Asset Management Engineering Consultation

APRIL 2025

REGISTRATION AUTHORITY
FOR CHARTERED PROFESSIONAL ENGINEERS

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Introduction

Purpose

Engineering New Zealand, as the Registration Authority for Chartered Professional Engineers, is considering a proposal to establish Asset Management Engineering as a distinct practice field within the CPEng framework.

Āpōpō – Infrastructure Asset Management Professionals Inc. is the leading association for asset management professionals in Aotearoa New Zealand. Engineering New Zealand works closely with Āpōpō to support dual Chartered members in maintaining professionalism in both asset management and asset management engineering. Āpōpō accredits Asset Management Chartered Professionals (AMCP) to globally aligned standards. Together, Engineering New Zealand and Āpōpō have developed this proposal to formally recognise Asset Management Engineering within the CPEng framework.

We now seek stakeholder feedback to assess the need for this new field. This consultation provides an opportunity to consider the potential benefits, risks, and impacts before the CPEng Board makes a final decision.

This document outlines the proposed practice field, the rationale for its inclusion, and initial thinking on performance indicators that may be used in assessments.

Current practice fields

An engineering practice field is a broadly defined area of professional engineering activity that represents an area of practice within the broader engineering profession and aligns with international categorisation.

Currently, Engineering New Zealand recognises 22 practice fields – definitions of these are available on our website. Engineers applying for registration as Chartered Professional Engineers (CPEng) select the practice field(s) that best aligns with their area of engineering practice. These are displayed on the CPEng Register, to help the public find a registered engineer.

Feedback invited for new Asset Management Engineering field

We invite your feedback on whether you support the introduction of a new Asset Management Engineering practice field, and to provide feedback on any benefits, risks, and impacts that the CPEng Board should consider before a final decision is made. You can provide feedback by completing the feedback survey by 3 May 2025.

Asset Management Engineering

Definition

Asset Management involves evaluating multiple complex factors to predict, assess and manage asset condition, performance, maintenance, and renewals, with a view to balancing cost, performance and risk. As it encompasses cross-disciplinary expertise and deals with complex engineering issues, there is growing recognition of its potential to be established as a distinct practice field under the CPEng framework. Asset Management Engineering differs from general Asset Management, as it requires a deeper technical understanding of complexity and risk, engineering materials, structural performance, and systems behaviour over time.

Rationale

Asset Management often diverges from traditional engineering disciplines such as civil, structural, and mechanical engineering, which primarily focus on the design and construction of new assets. The field is sizable and plays a critical role in ensuring sustainable infrastructure investment, renewal, and maintenance.

As New Zealand faces the dual challenges of aging infrastructure and increasing climate resilience demands, Asset Management has emerged as a critical discipline to ensure the sustainability, reliability, and performance of essential assets.

Minster of Infrastructure Chris Bishop 2 December 2024:

> ***"My two remaining priorities: improving education and health infrastructure; and strengthening asset management and resilience will be key focus areas for me in 2025."***

Te Waihanga Chief Executive Geoff Cooper interpreting the Minister's comments on 12 December 2024:

> ***"2025 is the year of Asset Management"***

Future-proofing infrastructure

- **Aging Assets:** With much of New Zealand's infrastructure aging as renewals fall behind, the need for systematic maintenance, renewal, and optimisation has never been greater. Asset Management provides the tools and methodologies to secure asset lifespans and prioritise interventions.
- **Climate Change and Resilience:** As the impacts of climate change intensify, effective Asset Management enables organisations to assess vulnerabilities, plan for extreme events, and implement adaptive strategies to safeguard infrastructure.
- **Economic Efficiency:** Asset Management supports evidence-based decision-making, ensuring limited resources are directed to where they provide the greatest long-term benefit.

A growing need for practitioners

- With an estimated 2,000+ practitioners already working in New Zealand, the field continues to expand as organisations across the public and private sectors recognise its value. This growth underscores the importance of developing clear pathways for professional accreditation, like CPEng, to attract and retain top talent.
- Asset Management plays a pivotal role across industries, including transportation, water, energy, and telecommunications, ensuring New Zealand's critical infrastructure supports economic growth and community well-being.

The case for recognising asset management as a practice field in the CPEng framework

Recognising Asset Management as a distinct practice field acknowledges the critical role engineers play in managing New Zealand's infrastructure and prepares the profession for future challenges. This will provide practitioners with:

- Professional recognition for their expertise and contributions.
- Clear career pathways for engineers specialising in Asset Management.
- Enhanced collaboration with other engineering disciplines to address New Zealand's infrastructure needs comprehensively.

By formalising Asset Management Engineering within the CPEng framework, we not only strengthen the profession but also contribute to ensuring that New Zealand's infrastructure remains resilient, efficient, and future-ready.

Is Asset Management engineering?

Asset Management is fundamentally rooted in engineering principles.

1. **Technical Depth and Complexity**

- Asset Management Engineering requires a deep understanding of engineering materials, structural performance, and systems behaviour over time. Practitioners must analyse data to predict how assets will respond to environmental conditions, usage patterns, and maintenance activities.
- Engineering knowledge is essential for developing innovative solutions to optimize asset performance and reliability, balancing technical feasibility with cost-effectiveness, and compliance in an ever-evolving regulatory environment.

2. **Multidisciplinary Integration**

- While Asset Management Engineering intersects with management and financial planning, its core is grounded in applying engineering methodologies to solve complex problems.
- Practitioners routinely engage with fields such as structural, civil, mechanical, water, and electrical engineering to assess and implement interventions that ensure assets remain safe and functional throughout their lifecycle.

3. **Real-World Impact**

- The decisions made by Asset Management Engineers directly influence public safety, environmental sustainability, infrastructure resilience, and economic performance. This aligns with the ethical and professional responsibilities of engineers to protect and serve society.

Do you support the Registration Authority introducing a new practice field for Asset Management Engineering? Why/Why not?

Key performance indicators

Key indicators that Assessors may evaluate

Current thinking in terms of integration of an Asset Management Engineering field within the CPEng framework is detailed below, with performance indicators for each competency group provided:

Engineering Knowledge
CPEng competence standard description a. Comprehend, and apply their knowledge of accepted principles underpinning: i. widely applied good practice for professional engineering; and ii. good practice for professional engineering that's specific to New Zealand. b. Maintain the currency of their professional engineering knowledge and skills.
Performance indicators for engineering knowledge in Asset Management Engineering • Applies knowledge of industry or professional technical standards and compliance standards to asset management portfolios. • Considers technical, behavioural and work values within an asset management context. • Integrates their understanding of te ao Māori into practical asset management decisions. • Commits and agrees to annual CPD requirements for maintaining CPEng registration.

Managing Engineering Work

CPEng competence standard criteria

- Exercise sound professional engineering judgement.
- Be responsible for making decisions on part or all of one or more complex engineering activities.
- Manage part or all of one or more complex engineering activities in accordance with good engineering management practice.
- Identify, assess, and manage engineering risk.

Performance indicators for managing engineering work in Asset Management Engineering

- Applies knowledge of capital investment and maintenance management decision-making activities, including but not limited to: business case development, prioritisation, optioneering, and lifecycle analysis and operations, optimised decision-making, financial analysis and forecasting expenditure based on asset performance and lifecycle costs.
- Applies knowledge of the asset management system and elements within an asset management system, including but not limited to: management processes, design frameworks, human and other resources, procurement activities, organisational service levels and objectives.
- Applies knowledge of the asset management activities usually assessed and/or evaluated that contribute to achieving Asset Management objectives and organisational objectives to meet stakeholder needs and expectations. Describes quantitative and qualitative metrics for monitoring asset health, performance of the Asset Management system, and the effectiveness of Asset Management overall.
- Applies knowledge of typical risk management processes within operational, tactical and strategic asset management activities and is able to describe a basic risk framework including how to identify, quantify and mitigate risks within an asset management context and can include examples of operational, tactical and strategic level risks.

Professional Acumen

CPEng competence standard description

- Conduct their professional engineering activities to an ethical standard at least equivalent to the Code of Ethical Conduct.
- Recognise the reasonably foreseeable social, cultural, and environmental effects of professional engineering activities generally.
- Communicate clearly to other engineers and others they are likely to deal with in the course of their professional engineering activities.

Performance indicators for professional acumen in Asset Management Engineering

- Agrees to the CPEng Code of Ethical Conduct and understands and applies in Asset Management engineering activities.
- Applies knowledge of the types of stakeholder management activities an organisation may use within an asset management context, including but not limited to: identification of stakeholders, communications and engagement planning, how stakeholder feedback is collected and used, differing consultation methods, ongoing management of stakeholders within an asset management context.

Developing Technical Solutions

CPEng competence standard description

- Define, investigate, and analyse complex engineering problems in accordance with good practice for professional engineering.
- Design or develop solutions to complex engineering problems in accordance with good practice for professional engineering.

Performance indicators for developing technical solutions in Asset Management Engineering

Applies knowledge of engineering operations management, as part of asset management lifecycle activities. Addresses factors usually contained within an operations strategy or plan including but not limited to: asset design, maintenance, operational, reliability, safety, environmental and legal parameters and how operational risk will be managed.

Design, develop or review an asset management system for an organisation, including but not limited to the elements of people, processes, policy, strategy, asset management planning, improvement planning and asset management information systems.

Do you agree with the proposed performance indicators for assessing the new field?

Do you have any feedback on the proposed performance indicators for the new field?

If a new field for Asset Management Engineering was made available, would you apply for CPEng registration in this field?

Areas an Asset Management Engineer might work in

Asset Management Engineers operate across a diverse range of engineering domains and industries, where their expertise ensures infrastructure and assets are maintained efficiently and sustainably. The key domains include:

1. **Infrastructure and Transportation**
- Roading, bridges, and tunnels
- Rail networks and public transport systems
- Airports and aviation infrastructure
- Ports and maritime facilities

2. **Water and Environmental Management**
- Three Waters (drinking water, wastewater, and stormwater)
- Dams and reservoirs
- Irrigation and flood protection systems
- Environmental sustainability projects

3. **Energy and Utilities**
- Power generation (thermal, hydro, wind, solar)
- Transmission and distribution networks
- Substations and power plant management
- Gas and fuel infrastructure

4. **Buildings and Facilities Management**

- Commercial and residential property portfolios
- Hospitals and healthcare facilities
- Educational institutions (schools and universities)
- Government and civic buildings

5. **Manufacturing and Industrial Assets**

- Production plants and processing facilities
- Heavy machinery maintenance and lifecycle management
- Logistics and warehousing assets

6. **Local and Central Government**

- Policy development and regulation of asset management including managing compliance within this framework
- Strategic planning for national infrastructure projects
- Public asset maintenance programs

7. **Technology and Digital Infrastructure**

- Asset information systems and digital twin technologies
- Smart cities and IoT-based infrastructure monitoring
- Data analytics for predictive asset maintenance

Are there any impacts on industry that the Registration Authority needs to consider before establishing a new Asset Management Engineering field?

Are there any risks the Registration Authority needs to consider before establishing a new Asset Management Engineering field?

Impact on CPEng registrants

If you're already registered as a CPEng and would like to register in Asset Management Engineering (should the decision be made to establish this new practice field option), you have the option to wait until your next reassessment to add this, or apply via a mutual recognition assessment application and complete a form which will require you to provide self-assessment and evidence statements for competency group 1 (Engineering Knowledge) and competency group 4 (Developing Technical Solutions).

If you are registered as a CPEng and have also been assessed and accredited with Āpōpō as an Asset Management Chartered Professional (AMCP), you will be able to add the Asset Management Engineering practice field with no further assessment – noting that you will need to ensure you meet the CPD requirements for an additional practice field (additional 15 hours technical CPD related to Asset Management Engineering per year).

Are there any other impacts on CPEng registrants we need to consider?

Conclusion and next steps

In this document we have proposed to introduce a new CPEng practice field for Asset Management Engineering, which would allow engineers applying for CPEng for the first time, or applying for continued CPEng registration, to apply for CPEng registration in an Asset Management Engineering field.

Thank you for taking the time to review this proposal. We welcome your feedback by 3 May 2025. You can complete our **online survey** or email your feedback to **registrar@engineeringnz.org**

After we receive feedback on this consultation document, we will consolidate feedback for the CPEng Board's review and decision in mid-2025. If approved, we will announce the new field, publish the new field description on the Registration Authority's website, assess and register the first engineers in the new field and train them as the practice area assessors who will assess applications in the new field, and make the new field available to applicants.