall accreditation rate masks a sharp size divide: 58% of those in large organisations report ISO 55001 accreditation, well above the rates seen in medium (28%) and small (27%) organisations. For most small and medium organisations, formal accreditation is either out of reach or has not been deemed a priority relative to the practical work of implementing sound asset management practice. This makes the mid-career appetite for accreditation, identified above, particularly meaningful. The momentum sits with the cohort as they move into the roles that will decide whether smaller and mid-sized organisations pursue accreditation in the years ahead.

Future intent is the meaningful signal. The 11% who say their organisation plans to pursue accreditation is the forward-looking marker, and where the mid-career concentration shows up most clearly. This is also where the Council's standards and certification offering meets a receptive audience: those in the process of making their first significant organisational commitments in this space, looking for guidance on how to do so well.

> *"Continual improvement of our management systems to achieve true value."*
>
> MEMBER, ON THEIR TOP PRIORITY FOR 2026

CHANGES SINCE 2024

The formalisation threshold was crossed during this two-year window: implementation of asset management systems rose from 67% to 76%, and the group with no system and no plans dropped from 11% to 9%. ISO 55001 accreditation, by contrast, was broadly stable, with 34% of organisations accredited in 2024 and 38% in 2026, and around half having no plans to pursue it in either year (49% in 2024). Accreditation remained concentrated among the organisations already committed to it rather than broadening across the wider membership, which is what makes the mid-career appetite for accreditation, identified in this chapter, the signal worth watching.

WHAT THIS MEANS FOR THE PROFESSION

With systems now near-universal, the frontier is getting more value from the systems in place rather than the case for having one at all. The concentration of accreditation appetite among mid-career members marks this group as the natural audience for standards and certification, as they move into the roles that shape organisational commitments.

10 What's next: trusted knowledge in a new AI world

85 vs 3% name digitisation and AI as the top trend shaping the sector, yet just 3% name AI as a source of professional knowledge

If the earlier insights describe where the profession stands, this final one looks at how it will equip itself for what comes next. Asked where they turn for asset management knowledge, respondents named the Asset Management Council more often than any other institutional source, ahead of general internet search and the long tail of alternatives. Around it sits a broad and healthy mix: peers and colleagues, on-the-job experience, formal standards, and the wider global asset management community. The picture is of a profession that builds its craft through trusted, human and institutional channels rather than through any single source.

That preference sits in striking contrast with the trend data. The same respondents who rank digitisation and AI as the dominant force shaping the sector, named by 85% and more than thirty points clear of the next trend, all but ignore AI as a way of learning the discipline itself. Just 3% cite AI as a source of professional knowledge, barely moved from 2% in 2024. The profession expects AI to transform the assets it manages, but does not yet trust it to teach the craft of managing them.

Read forward, this is less a lag than a signal. As AI-generated content spreads through the general information environment, the value of knowledge with clear provenance rises rather than falls. Practitioners who must stand behind decisions about long-lived, safety-critical assets need to know where their knowledge comes from and who stands behind it. The survey suggests the profession has already priced this in: curiosity about AI is high, with artificial intelligence selected as an area of professional interest by 40% in its first year as an option, but the appetite is to learn about AI through trusted channels, not from it.

The development agenda points the same way. The skills members most want to build, strategic asset management first among them, are the judgement-heavy capabilities that determine whether technology investment pays off. The learning demand of the next few years is therefore not a choice between fundamentals and frontier but a sequencing of the two: AI and data capability taught through the lens of sound asset management practice, from sources the profession already trusts. [6][7][8]

ASSET MANAGEMENT COUNCIL

"I rely on AM Council publications, industry webinars, peer discussions, and standards like ISO 55000."

MEMBER, ON THEIR SOURCES OF AM KNOWLEDGE

"As AM becomes more technology-enabled and strategy-driven, the sector needs stronger capability in blending engineering, data, technology, and business decision-making."

MEMBER, ON THE CLOSING THE GAP BETWEEN TECH AND DECISION MAKING

CHANGES SINCE 2024

The AM Council remained the top knowledge source across the two waves. AM Council resources were the leading named institutional source of asset management knowledge in both years. AM practitioners continued to draw on a broad mix of sources alongside the Council: peers, on-the-job experience and the wider global asset management community, a pattern equally visible in 2024. AI, by contrast, remained a negligible source of professional knowledge in both waves, even as it dominated the trend rankings. Trusted institutional knowledge, in other words, is a stable asset of the profession, and the two years have done nothing to dislodge it.

WHAT THIS MEANS FOR THE PROFESSION

Much of the sector has largely completed its adoption phase: asset management systems, climate policies and emerging technologies are now in place across most organisations. The harder work of the next two years is conversion, turning systems into value, policies into practice and data into decisions. National research underlines the stakes, with one industry study finding that most AI initiatives in asset-intensive organisations fall short of expected returns, usually for organisational rather than technical reasons. [1] Conversion at that scale runs on judgement, and judgement is built through trusted knowledge. The channels the profession already relies on are the infrastructure of that next phase, and investing in them is how the sector makes good on everything the preceding nine insights describe.



Conclusion

CONCLUSION

The asset management profession in Australia enters 2026 as a committed, experienced and clear-eyed community that knows its own worth. Its members can point to real benefits where their discipline is properly resourced, and they hold a confident view of where the sector is heading. The obstacles they describe are not, for the most part, obstacles of knowledge or capability. They are obstacles of permission, recognition and organisational will.

That diagnosis is, ultimately, an optimistic one. A profession that already knows what good looks like does not need to be taught, it just needs to be backed.

The workforce and progression challenges, the capability paradox, the data-confidence gap and the uneven embedding of climate resilience are all real, but each is addressable, and members themselves have pointed the way toward the answers.

The direction of the next phase is also clear. The sector's adoption work is largely done; the work ahead is conversion, and it will be won by the organisations that solve their people, data and governance challenges first, drawing on the trusted knowledge channels the profession has built.

The profession surveyed here already knows what good looks like. This report is offered as a record of that collective judgement, and as a benchmark against which the sector's progress can be measured in the years to come.







Appendix

APPENDIX: NOTES ON DATA AND METHOD

Detailed data tables, full theme frequency tables, the respondent-level coding of open-ended responses, and the complete results of all subgroup significance tests are provided in the accompanying analysis workbooks. The following notes summarise the conventions used throughout this report.

Base sizes

All percentages are calculated on the number of respondents who answered the relevant question. Because not every respondent answered every question, bases vary and are stated alongside each finding. The validated total sample is 11.

Significance

Subgroup differences were tested using chi-square and Fisher's exact tests, with rank-based tests applied to ordered scales. Only differences significant at the conventional 0.05 threshold are described as significant. The significant differences identified cluster around organisation size and seniority.

Cautious language

Given the modest sample size, suggestive or directional differences are described with deliberately cautious language and are not presented as firm conclusions. Findings based on small numbers, such as the small group of renot expecting to remain in the profession, are flagged so that direction, rather than precise magnitude, is emphasised.

Multi-response questions

Several questions allowed respondents to select or mention more than one item, including areas of interest, trends, software, technologies and the thematically coded open-ended questions. For these, percentages refer to the proportion of respondents mentioning each item and therefore sum to more than 100%.

Thematic coding

Open-ended responses were read individually and assigned to one or two themes drawn from the data. The full respondent-level coding is retained and available for review. Coding was conducted by a single analyst; a second independent coder is recommended for any published edition.

EXTERNAL SOURCES

The following publicly available sources are cited in this report where the survey's findings are set against the wider Australian asset management landscape. Bracketed numbers in the insight chapters correspond to the entries below. These external findings are drawn from a desk scan of public material and are attributed to their original publishers; readers are encouraged to consult the sources directly.

[1] **MAINSTREAM (via Certus Solutions).** The State of Asset Management in Australia & New Zealand 2025. https://www.certussolutions.com/hubfs/The%20State%20of%20Asset%20Management%20in%20AU%20%26%20NZ%202025%20Report.pdf

[2] **Gartner Peer Insights.** Enterprise Asset Management Software Reviews 2026. https://www.gartner.com/reviews/market/enterprise-asset-management-software

[3] **TechnologyOne.** Asset and Project Intensive. https://www.technology1.co.nz/industries/asset-and-project-intensive

[4] **Austroads.** AP-R716-24, Climate Change and the Road Network. https://austroads.gov.au/publications/asset-management/ap-r716-24

[5] **Infrastructure Australia.** Decarbonising Infrastructure. https://www.infrastructureaustralia.gov.au/ipl/delivering-net-zero-and-clean-energy-economy/decarbonising-infrastructure

[6] **International Organization for Standardization.** ISO 55000:2024 and ISO 55001:2024, Asset Management. https://www.iso.org/standard/83053.html

[7] **Asset Management Council.** The Asset Journal. https://www.amcouncil.com.au/the-asset-journal/

[8] **Institute of Public Works Engineering Australasia (IPWEA).** NAMS+. https://www.ipwea.org/resourcesnew/namsplus

[9] **CSIRO.** Robots Take the Heat for Humans Maintaining Our Biggest Solar Farms (2026). https://www.csiro.au/en/news/All/News/2026/March/Robot-Solar-Farm



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