

An aerial photograph of a modern urban plaza. The plaza features a large, lush green tree in the center, a wooden deck area, and a water feature with a dark, irregular shape. People are walking around the plaza, and there are some benches and planters. The background shows a paved area with a bicycle lane and a road.

ĀPŌPŌ®

# Competency Framework

for Asset Managers

Version 3.0

# Āpōpō Competency Framework

The Āpōpō Competency Framework mirrors the GFMAM Asset Management Landscape v3. There are eight subject groups and 46 subjects in total. It weaves together community competencies and technical competencies to form a framework that reflects asset management in Aotearoa New Zealand.

The Framework makes references to the [Āpōpō Guide](#) and the [Āpōpō digital badge programme](#).

Subject Group	Subject
<b>0. Pou Herenga</b> <i>The subjects relating to undertaking infrastructure asset management in the unique cultural context of Aotearoa New Zealand.</i>	<a href="#">0.1. Whakapapa</a>
	<a href="#">0.2. Manaakitanga</a>
	<a href="#">0.3. Kaitiakitanga</a>
	<a href="#">0.4. Whanaungatanga</a>
	<a href="#">0.5. Tikanga</a>
	<a href="#">0.6. Rangatiratanga</a>
<b>1. Context and Stakeholders</b> <i>The organisation context and stakeholder subjects. These set the boundary conditions that inform the approach to AM within an organisation.</i>	<a href="#">1.1. Organisational Purpose and Context</a>
	<a href="#">1.2. Stakeholder Management</a>
	<a href="#">1.3. Asset Costing and Valuation</a>
<b>2. Governance</b> <i>The subjects relating to Governance and management of AM within an organisation. This includes the AM system approach taken by the organisation.</i>	<a href="#">2.1. Asset Management Policy</a>
	<a href="#">2.2. Asset Management System</a>
	<a href="#">2.3. Asset Management Assurance and Audit</a>
	<a href="#">2.4. Technical Standards and Legislation</a>
	<a href="#">2.5. Management of Change</a>
	<a href="#">2.6. Risk</a>
<b>3. Asset Management Planning</b> <i>The subjects relating to the AM planning and approach taken by the organisation.</i>	<a href="#">3.1. Asset Management Strategy and Objectives</a>
	<a href="#">3.2. Demand Analysis</a>
	<a href="#">3.3. Sustainable Development</a>
	<a href="#">3.4. Planning</a>
	<a href="#">3.5. Decision-Making</a>
	<a href="#">3.6. Lifecycle Value Realisation</a>
	<a href="#">3.7. Resourcing Strategy and Management</a>
	<a href="#">3.8. Shutdown and Outage Strategy and Planning</a>
	<a href="#">3.9. Contingency Planning and Resilience Analysis</a>
<b>4. Leadership and People</b> <i>The people-related subjects, including AM leadership, resourcing, and competence, that inform an organisation's culture.</i>	<a href="#">4.1. Asset Management Leadership</a>
	<a href="#">4.2. Organisational Arrangements</a>
	<a href="#">4.3. Organisational Culture</a>
	<a href="#">4.4. Competence Management</a>
	<a href="#">4.5. Organisational Change Management</a>
	<a href="#">4.6. Knowledge Management</a>
<b>5. Data and Information</b> <i>The information-related subjects applicable to AM. This includes how information is managed as an asset and the importance to AM decision-making.</i>	<a href="#">5.1. Asset Management Data and Information Strategy</a>
	<a href="#">5.2. Asset Management Data and Information Standards</a>
	<a href="#">5.3. Asset Management Data and Information Management</a>
	<a href="#">5.4. Asset Management Data and Information Systems</a>
	<a href="#">5.5. Configuration Management</a>
<b>6. Delivery</b> <i>The subjects relating to lifecycle delivery of AM.</i>	<a href="#">6.1. Systems Engineering</a>
	<a href="#">6.2. Asset Creation and Acquisition</a>
	<a href="#">6.3. Integrated Reliability</a>

	<a href="#">6.4. Asset Operation</a>
	<a href="#">6.5. Maintenance Delivery</a>
	<a href="#">6.6. Incident Management and Response</a>
	<a href="#">6.7. Asset Repurposing or Disposal</a>
	<a href="#">6.8. Supply Chain Management</a>
<b>7. Value Realisation</b> <i>The subjects relating to how value is created through doing AM. Subjects related to measuring outcomes and continual improvement, not just the performance of assets.</i>	<a href="#">7.1. Outcomes and Impacts</a>
	<a href="#">7.2. Monitoring</a>
	<a href="#">7.3. Continuous Improvement</a>

## 0.1. Whakapapa

### Definition

Whakapapa refers to genealogy and the interconnectedness of all living things. It recognises the importance of tracing lineage, understanding ancestral connections, and acknowledging the intergenerational relationships that exist between people, the natural world, and the spiritual realm.

### Context

Whakapapa highlights the interconnectedness of assets and their dependencies on other elements within the wider system. Asset managers can apply the principle of whakapapa to recognise the relationships between assets, their components, and the broader ecosystem in which they operate. This understanding can help identify interdependencies, potential risks, and opportunities for collaboration and integrated decision-making.

Whakapapa acknowledges the concept of continuity and the cyclical nature of life. In asset management, this principle can be applied by considering the lifecycle of assets from acquisition to disposal. Understanding the lifecycle perspective allows asset managers to make informed decisions regarding maintenance, renewal, and replacement activities while considering the long-term sustainability and performance of the assets.

Whakapapa extends beyond human genealogy to encompass the connections between people, culture, and the natural environment. Asset managers can apply this principle by recognising and respecting the cultural significance of assets, including their historical and heritage value. Incorporating whakapapa in asset management practices can involve consultation with Māori communities, acknowledging the cultural values attached to assets, and considering their role in preserving cultural heritage.

Whakapapa encourages holistic thinking and decision-making that considers the broader impacts and implications of asset management activities. Asset managers can apply this principle by considering social, environmental, and cultural factors alongside economic considerations. By adopting a holistic approach, asset managers can make decisions that are aligned with the principles of sustainability, well-being, and the long-term interests of all stakeholders.

Whakapapa emphasises the importance of building meaningful relationships and working collaboratively with others. Asset managers can apply this principle by engaging with Māori communities, iwi, and hapū throughout the asset management lifecycle. This collaborative approach fosters mutual understanding, shared decision-making, and the integration of Māori values, knowledge, and aspirations into asset management practices.

### Artefacts

- Cultural Impact Assessments / Tangata Whenua Effects Assessments
- Records of consultations with cultural experts
- Reports on ecosystem services evaluations, documentation of strategies to enhance positive impacts
- Documentation showing inclusive participation, feedback from stakeholders on decision outcomes
- Resilience plans or risk assessments, evidence of adaptation strategies

- Preservation plans, conservation reports, heritage impact assessments
- Records of consultations with spiritual leaders, documentation of site-specific management practices
- Documentation of the stories, legends, and cultural significance associated with assets, e.g.:
  - Examples of sharing narratives within the organisation and with stakeholders
  - Asset histories blending factual data with cultural context
  - Oral histories or written accounts from community members
- Documented legacy statements, succession plans, educational initiatives.

### **Related Subjects**

- 0.2. Manaakitanga
- 0.3. Kaitiakitanga
- 0.4. Whanaungatanga
- 3.6. Lifecycle Value Realisation
- 4.3. Organisational Culture

### **Āpōpō Learning**

- AO 101 – Introduction to Te Ao Māori
- AM 101 – Introduction to Asset Management
- AM 202 – Understanding Requirements
- AM 203 – Lifecycle Planning
- AM 302 – Organisational Strategy
- AM 304 – Asset Management Strategy
- AM 305 – Planning and Decision-Making
- AM 430 – Effective Asset Management Plans
- AM 432 – Making Effective Infrastructure Decisions

### **Āpōpō Guide**

- Fundamental Principles > Te Ao Māori Principles > Whakapapa
- 1.4. Whakapapa: The Essence of Connection
- 3.4.1. Te Ao Māori Perspectives on Planning
- 7.2.1. Whakarite: Assessing Performance through a Lens of Te Ao Māori
- 7.3.1. Māori Perspectives on Continuous Improvement

### **Competencies**

Entry-Level:

- Describe the importance of recognising the cultural, spiritual, and historical value of assets.

Learning:

- Describe the relationships between assets, their components, and the broader ecosystem in which they operate.

To be declared Competent or Higher in this subject you must:

- Demonstrate holistic application of the interdependence of assets in infrastructure asset management decisions.

*Narrative includes details of how the asset manager integrates their understanding of whakapapa into practical asset management decisions. They recognise that assets are not isolated entities but are part of a larger whole. This involves considering cultural, ecological, and social aspects when making infrastructure-related choices.*

OR

- Provide evidence of integrating the cultural, spiritual, and historical value of assets into infrastructure asset management planning.

*Evidence should show a deep understanding of these concepts within the context of asset management.*

*Supporting narrative describes how the asset manager seamlessly weaves cultural, spiritual, and historical dimensions into asset management planning. They recognise that assets hold intrinsic value beyond their physical attributes.*

## 0.2. Manaakitanga

### Definition

Manaakitanga embodies the concept of hospitality, respect, and care for others. It emphasises the importance of nurturing positive relationships, showing kindness, uplifting and upholding the mana of others, and demonstrating hospitality towards individuals, communities, and the environment.

### Context

Manaakitanga emphasises the importance of building positive and respectful relationships with stakeholders. Asset managers can apply this principle by actively engaging with asset owners, users, communities, and other relevant parties. By demonstrating manaakitanga, asset managers create an environment of trust and collaboration, which leads to more effective decision-making and the achievement of shared goals.

Manaakitanga recognises and respects diverse cultures and values. In asset management, this principle can be applied by acknowledging and incorporating cultural considerations into decision-making processes. Asset managers can work closely with Māori communities and stakeholders to understand their cultural perspectives, values, and aspirations related to assets. This collaborative approach ensures that asset management practices are culturally sensitive and aligned with the principles of manaakitanga.

Manaakitanga emphasises caring for the well-being and welfare of others. Asset managers can apply this principle by considering the social impacts of asset management decisions. This includes ensuring that assets contribute positively to the community, promoting inclusivity, and addressing social equity considerations. By prioritising social responsibility, asset managers can create assets and infrastructure that enhance the quality of life for all stakeholders.

Manaakitanga extends to the environment, emphasising the responsibility to care for and protect the natural world. In asset management, this principle can be applied by integrating sustainable and environmentally-friendly practices. Asset managers can consider the ecological impacts of asset decisions, adopt sustainable design and construction practices, and prioritise environmental preservation and regeneration.

Manaakitanga includes the responsibility to ensure the safety and well-being of others. In asset management, this principle can be applied by prioritising safety in the design, operation, and maintenance of assets. Asset managers can implement robust safety protocols, conduct regular inspections, and address any potential risks to the well-being of users and communities.

### Artefacts

- Reports on equity assessments, including data on specific equity indicators
- Documentation of actions taken to address identified disparities
- Reports on community benefits achieved (e.g., improved public spaces, enhanced services)
- Documentation of community feedback or testimonials
- Records of feedback received during public forums
- Evidence of adjustments made based on stakeholder input
- Documentation of due diligence on investment options

- Reports on the impact of ethical investment choices
- Documentation of approaches used to share power with stakeholder groups and evidence of how this is demonstrated through continued interactions
- Records of collaborative initiatives (e.g., meeting minutes, project teams)
- Feedback from team members on the effectiveness of collaboration
- Documentation of an ethical dilemma and its resolution
- Feedback from colleagues on your leadership style
- Stakeholder surveys measuring trust levels
- Case study of a conflict with a stakeholder and its successful resolution
- Documentation of collaborative decision-making forums
- Examples of decisions made collaboratively.

### **Related Subjects**

- 0.1. Whakapapa
- 0.4. Whanaungatanga
- 3.3. Sustainable Development
- 3.5. Decision-Making
- 4.1. Asset Management Leadership

### **Āpōpō Learning**

- AM 101 – Introduction to Asset Management
- AM 201 – Telling the Story of Asset Management
- AM 202 – Understanding Requirements
- AM 302 – Organisational Strategy
- AM 305 – Planning and Decision-Making
- CW 101 – Introduction to Collaboration

### **Āpōpō Guide**

- Fundamental Principles > Te Ao Māori Principles > Manaakitanga
- 1.1.2. Understanding Stakeholder Requirements
- 1.5. Engaging with Mana Whenua: Cultural Protocols and Practices
- 4.2.4. Accountability, Communication, and Collaboration
- 3.3.2. Quadruple Bottom Line
- 3.3.3. Applying Social Licence in Asset Management
- 6.3.2. Health and Safety
- 6.12.1. Social Procurement
- 7.3.6.1. Innovation, Collaboration and Adaptive Management

### **Competencies**

Entry-Level:

- Understands the responsibility to ensure the safety and well-being of others.

Learning:

- Identifies the perspectives, values and aspirations of communities and stakeholders, as they relate to infrastructure assets.

To be declared Competent or Higher in this subject you must:

- Demonstrate application of social responsibility in asset management decision-making.

*Narrative demonstrates the integration of social considerations into decision-making. The asset manager weighs the impact of asset choices on communities, equity, and social justice. This goes beyond mere compliance; it reflects a commitment to ethical decision-making that benefits society as a whole. The asset manager actively seeks to promote positive outcomes.*

OR

- Provide evidence of creating an enduring culture of trust and collaboration within asset management practices.

*Evidence should show how the asset manager fosters trust, transparency, and collaboration. They build strong and long-lasting relationships with stakeholders and promote collective decision-making. This competency extends beyond individual actions; it involves shaping organisational culture.*

*Supporting narrative describes how the asset manager models ethical leadership, encourages open communication, and champions a shared vision for sustainable asset management.*

*Evidence should demonstrate practical application and understanding of these concepts within the context of asset management.*

## 0.3. Kaitiakitanga

### Definition

Kaitiakitanga represents the role of guardianship and stewardship. It recognises the responsibility of people to protect, care for, and sustainably manage the environment, including natural resources, land, water, and cultural heritage, for future generations.

### Context

Kaitiakitanga emphasises the sustainable use and management of assets. Asset managers can apply this principle by adopting practices that minimise negative impacts on the environment, promote resource efficiency, and ensure the long-term viability of assets. This includes implementing sustainable design and construction practices, optimising asset performance to reduce energy consumption and waste, and integrating circular economy principles into asset lifecycle management.

Kaitiakitanga recognises the importance of preserving cultural heritage and values. In asset management, this principle can be applied by considering the cultural significance of assets and incorporating cultural heritage preservation practices. Asset managers can engage with Māori communities, iwi, and hapū to understand the cultural values associated with assets and implement strategies to protect and promote these values. This may include the use of traditional materials, design elements, or cultural protocols in asset management processes.

Kaitiakitanga extends to the protection and restoration of the natural environment. Asset managers can apply this principle by incorporating ecological considerations into asset management practices. This may involve implementing sustainable land management practices, preserving biodiversity, restoring ecosystems, and mitigating the environmental impacts of asset operations. By adopting kaitiakitanga, asset managers actively contribute to the well-being of ecosystems and support the health and vitality of natural resources.

Kaitiakitanga emphasises the importance of collaboration and shared decision-making. In asset management, this principle can be applied by actively engaging with stakeholders, including Māori communities, in decision-making processes. Asset managers can seek input from iwi, hapū, and relevant Māori organisations to ensure that asset management practices align with cultural values, aspirations, and knowledge systems. This collaborative approach enhances the inclusiveness and effectiveness of asset management while fostering a sense of ownership and shared responsibility and reciprocity.

Kaitiakitanga involves considering the long-term consequences of decisions and actions for generations to come. In asset management, this principle can be applied by adopting a proactive and future-oriented mindset. Asset managers can consider the resilience and adaptability of assets to future challenges, such as climate change impacts or technological advancements. By prioritising long-term sustainability and resilience, asset managers fulfil their role as kaitiaki by ensuring the assets entrusted to them can serve future generations effectively.

### Artefacts

- Reports on environmental impact assessments
- Documentation of environmental consideration in decision-making
- Examples of environmental reports impacting the decisions made

- Evidence of sustainable practices adopted
- Example of strategies created
- Environmental monitoring reports
- Annual sustainability reports
- Documentation of meetings, workshops, or consultation with knowledge holders and community representatives
- Reports summarising the knowledge shared and its integration into asset management practices
- Examples of successful knowledge transfer
- Documentation of successful skill development in others
- Records of interdisciplinary workshops or joint projects
- Demonstrated outcomes from collaborative efforts
- Documents that demonstrate how you know when to lead and when to step back and let others lead
- Published articles, presentations, or workshops on sustainable asset management
- Documentation of influencing organisational policies toward sustainability
- Records of participation in environmental conferences
- Contributions to industry guidelines or best practices.

### **Related Subjects**

- 0.1. Whakapapa
- 0.5. Tikanga
- 3.3. Sustainable Development
- 3.5. Decision-Making
- 7.1. Outcomes and Impacts

### **Āpōpō Learning**

- AM 101 – Introduction to Asset Management
- AM 203 – Lifecycle Planning
- AM 433 – Risk and Resilience
- CC 101 – Introduction to Climate Adaptation in Asset Management
- CC 102 - Reducing Carbon Emissions through Asset Management

### **Āpōpō Guide**

- Fundamental Principles
- Fundamental Principles > Te Ao Māori Principles > Kaitiakitanga
- 1. Context and Stakeholders
- 3.3. Sustainable Development
- 3.3.4. Enhancing Environmental and Cultural Resilience through Asset Management
- 3.9. Contingency Planning and Resilience Analysis
- 5.4. Asset Management Objectives
- 3.6.1. Kaitiakitanga: Collaborative Asset Lifecycle Management

### **Competencies**

Entry-Level:

- Understands why we practice infrastructure asset management.

Learning:

- Explains how the concepts of stewardship and guardianship shape asset management practices.

To be declared Competent or Higher in this subject you must:

- Demonstrate application of empowering and holding space for others to fulfil their responsibilities of guardianship and stewardship.

*Narrative shows the asset manager not only embodies stewardship and guardianship personally but also actively empowers others to embrace these roles. They recognise that their influence extends beyond individual actions and can shape organisational culture. The asset manager becomes a catalyst for positive change by fostering a sense of collective responsibility, mentorship, and shared care for assets and the environment. They create an environment where others feel empowered to fulfil their stewardship duties and contribute to sustainable asset management practices.*

OR

- Provide evidence of incorporating environmental considerations into infrastructure asset management practices.

*Evidence should demonstrate how the asset manager integrates environmental awareness into decision-making. They recognise that assets exist within ecosystems and have ecological impacts. Their choices aim for sustainability and minimise harm to the natural world.*

*Evidence should show a deep understanding of these concepts within the context of asset management.*

## 0.4. Whanaungatanga

### Definition

Whanaungatanga emphasises the value of building and maintaining meaningful relationships, both within the immediate family and the wider community. It recognises the importance of collective identity, mutual support, and interconnectedness in fostering unity and well-being.

### Context

Whanaungatanga encourages collaboration and active engagement with stakeholders in asset management processes. Asset managers can foster relationships with asset owners, users, contractors, and the wider community to ensure inclusive decision-making, shared responsibilities, and collective problem-solving. By valuing and respecting diverse perspectives, asset managers can leverage the collective wisdom and expertise of stakeholders, leading to more effective and sustainable asset management outcomes.

Whanaungatanga emphasises the importance of building and nurturing relationships based on trust, respect, and mutual understanding. Asset managers can establish meaningful connections with Māori communities, iwi, hapū, and relevant cultural groups. This involves taking the time to develop deep reciprocal relationships, engaging in meaningful dialogue, and actively listening to different viewpoints. By building strong relationships, asset managers can create a foundation for collaboration, cultural responsiveness, and shared decision-making in asset management processes.

Whanaungatanga recognises the significance of cultural diversity and the need to create an inclusive and culturally responsive asset management environment. Asset managers can demonstrate whanaungatanga by acknowledging and respecting Māori culture, values, and practices. This may involve incorporating tikanga Māori (Māori customs and protocols) in asset management processes, engaging in cultural impact assessments, and actively seeking input from Māori stakeholders. By embracing cultural diversity and perspectives, asset managers can ensure that asset management practices are respectful, inclusive, and aligned with the aspirations of Māori communities.

Whanaungatanga extends to our relationship with the environment and the natural world. Asset managers can apply this principle by recognising the interconnectedness between assets, the environment, and the well-being of communities. They can adopt sustainable practices that minimise the environmental impact of asset management activities, promote environmental stewardship, and contribute to the resilience and health of ecosystems. By fostering a sense of connection and responsibility towards the environment, asset managers can integrate whanaungatanga into their decision-making processes.

Whanaungatanga emphasises the holistic well-being of individuals, communities, and the wider ecosystem. Asset managers can consider the broader impacts of asset management decisions on social, cultural, and environmental well-being. They can prioritise outcomes that enhance community well-being, cultural preservation, and environmental sustainability. By adopting a holistic approach, asset managers can align their actions with the principles of whanaungatanga and contribute to the overall thriving of people, assets, and the environment.

### Artefacts

- Documentation of engagement initiatives

- Examples of improved practices resulting from stakeholder input
- Case study of a successful collaboration resulting from stakeholder input
- Meeting notes demonstrating cross-departmental communication
- An example that demonstrates your involvement alignment of asset management practices across departments
- Records of listening sessions
- Examples of responsiveness to feedback
- Evidence of adjustments made based on input
- Records of partnership agreements
- Examples of positive impact resulting from community collaborations
- Documentation of cultural considerations in asset decisions
- Design sketches or plans co-created with community input
- Documentation of community aspirations with the asset planning process
- Feedback from community members involved in co-design
- Examples of identifying voices that were not heard in discussions
- Records of activities to engage with those communities
- Monitoring reports
- Examples of actions taken as a result of proactive monitoring.

### **Related Subjects**

- 0.2. Manaakitanga
- 0.5. Tikanga
- 1.2. Stakeholder Management
- 4.6. Knowledge Management
- 6.6. Incident Management and Response

### **Āpōpō Learning**

- AM 101 – Introduction to Asset Management
- CW 101 - Introduction to Collaboration

### **Āpōpō Guide**

- Fundamental Principles > Te Ao Māori Principles > Whanaungatanga
- 1.5. Engaging with Mana Whenua: Cultural Protocols and Practices
- 4.2.3. Asset Management People
- 4.8. Kotahitanga and Whakawhanaungatanga

### **Competencies**

Entry-Level:

- Recognises the importance of building and maintaining meaningful relationships.

Learning:

- Describes relationship-building strategies in asset management.

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of the importance of taking time to develop relationships, engaging in meaningful dialogue, and actively listening to different viewpoints.

*Narrative shows that the asset manager invests time and effort in relationship-building. They recognise that meaningful and long-lasting connections are essential for effective asset management. The asset manager actively engages in open conversations, seeks diverse perspectives, and practices active listening. They value the richness of different viewpoints and understand that collaboration leads to better decision-making.*

OR

- Provide evidence of ensuring that asset management practices are aligned with the community and their aspirations.

*Evidence should demonstrate how the asset manager extends their focus beyond the organisation to the broader community. They actively involve external stakeholders, listen to their aspirations, and ensure that asset management practices align with community values. The asset manager recognises that assets exist within a social context and that decisions impact people's lives both inside and outside the organisation. They advocate for community well-being and actively seek community input.*

*Evidence should show a deep understanding of these concepts within the context of asset management.*

## 0.5. Tikanga

### Definition

Tikanga encompasses the customs, protocols, and practices that guide Māori ways of living and interacting. It provides a framework for appropriate behaviour, decision-making, and maintaining balance and harmony within individuals, communities, and the natural world.

### Context

Tikanga guides asset managers in respecting and adhering to cultural protocols and customs when working with Māori communities, iwi, hapū, and relevant cultural groups. This involves understanding and following appropriate procedures, greetings, and protocols to ensure that asset management activities are conducted in a culturally appropriate manner. By demonstrating cultural sensitivity and awareness, asset managers can build trust, respect, and positive relationships with Māori stakeholders.

Tikanga emphasises the importance of consultation and engagement with Māori communities throughout the asset management lifecycle. Asset managers can apply tikanga by actively seeking input, listening to the perspectives of Māori stakeholders, and incorporating their knowledge and aspirations into decision-making processes. By engaging in meaningful dialogue and co-designing solutions, asset managers can ensure that Māori values, aspirations, and needs are reflected in asset management practices.

Tikanga encourages the integration of cultural impact assessments into asset management processes. These assessments involve identifying potential impacts on cultural values, heritage sites, and traditional practices of Māori communities. By conducting cultural impact assessments, asset managers can better understand and mitigate any potential adverse effects on cultural values and ensure the protection and preservation of cultural assets.

Tikanga recognises the interconnectedness between people, assets, and the environment. Asset managers can apply tikanga by adopting sustainable practices that align with Māori principles of environmental stewardship and protection. This may involve considering the environmental impact of asset management activities, promoting sustainable resource use, and incorporating traditional ecological knowledge into decision-making processes. By embracing tikanga in relation to the environment, asset managers contribute to the overall well-being of ecosystems and the preservation of cultural connections to the natural world.

Tikanga provides a framework for ethical decision-making in asset management. It guides asset managers to consider not only the technical and financial aspects but also the cultural, social, and ethical implications of their decisions. By applying tikanga, asset managers can ensure that their actions align with cultural values, respect the rights and interests of Māori communities, and contribute to the long-term sustainability and well-being of assets and communities.

### Artefacts

- Reports documenting the findings of cultural impact assessments and proposed mitigation strategies
- Records of consultations and discussions with Māori communities and cultural stakeholders
- Details of modifications made to project plans based on feedback from cultural impact assessments

- Documented stories with explanations as to how they relate to infrastructure projects
- Highlights of key insights, observations, and recommendations gathered during discussions with Māori communities and cultural stakeholders
- Documentation of community-led design workshops and collaborative planning sessions: photos, notes, videos, etc
- Testimonials from community members affirming their involvement and influence in project decision-making
- Examples of infrastructure projects that reflect the cultural identity and values of the communities they serve
- Copies of meeting minutes, agendas, and action plans from community advisory committee meetings
- Examples of consensus-building, conflict resolution, and collaborative problem-solving among committee members
- Usage metrics and analytics reports from collaborative decision-making platforms
- Documentation of the implementation of the collaborative decision
- Documentation of your experience and learnings from te reo and/or tikanga lessons, participating in a wānanga, pōwhiri or marae visit.

### **Related Subjects**

- 0.1. Whakapapa
- 0.3. Kaitiakitanga
- 4.3. Organisational Culture
- 4.5. Organisational Change Management
- 6.1. Systems Engineering
- 7.2. Monitoring

### **Āpōpō Learning**

- AO 101 – Introduction to Te Ao Māori
- AM 434 – Forecasting Demand

### **Āpōpō Guide**

- Fundamental Principles > Te Ao Māori Principles > Tikanga
- 4.7. Leadership and Governance in Aotearoa
- 6.7.1. Tikanga Māori in Asset Acquisition and Disposal
- 1.6. Cultural Impact Assessments (CIAs)

### **Competencies**

Entry-Level:

- Knows about cultural protocols and customs.

Learning:

- Understands cultural protocols and their role in infrastructure asset management.

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the use of cultural impact assessments to better understand and mitigate potential adverse effects.

*Narrative describes how the asset manager actively employs Cultural Impact Assessments / Tangata Whenua Effects Assessments to evaluate the potential effects of infrastructure projects on cultural heritage, traditions, and practices. They seek to identify and mitigate adverse impacts through informed decision-making and stakeholder engagement.*

OR

- Provide evidence of supporting meaningful dialogue and co-designing solutions with the communities and stakeholders they serve.

*Evidence should show how the asset manager actively fosters meaningful dialogue and collaboration with communities and stakeholders to co-design solutions that respect and reflect cultural values, protocols, and aspirations.*

*Evidence should show a deep understanding of these concepts within the context of asset management.*

## 0.6. Rangatiratanga

### Definition

Rangatiratanga refers to leadership, autonomy, and self-determination. It acknowledges the authority and sovereignty of individuals, communities, and iwi (tribes) to govern their own affairs, make decisions, and exercise control over their resources and cultural practices.

### Context

Rangatiratanga emphasises the importance of collaborative decision-making processes that involve and empower Māori stakeholders. Asset managers can apply this principle by actively involving Māori communities, iwi, and hapū in the planning, development, and management of assets. By recognising the authority and autonomy of Māori stakeholders and enabling their meaningful participation, asset managers can ensure that decisions are made collectively and align with the aspirations and needs of the community.

Rangatiratanga promotes the empowerment of local communities to take ownership and responsibility for the management of assets. Asset managers can support this principle by fostering capacity and capability-building initiatives, providing training opportunities, and facilitating knowledge transfer to Māori stakeholders. By empowering communities to participate in asset management processes, asset managers contribute to the development of self-sustaining and resilient communities.

Rangatiratanga acknowledges the value and importance of indigenous knowledge systems, including traditional practices, customs, and wisdom. Asset managers can apply this principle by recognising and integrating Māori traditional ecological knowledge, cultural heritage, and resource management practices into asset management strategies. By incorporating indigenous knowledge, asset managers gain valuable insights and perspectives that enhance decision-making processes and contribute to the sustainability and resilience of assets.

Rangatiratanga recognises the right of Māori communities to govern their own affairs and make decisions that are aligned with their cultural values and aspirations. Asset managers can support this principle by respecting the governance structures and processes of Māori communities and seeking their guidance and input in asset management activities. By embracing cultural governance, asset managers contribute to the preservation and revitalisation of Māori culture, language, and traditions.

Rangatiratanga emphasises the importance of building strong and meaningful relationships between asset managers and Māori stakeholders. This involves open communication, trust-building, and a willingness to listen and learn from each other. By fostering respectful and collaborative relationships, asset managers create an environment that honours the principle of rangatiratanga and facilitates effective asset management processes.

### Artefacts

- Documentation of community engagement activities, including meeting agendas, participant lists, and summary reports
- Records of project governance structures that share power equally
- Records of collaborative decision-making processes, such as consensus statements, action plans, and agreements reached with community stakeholders

- Feedback from community members affirming their involvement and influence in asset management decisions
- Documentation of community-led asset management plans, policies, and procedures developed in collaboration with local stakeholders
- Reports on capacity-building workshops, training sessions, and skills development programs delivered to community members
- Case studies or success stories highlighting instances where communities have successfully assumed responsibility for asset management, resulting in improved outcomes and sustainability
- Copies of signed agreements
- Reports detailing the allocation and utilisation of community asset management grants.

### **Related Subjects**

- 0.2. Manaakitanga:
- 0.4. Whanaungatanga
- 1.1. Organisational Purpose and Context
- 4.1. Asset Management Leadership
- 7.1. Outcomes and Impacts

### **Āpōpō Learning**

- AM 101 – Introduction to Asset Management
- AM 201 – Telling the Story of Asset Management
- AM 204 – Asset Management Enablers
- AM 306 – Delivery
- AM 308 – Improving Asset Management Maturity
- AM 431 – Levels of Service
- AO 101 – Introduction to Te Ao Māori

### **Āpōpō Guide**

- Fundamental Principles > Rangatiratanga
- 4. Leadership and People
- 3.4.1. Te Ao Māori Perspectives on Planning

### **Competencies**

Entry-Level:

- Knows about community leadership, autonomy, and self-determination.

Learning:

- Can explain the significance of empowering local communities in infrastructure asset management.

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of involving communities in collaborative decision-making processes related to the planning, development, and management of assets.

*Narrative should describe how the asset manager actively engages local communities in collaborative decision-making processes throughout the asset lifecycle. They seek to integrate community perspectives, priorities, and aspirations into asset planning, development, and management activities.*

OR

- Provide evidence of empowering local communities to take ownership and responsibility for the management of assets for which they are accountable.

*Evidence should show how the asset manager actively supports and enables local communities to assume leadership roles and responsibilities in the management of assets within their jurisdiction. They promote capacity-building, resource mobilisation, and community-led governance structures to foster sustainable asset management practices.*

*Evidence should demonstrate practical application and understanding of these concepts within the context of asset management.*

## 1.1. Organisational Purpose and Context

### Definition

The processes and activities used to design, implement, and sustain an approach to Asset Management should be aligned with the organisation's purpose.

This includes activities associated with defining the scope and boundaries of Asset Management and the organisational objectives that Asset Management needs to deliver and contribute to. These activities may make use of value from financial and non-financial assets.

### Context

The organisation's purpose influences the scope of its activities and objectives. The organisational purpose and its operating context define the success criteria and influence the decision-making criteria used in Asset Management. It guides the Asset Management capabilities required. The operating context relates to internal and external factors that influence the risks and opportunities of the organisation. Organisational context has several dimensions and includes social, cultural, regulatory, political, financial, economic, environmental aspects in local, national, and international context. It encompasses:

- Mission and vision
- Identification and assessment of internal and external stakeholders and their requirements
- Products and/or services
- Governance, enterprise risk, compliance, and policy frameworks
- Strategic/business plan and objectives.

Organisational context includes identification of its legal obligations and compliance requirements with respect to governing Acts and Regulations. It also outlines the organisation's commitment to its stakeholders and defines how Asset Management contributes to its objectives. The scope and the boundaries of Asset Management, the Asset Management system and other management systems are set, and their interfaces are defined.

The purpose and context of the organisation should be continually reviewed for relevance, and changes should shape the Asset Management System as it adapts. The triggers and timeframe for undertaking these reviews depend on the dynamics of the operating context and on the organisation's Management of Change process.

### Artefacts

Typical artefacts within this subject include:

- Organisational vision, mission, strategic/business plan
- Corporate governance, risk, and compliance framework
- Organisational objectives including its commitment to environmental and sustainability goals
- Organisational culture
- Organisation structure
- Technical standards and legislation

## Related Subjects

- 0.1. Whakapapa
- 0.5. Tikanga
- 0.6. Rangatiratanga
- 1.2. Stakeholder Management
- 2.1. Asset Management Policy
- 2.2. Asset Management System
- 3.1. Asset Management Strategy and Objectives
- 3.4. Planning
- 3.3. Sustainable Development

## Āpōpō Learning

- AM 101 – Introduction to Asset Management
- GOV 101 – Infrastructure Leadership and Governance
- ST 310 – ISO 55000 Asset Management Standards

## Āpōpō Guide

- 1.1. Organisational Purpose and Context

## Relevant Standards

- ISO 5500x Series – Asset Management

## Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of how organisational objectives (purpose, context, strategy, vision, mission etc) are reflected within asset management objectives.

*Narrative demonstrates applied knowledge of the line of sight between organisational objectives and asset management objectives, and can include the subsequent hierarchy descending to Attributes and LOS.*

## 1.2. Stakeholder Management

### Definition

The structured and documented approach that organisations use to identify, engage, and manage all relevant needs and requirements of internal and external stakeholders, that derive value from and are affected by the organisation.

### Context

Stakeholder management describes all policies, processes, and activities used for scenario development, identifying, communicating, and interacting with stakeholders. Understanding the value that stakeholders receive from the organisation is essential. The approach to Asset Management and Asset Management risks or opportunities needs to consider stakeholders and actively manage how Asset Management influences them.

The organisation's approach to Asset Management should be based on operational context, the strategic/business plan, and stakeholder management plan. Each organisation should document internal and external stakeholders according to its purpose and context. This is often summarised in the strategic/business plan.

Stakeholder management is a collaborative activity across the organisation.

The Management Review process should ensure that all significant internal and external stakeholders are managed proactively. Stakeholder satisfaction should be monitored, risks and conflicts resolved, and desired stakeholder outcomes delivered in line with the organisational objectives.

Management activities within scope of this subject include:

- Identifying key stakeholders, their level of influence and impact, and their needs and requirements
- Development of stakeholder strategies and plans (including consultation and communication)
- Planning and execution of stakeholder processes
- Analysing and understanding, monitoring, and evaluating the effectiveness of stakeholder management.

### Artefacts

Typical artefacts within this subject include:

- Documented stakeholder analysis
- Stakeholder management plan
- Register of stakeholders
- Documented feedback from stakeholders
- Records of stakeholder engagement
- Communication and Engagement Strategy
- Communication Management Plan
- Strategic Asset Management Plan (SAMP)

### Related Subjects

- 0.2. Manaakitanga
- 0.4. Whanaungatanga
- 1.1. Organisational Purpose and Context
- 2.1. Asset Management Policy
- 3.1. Asset Management Strategy and Objectives
- 3.2. Demand Analysis
- 3.4. Planning
- 3.5. Decision-Making

### **Āpōpō Learning**

- AM 201 – Telling the Story of Asset Management
- AM 304 – Asset Management Strategy
- AM 431 – Levels of Service
- CW 101 – Introduction to Collaboration

### **Āpōpō Guide**

- 1.2. Stakeholder Management

### **Relevant Standards**

- ISO 5500x Series – Asset Management
- IAP2 (International Association for Public Participation)

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the types of stakeholder management activities an organisation may use within an asset management context.

*Narrative includes 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.*

OR

- Provide evidence of a stakeholder management, engagement or communications plan, or having undertaken stakeholder engagement and analysis for an AMP, SAMP, or similar strategic asset management planning document.

## 1.3. Asset Costing and Valuation

### Definition

Asset Costing is the organisation's end to end process for defining, capturing, and utilising the TOTEX (Total Expenditure) of physical assets or systems of assets throughout their lifecycle. This includes the costs associated with planning, design, acquisition, construction, operation, maintenance, renewal, and disposal.

Asset valuation is the organisation's end-to-end process for quantifying the financial value of assets in accordance with accounting standards.

The application of cost and valuation methodologies generates information and intelligence that supports decision-making in areas such as asset investments, asset lifecycle optimisation, improvements in return on investment, and to exercise management control to balance risk, cost, and performance.

### Context

It is important to create and maintain a close link between accounting systems and Asset Management systems. These should have consistent mechanisms, definitions, and processes for determining asset costs and asset valuation. This alignment can produce a range of benefits including:

- Stronger understanding of the costs and revenue within an organisation generated by assets and their subsequent drivers.
- Compliance with financial accounting standards.
- A holistic and consistent view of value that assets and the organisation deliver to its stakeholders.

Asset costing requires a structure and /or framework that defines the composition of all costs related to an asset, including systems of assets. This needs to consider the Total Expenditure (TOTEX), including the Capital Expenditure (CAPEX) and Operating and Maintenance Expenditure (OPEX) of the asset through its lifecycle (including end of life activities). This would typically be defined in a work or activity breakdown structure to ensure costs are defined and captured in a way that supports Asset Management decision-making.

Asset valuation refers to accounting practices or rules that allow the value estimation and value forecasting for assets over their lifecycle. The processes for defining asset valuation are typically the responsibility of the organisation's internal financial department.

Consideration should be given to alignment of financial and non-financial functions of the organisation to ensure consistency of asset cost and valuation information.

### Artefacts

Typical artefacts within this subject include:

- Expenditure reports
- Asset valuation register
- Documented valuation methodology
- Lifecycle costing
- Financial Depreciation Policy

- Asset transaction data and documentation
- Unit cost definitions and standards

### **Related Subjects**

- 0.3. Kaitiakitanga
- 3.4. Planning
- 3.5. Decision-Making
- 3.6. Lifecycle Value Realisation
- 5.4. Asset Management Data and Information Systems

### **Āpōpō Learning**

- AM 305 – Planning and Decision-Making

### **Āpōpō Guide**

- 1.3. Asset Costing and Valuation

### **Relevant Standards**

- International Financial Reporting Standards (IFRS)
- ISO 5500x Series – Asset Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the accounting basis for an asset costing (TOTEX, CAPEX & OPEX) and valuation, and a method of asset depreciation used within New Zealand.

*Narrative provides examples of TOTEX, CAPEX and OPEX costing inclusions. Response should include understanding of NZ valuation practice, and as a minimum straight line depreciation method over the life of an asset.*

OR

- Provide evidence of undertaking a valuation or lifecycle costing for an asset group or portfolio, or developing or reviewing/verifying an asset operations, renewal or capital programme.

## 2.1. Asset Management Policy

### Definition

The Asset Management Policy formalises the organisation's commitment to Asset Management, aligns its Asset Management principles with the organisation's strategic vision, mission, strategic goals, and objectives.

Further it provides a directional framework for all stakeholders in the development and implementation of the Asset Management strategic plan and the establishment of Asset Management objectives.

### Context

The Asset Management Policy provides a set of principles for the development and implementation of an organisation's approach to Asset Management, Asset Management system, Asset Management strategy and objectives.

The Asset Management Policy should be consistent with stakeholder requirements and organisational objectives and constraints. It should also be aligned with, and consistent with, other organisational policies.

The Asset Management Policy should be supported by senior management, effectively communicated, and periodically reviewed with a commitment to continual improvement of the Asset Management system.

### Artefacts

Typical artefacts within this subject include:

- Organisational Vision and Mission
- Organisational Objectives
- Stakeholder identification and analysis
- Reference and leverage established policies (e.g. or i.e. Continuous Improvement, Quality Assurance).

### Related Subjects

- 0.5. Tikanga
- 1.1. Organisational Purpose and Context
- 1.2. Stakeholder Management

### Āpōpō Learning

- GOV 101 – Infrastructure Leadership and Governance

### Āpōpō Guide

- 2.1. Asset Management Policy

### Relevant Standards

- ISO 5500x Series – Asset Management
- Any legislative requirement applicable to organisation

## Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of what elements are usually contained within an asset management policy.

*Narrative demonstrates application of the usual AM policy elements, which can include: asset management goals/objectives/principles, relevant delegations/authority, vision/mission/purpose and context.*

OR

- Provide evidence of having authored/co-authored the development or review of an asset management policy for an organisation.

## 2.2. Asset Management System

### Definition

A set of interrelated or interacting elements within an organisation to establish, update, and sustain Asset Management, Asset Management policies, Asset Management objectives and processes to achieve those objectives. The processes and measures used by an organisation to assess the ongoing fitness and performance of its Asset Management System, including continuous improvement initiatives. The Asset Management System should recognise and integrate with other formal management systems.

### Context

The Asset Management System is the management system used to manage an organisation's assets and asset-related capabilities. An Asset Management System typically includes the following elements:

- An integrated set of tools that include people, processes, Asset Management policy, Asset Management strategy and objectives, plans and Asset Management data and the information systems that define and guide the delivery of Asset Management in the organisation.
- Delivery of a structured and holistic approach for the development, coordination, and efficient control of the activities that an organisation undertakes to realise value in alignment with its Asset Management objectives.

The Asset Management System should be monitored to ensure that it:

- Fits the context of the organisation and assets within its scope
- Extracts expected Asset Management value and benefits
- Has capabilities that properly support delivery of the Asset Management objectives
- Monitors performance in meeting Asset Management objectives
- Can improve to better deliver Asset Management objectives.

These aspects are typically assessed by a combination of assurance processes, such as maturity assessments, peer review, benchmarking, and audits.

### Artefacts

Typical artefacts within this subject include:

- Asset Management System Manual
- Strategic Asset Management Plan (SAMP)
- Asset Management Plan
- Asset Management Governance Group meeting minutes
- Management Review Meeting minutes
- Maturity Assessment Outputs (Current State, Gaps, etc.)
- Performance Monitoring and Measures
- Asset Management System Improvement Plan

### Related Subjects

- 0.6. Rangatiratanga

- 2.1. Asset Management Policy
- 2.3. Asset Management Assurance and Audit
- 3.1. Asset Management Strategy and Objectives
- 3.4. Planning
- 5.4. Asset Management Data and Information Systems

### Āpōpō Learning

- AM 101 – Introduction to Asset Management
- AM 202 – Understanding Requirements
- AM 204 – Asset Management Enablers
- AM 304 – Asset Management Strategy
- AM 308 – Improving Asset Management Maturity
- GOV 101 – Infrastructure Leadership and Governance
- ST 310 – ISO 55000 Asset Management Standards

### Āpōpō Guide

- 2.2. Asset Management System

### Relevant Standards

- ISO 5500x Series – Asset Management

### Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrated applied knowledge of the elements and activities within an asset management system.

*Narrative includes the elements of people, processes, policy, strategy, asset management planning, improvement planning and asset management information systems.*

OR

- Provide evidence of developing or reviewing an asset management system for an organisation.

## 2.3. Asset Management Assurance and Audit

### Definition

An organisation's structured processes for assuring and auditing the effectiveness of its assets, Asset Management and Asset Management system to ensure organisational and Asset Management objectives are being achieved and its assets fulfil their required purpose.

### Context

Asset Management Assurance and Audit describes internal assurance processes, audit policies and procedures, internal and external audits, processes for reviewing audit findings and corrective actions as well as the use of external benchmarking.

Asset Management assurance is important for achieving desired organisational outcomes. Multiple levels of assurance are used to ensure that the intended outcomes are achieved. Multiple levels of assurance are used to assure different aspects of Asset Management activities including:

- Assurance that services are delivered as required
- Assurance that technical and contractual obligations are met
- Assurance that internal and/or external auditors have complied with appropriate standards and outcomes have been achieved.

The purpose of the organisation's internal audit function is to enhance and protect organisational value by providing risk-based and objective assurance, advice, and insights. For example, following the completion of an audit, recommendations for improvement are provided to organisational areas and actions are then taken to address the recommendations after they are agreed by the organisational area. Actions generally represent initiatives to strengthen existing controls or fill a control gap.

Management activities within the scope of this subject include:

- Development of audit policies.
- Development of audit processes.
- Development of assurance framework and assurance program.
- Execution of audit processes.
- Findings Management.

### Artefacts

Typical artefacts within this subject include:

- Audit policy
- Documented audit procedures
- Audit schedule
- Documented audit methodologies
- Documented audit results
- Audit reporting
- Assurance Framework

### Related Subjects

- 2.1. Asset Management Policy
- 2.6. Risk
- 2.5. Management of Change
- 3.6. Lifecycle Value Realisation
- 7.3. Continuous Improvement

### **Āpōpō Learning**

- AM 204 – Asset Management Enablers

### **Āpōpō Guide**

- 2.3. Asset Management Assurance and Audit

### **Relevant Standards**

- ISO 19011 – Guidelines for auditing management systems
- ISO 5500x Series – Asset Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the steps usually undertaken to audit asset management maturity within New Zealand.

*Narrative includes reference to NZ Treasury asset management maturity assessment, organisational practices and asset management system performance against organisational and asset management policy and delivery outcomes.*

OR

- Provide evidence of an asset management practice/system maturity review or audit you have undertaken or participated in.

## 2.4. Technical Standards and Legislation

### Definition

The process used by an organisation to ensure all its activities, including Asset Management activities, are compliant with relevant technical standards, regulations, and legislation.

### Context

Technical standards, regulations and legislation must be considered in the context of the Asset Management organisation's physical jurisdiction, business environment, industry and nature of the stakeholders serviced by the organisation.

### Artefacts

Typical artefacts within this subject include:

- Register of applicable technical standards, regulations, and legislation.

### Related Subjects

- 2.6. Risk
- 3.1. Asset Management Strategy and Objectives
- 3.5. Decision-Making
- 3.6. Lifecycle Value Realisation
- 6.5. Maintenance Delivery

### Āpōpō Learning

- CC 102 – Carbon Emissions Analysis in Asset Management
- ST 310 – ISO 55000 Asset Management Standards

### Āpōpō Guide

- 2.4. Technical Standards and Legislation

### Relevant Standards

- ISO 5500x Series – Asset Management

### Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of which industry or professional technical standards and compliance standards would be applicable to two asset management portfolios.

*Narrative demonstrates application of the usual industry and technical standards within at least two asset portfolio types.*

## 2.5. Management of Change

### Definition

Management of Change is the systematic approach to an organisation's processes for the identification, assessment, implementation, and communication of changes to processes and assets.

### Context

Management of Change describes policies and processes for dealing with changes to physical assets, their management systems or supporting resources. This subject also includes elements related to mitigating the risks associated with the impact of change.

The management activities within the scope of this subject are:

- Development of Management of Change Policies.
- Development of Management of Change Processes.
- Execution of Management of Change Processes.
- Periodic review of Management of Change Policies and Processes.

### Artefacts

Typical artefacts within this subject include:

- Documented Management of Change Process
- Management of Change Register and matrix
- Management of Change Plan
- Management of Change Communication with use of RACI or similar method
- Management of Change Models

### Related Subjects

- 2.6. Risk
- 4.5. Organisational Change Management
- 5.5. Configuration Management
- 6.5. Maintenance Delivery
- 2.2. Asset Management System
- 4.3. Organisational Culture
- 1.2. Stakeholder Management

### Āpōpō Learning

- AM 308 – Improving Asset Management Maturity
- AM 430 – Effective Asset Management Plans

### Āpōpō Guide

- 2.5. Management of Change

### Relevant Standards

- ISO 5500x Series – Asset Management
- ISO 27001 (change management in the context of information management systems)

- Local regulatory and jurisdictional requirements

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of the change management process, and how it can be communicated as it relates to people, processes, service delivery and assets.

*Narrative describes application of change management processes within an asset management context, including as a minimum: reference to people, processes, service delivery and assets.*

## 2.6. Risk

### Definition

The management of uncertainties on Asset Management objectives through policies and processes for identifying, quantifying, mitigating risk and exploiting opportunities associated with existing and future organisational and Asset Management objectives.

### Context

Risk Management describes policies and processes for the identification, assessment, quantification, analysis and treatment of risks and opportunities. Risk and criticality are not the same. Criticality is a function of the relative importance of an asset OR system to the organisation's overall mission. Critical assets are an organisation's essential assets that can impact on the organisational objects. Risk, on the other hand, is a function of criticality (impact of failure) and the likelihood of failure. Accurately identifying and understanding criticality and risk is foundational to the success of an organisation's approach to Asset Management and to securing its level of service.

The Asset Risk Management Framework should be aligned to the organisational (or Corporate) risk management framework, risk appetite and Risk Management standards (e.g., ISO 31000). ISO 31000 quantifies risk as the product of the Likelihood (or Probability) of an event occurring and the Consequence (or impact) on organisational and Asset Management objectives.

Risk level is assessed against the organisation's risk tolerance both at the individual level and at an aggregate level. Risk mitigation strategies can be developed to ensure that the resulting Residual Risk is at tolerable levels based on the organisation's appetite for risk. Assessing residual risk involves considering trade-offs with cost and performance, and impact on the achievement of organisational and Asset Management objectives. Comprehensive Risk Management is the foundation for developing capital plans related to growth, rationalisation, upgrades, enhancements, renewals, and updates to operations as well as maintenance strategies.

Risk Management is common to all subjects within the Asset Management Landscape. Risk management activities must be clearly aligned with activities at an operational and project level such as risk treatment and Asset Management Assurance and Audit. An organisation should establish processes to identify, gather, collect, or capture opportunities and decide on the opportunities to be addressed to improve performance of the organisation.

### Artefacts

Typical artefacts within this subject include:

- Risk Management Policy
- Risk Management Strategy
- Risk Management Framework
- Risk Management Procedures
- Risk Registers
- Risk Criteria
- Risk Profile
- Risk Action Requests
- Risk Profile Reports

- Risk Measures
- Risk Costs

### **Related Subjects**

- 3.1. Asset Management Strategy and Objectives
- 3.6. Lifecycle Value Realisation
- 3.5. Decision-Making
- 3.9. Contingency Planning and Resilience
- 2.6. Risk
- 2.3. Asset Management Assurance and Audit
- 1.2. Stakeholder Management
- 4.5. Organisational Change Management

### **Āpōpō Learning**

- AM 304 – Asset Management Strategy
- AM 305 – Planning and Decision-Making
- AM 433 – Risk and Resilience

### **Āpōpō Guide**

- 2.6. Risk

### **Relevant Standards**

- ISO 5500x Series – Asset Management
- ISO 31000 - Risk management — Principles and guidelines
- IEC/ISO 31010 - Risk management – Risk assessment techniques
- ALARP/SFAIRP (asset integrity issues with large safety/environmental consequences)

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of typical risk management processes within operational, tactical and strategic asset management activities and be able to describe a basic risk framework.

*Narrative includes an example of identifying, quantifying and mitigating risks within an asset management context and can include examples of operational, tactical and strategic level risks.*

OR

- Provide evidence of having developed, reviewed or analysed an asset management risk management policy, process or framework within an organisation.

## 3.1. Asset Management Strategy and Objectives

### Definition

The Asset Management Strategy is contained in the Strategic Asset Management Plan (SAMP). It translates organisational objectives into Asset Management objectives, defines the organisation's Asset Management system and the approach to Asset Management and the organisation's assets, and describes the strategies and actions to deliver on Asset Management objectives.

### Context

The SAMP describes the organisation's whole lifecycle approach to the management of the assets defined by the organisation within the scope of their Asset Management system. It would typically include a set of strategic statements that describe current and future Asset Management objectives, the organisation's intent, and the current and future Asset Management capabilities (Asset Management system, people, process, and technologies) required for the organisation to deliver these outcomes predictably and sustainably.

The SAMP would typically include:

- Statements aligning Asset Management with the delivery of strategic organisational objectives.
- Asset Management objectives formulated in accordance with the Asset Management Policy, using Asset Management decision criteria that are responsive and aligned to organisational objectives and stakeholder requirements including measurable objectives to deliver on the expected economic, environmental, and social performance of an organisation's asset portfolios and Asset Management activities.
- A description of the role, scope and boundaries of the Asset Management system, the asset portfolios included in the scope of the Asset Management system, and interaction with other management systems.
- The methods and decision-making criteria used to undertake lifecycle performance, cost, and risk analyses that determine the optimum asset interventions (including the methodology for determining asset criticality).
- The approach, strategy, and actions used to achieve Asset Management objectives and the realisation of value including the approach used to balance performance, risk, and cost objectives to achieve sustainable value from assets.
- Key accountabilities for the activities defined in the Asset Management Strategy including the implementation, monitoring, review and updating of the Asset Management Strategy.

The timeframe for a SAMP typically corresponds to the lifecycle of asset portfolios or has a sufficient horizon to accommodate planning for assets, Asset Management and Asset Management systems. The planning horizon typically extends beyond an organisation's normal budgetary cycle.

### Artefacts

Typical artefacts within this subject include:

- Asset Management Objectives

- Scope of the Asset Management System
- Stakeholders' Analysis
- Asset Portfolio Summary
- Current Asset Performance Summary
- Strategic-level Asset Management Key Performance Indicators (KPIs) and Improvement Targets
- Future asset portfolio requirements
- AM Maturity assessment and improvement plan
- Asset Management Strategic Initiatives
- Asset risk appetite and management

### **Related Subjects**

- 0.1. Whakapapa
- 0.3. Kaitiakitanga
- 1.1. Organisational Purpose and Context
- 1.2. Stakeholder Management
- 3.2. Demand Analysis
- 2.1. Asset Management Policy
- 3.6. Lifecycle Value Realisation
- 3.3. Sustainable Development

### **Āpōpō Learning**

- AM 201 – Telling the Story of Asset Management
- AM 202 – Understanding Requirements
- AM 302 – Organisational Strategy
- AM 304 – Asset Management Strategy
- AM 305 – Planning and Decision-Making

### **Āpōpō Guide**

- 3.1. Asset Management Strategy and Objectives

### **Relevant Standards**

- ISO 5500x Series – Asset Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of what is usually contained within an asset management Strategy, a strategic asset management plan (SAMP) and an asset management system.

*Narrative describes the HOW versus the WHAT that differentiate AM Strategy and SAMP objectives, describes what asset management objectives and asset management system elements are, and provides examples of application of this knowledge.*

OR

- Provide evidence of having authored/co-authored the development or review of an asset management strategy or strategic asset management plan for an organisation.

## 3.2. Demand Analysis

### Definition

Demand analysis consists of knowing and understanding the variables that make up the requirements of interested parties and the economic, social, and environmental scenarios where the organisation operates, to establish a forecast for Asset Management that generates value for the organisation.

Demand analysis consists of the processes that an organisation uses to evaluate, analyse, and influence demands and to perform the evaluation and analysis of the capability of assets to meet demand.

### Context

Demand analysis typically includes assessing future demand for products or services. This demand will impact on the portfolio and asset availability.

When carrying out demand analysis the following should be considered (in no particular order):

- Stakeholder expectations
- Climate change
- Sustainability
- Historical demand and the context that drives demand
- Current and future demand, as well as changes over time
- New products or services required by the organisation
- Changes in the performance levels required to provide products and services
- Current and future asset utilisation and capacity
- Impact on future performance, condition, and capability
- Technological issues and trends in new technologies
- The need for new skills.

Demand analysis involves identifying scenarios, understanding the factors that influence them, as well as their likelihood of occurring. Strategies should be developed that consider the capacity of the organisation and its assets as well as in relation to the expected demand scenarios. The strategies should also consider the use of non-asset solutions where demand may exceed supply. Revised levels of performance should be reflected in the Asset Management Objectives.

The outcome of demand analysis should be considered in strategic objectives as it influences the expected economic, environmental, and social performance of an organisation's asset portfolios.

Demand analysis contributes to the decision-making criteria, which are used to calculate the cost of the lifecycle of assets, complete risk analysis, determine environmental impacts of product disposal and impact on the supply chain value. These considerations should be included in a methodology to determine their criticality.

### Artefacts

Typical artefacts within this subject include:

- Historical demand analysis

- Demand scenarios
- Demand forecasts
- Demand Management Strategy
- Service Level Strategy
- Asset performance forecast.

### **Related Subjects**

- 1.2. Stakeholder Management
- 3.1. Asset Management Strategy and Objectives
- 3.4. Planning
- 3.5. Decision-Making
- 1.1. Organisational Purpose and Context
- 3.6. Lifecycle Value Realisation

### **Āpōpō Learning**

- AM 202 – Understanding Requirements
- AM 434 – Forecasting Demand

### **Āpōpō Guide**

- 3.2. Demand Analysis

### **Relevant Standards**

- None

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of typical micro/macro trends that affect infrastructure assets and services.

*Narrative includes a description of the usual process of assessing demand. Provides at least three real-life examples of demand analysis factors from their work.*

OR

- Provide evidence of having participated in or completed demand analysis for an asset group or organisation.

### 3.3. Sustainable Development

#### Definition

The holistic, interdisciplinary, collaborative method, including processes, used to ensure an enduring, balanced approach to economic activity, environmental responsibility, social governance, and progress to ensure all activities are sustainable over multiple timeframes while supporting the organisation's purpose.

#### Context

Sustainability is a continually evolving concept, which includes sustainable economic development, environmental protection, and enhancement as well as social inclusion, progress, and governance. More recently, progressive organisations have added cultural vitality as a dimension to sustainability, focusing on the culture and core values of the organisation. Sustainability objectives are also very closely tied with the concept of "value" (created through use of its tangible and non-tangible assets) as defined by stakeholders.

Sustainable Development requires that Asset Management processes, decision-making, Asset Management objectives and Asset Management activities are consistent with the organisation's sustainability framework.

Factors to be considered in these processes include:

- Environmental Impact of Asset Management
- Social Impact of Asset Management
- Economic Impact of Asset Management Plans
- Optimising environmental, social, governance and financial impacts.

To achieve sustainability in Asset Management all activities, including asset lifecycle activities, undertaken to achieve the organisation's environmental, social and governance objectives should support this goal.

This is critically important at the closure stage of the asset lifecycle. Resiliency may be considered part of an organisation's strategy to support sustainability; however, this only represents the organisation's ability to overcome challenges and adversity.

Sustainable development is enhanced when it acknowledges the local knowledge, cultural and heritage significance, and engages with local communities, especially indigenous communities, in the areas where it functions.

#### Artefacts

Typical artefacts within this subject include:

- The organisation's Strategic Plan, Mission, and Vision
- Environmental Impact Plan
- Social Development Plan
- Skills Development Plan
- Financial Plan
- Asset Management Strategy and Policy

- Analysis for high level view of factors impacting the organisation’s current and planned activities such as PESTLE (Political, Economic, Social, Technological, Legal, and Environmental)
- Business Continuity Plan

### **Related Subjects**

- 0.2. Manaakitanga
- 0.3. Kaitiakitanga
- 1.1. Organisational Purpose and Context
- 2.1. Asset Management Policy
- 3.1. Asset Management Strategy and Objectives
- 3.5. Decision-Making
- 3.6. Lifecycle Value Realisation
- 2.6. Risk
- 5.3. Asset Management Data and Information Management
- 7.1. Outcomes and Impacts
- 4.3. Organisational Culture

### **Āpōpō Learning**

- CC 101 – Introduction to Climate Adaptation in Asset Management
- CC 102 – Carbon Emissions Analysis in Asset Management

### **Āpōpō Guide**

- 3.3. Sustainable Development

### **Relevant Standards**

- ISO 14090 Climate Adaptation.

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of the factors to consider in sustainability planning within an asset management context.

*Narrative includes 2-3 sustainability considerations from their work, including but not limited to: environmental considerations, social impact, decarbonisation, broader outcomes, circular economy, energy efficiency, resources management.*

OR

- Provide evidence of development or review of a sustainability plan or sustainability section of an AMP or SAMP for an organisation.

## 3.4. Planning

### Definition

The activities involved in developing the relevant Asset Management planning artefacts that support strategic planning activities such as the Strategic Asset Management Plan. Asset Management planning specifies the detailed activities and resources, responsibilities, time horizon, and risks for the achievement of Asset Management objectives.

### Context

Asset Management Planning is the process used to develop detailed Asset Management Plans that specify the asset lifecycle activities an organisation intends to undertake to achieve its Asset Management objectives and stakeholder needs in consideration with the resources, costs, time horizon required for their delivery.

Asset Management Planning includes the following:

- A review of previous Asset Management Plans and recovery plans where applicable.
- A demonstrated alignment with the Strategic Asset Management Plan.
- The asset lifecycle activities the organisation intends to undertake to deliver Asset Management objectives, stakeholder needs and level of service, in consideration of a range of intervention options for new, existing, and non-asset solutions.
- Evidence of social, economic, cultural, environmental, and economic evaluation to substantiate the asset lifecycle activities.
- A consideration of the planning horizons across the immediate, short, medium, and the long term.
- The costs associated with delivering asset lifecycle activities.
- The outputs, outcomes, and benefits (measured value) expected from the application of asset lifecycle activities.
- Identification of relevant delivery models and resources (e.g., financial, asset and human) necessary to execute the Asset Management plans based on legal, regulatory, industry and technical standards.
- A scenario analysis to balance cost, risks and performance against any forward planning delivery, funding, and resourcing assumptions.
- Asset Management assurance requirements (e.g., technical assurance and investment gateway reviews).
- Details on how the plan will be approved monitored, reviewed, and updated including appropriate review period (periodic and systematic).
- An integration of Asset Management Plans with other organisational plans e.g. financial plans, health and safety plans and human resource plans.
- Details of maintenance and execution of plans in enterprise systems e.g., financial systems, resource management systems and Asset Management systems.

### Artefacts

Typical artefacts within this subject include:

- Asset Management Plans
- Approved capital and operating budget allocations over the planning period
- Work volumes and costs

- Capital and operational expenditure investment over planning horizon and asset lifecycle (with regular periodic update and review)
- Resource plans

### **Related Subjects**

- 3.1. Asset Management Strategy and Objectives
- 3.2. Demand Analysis
- 3.5. Decision-Making
- 3.6. Lifecycle Value Realisation
- 3.8. Shutdown and Outage Strategy and Planning
- 2.6. Risk
- 3.9. Contingency Planning and Resilience
- 3.7. Resourcing Strategy and Management
- 5.3. Asset Management Data and Information Management

### **Āpōpō Learning**

- AM 202 – Understanding Requirements
- AM 430 – Effective Asset Management Plans
- AM 431 – Levels of Service

### **Āpōpō Guide**

- 3.4. Planning

### **Relevant Standards**

- ISO 5500x Series – Asset Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of 3-4 asset management planning activities, and be able to describe the differences between strategic, tactical and operational asset planning activities.

*Narrative includes, but not limited to: setting asset management objectives, setting levels of service which support organisational outcomes, developing operational, renewal or capital budgets and programmes and undertaking risk management activities. Describes an asset management planning activity from their work within each strategic, tactical and operational context.*

OR

- Provide evidence of having participated in or completed an AMP or SAMP for asset group or organisation.

## 3.5. Decision-Making

### Definition

Decisions are choices made under conditions of uncertainty, complexity, and constraint. Decisions are the primary means of allocating and reallocating the organisation's finite resources consistent with its value framework to achieve its strategic objectives. Investment decision-making comprises the policy, principles and criteria, decision-support techniques, information, and processes to address risks or opportunities through the development of alternatives and the selection of priority solutions across the full lifecycle to deliver value to stakeholders.

### Context

Decision-Making includes an evaluation approach of alternative investments with a medium to long-term vision of the asset lifecycle cost benefits horizon based on investment (CAPEX and OPEX) from available funding sources, people, processes, and technology resources. This includes the business case development steps used for problem definition, as well as characterisation, robust solution evaluation that drives sufficient quality alternatives allowing decision-makers to make the best lifecycle choices across all time horizons.

Decision-making criteria should be aligned with Asset Management strategy, objectives and policy and value framework. Asset Management decisions should consider the trade-offs between risk, performance, and cost, while understanding competition for resources and other constraints. Decisions should be made by a capable multi-disciplinary team with appropriate experience and authority supported by technology. Decisions associated with action plans, and results should be tracked to assure the value delivered meets expectations.

Decision types in Asset Management include but are not limited to:

- Greenfield (new) or brownfield (existing) asset acquisition or build
- Asset end-of-life, life extension, repurposing, and reclamation
- Capacity increases, avoiding capacity constraints, quality efficiency and emissions improvements
- Infrastructure system or network reconfiguration or optimisation
- New, expanded, or obsolete digital technology infrastructure enhancement
- Environmental, social and corporate governance and sustainability investments
- Sustaining asset lifecycle operate, repair or replacement investments
- Operating and maintenance strategies and actions
- Improvements and innovations to processes and supporting technology systems.

### Artefacts

Typical artefacts within this subject include:

- Corporate investment policy and process framework
- Business Case decisions
- Selection process for investments
- Lifecycle costing
- Post-investment appraisal reviews and audits.

### Related Subjects

- 0.2. Manaakitanga
- 0.3. Kaitiakitanga
- 3.1. Asset Management Strategy and Objectives
- 3.2. Demand Analysis
- 3.4. Planning
- 2.6. Risk
- 3.6. Lifecycle Value Realisation
- 5.3. Asset Management Data and Information Management
- 3.7. Resourcing Strategy and Management

### Āpōpō Learning

- AM 203 – Lifecycle Planning
- AM 304 – Asset Management Strategy
- AM 305 – Planning and Decision-Making
- AM 432 – Making Effective Infrastructure Decisions
- AM 433 – Risk and Resilience

### Āpōpō Guide

- 3.5. Decision-Making

### Relevant Standards

- ISO 15686 - Buildings and constructed assets – Service life planning
- Configuration Management Standard EIA649C
- ISO 5500x Series – Asset Management

### Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of 3-4 capital investment and maintenance management decision-making activities.

*Narrative includes 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. Describes the differences between capital and maintenance/renewal asset planning activities.*

OR

- Provide evidence of undertaking a maintenance decision-making methodology including such as failure mode analysis, just in time, run to fail, and reliability centred maintenance with an asset portfolio.

OR

- Provide evidence of undertaking a capital investment decision-making methodology such as MCA, BC, BBC, NPV for capital investment or asset portfolio.

## 3.6. Lifecycle Value Realisation

### Definition

The activities undertaken by an organisation to ensure the best total value from investments and benefits in different physical and non-physical asset acquisition, creation, operations, maintenance, improvements, renewals, and disposals across all asset lifecycle stages.

### Context

Lifecycle Value Realisation considers the interaction of lifecycle activities to achieve the organisation's Asset Management objectives. The best value strategy often attempts to maximise future production or service levels at the lowest whole-of-life sustainable cost within risk tolerances, constraints, and stakeholder commitments.

Lifecycle Value Realisation would typically include:

- Identification and evaluation of options across asset life to support better investment decisions tailored for complexity of new, upgraded, repurposed, divestment and rationalisation of owned or managed assets.
- A value framework containing measures of financial and non-financial value drivers aligned to stakeholder requirements, organisational values, and Asset Management objectives.
- Good stewardship to drive robust evaluation methods, modelling scenarios and constraints to determine whether the lifecycle value solution will deliver the requirements expected by stakeholders while considering competition for resources across the organisation.
- A multi-disciplinary approach with clear criteria across appropriate time horizon for qualifying and quantification value, direct and indirect intervention costs, risks, performance, customer service levels, sustainability and environment, social and corporate governance objectives, with financial investment and asset depreciation.
- A benefit tracking and monitoring system provides assurance that the activities execution and performance measures achieve the stated objectives of the lifecycle strategies, objectives, and plans, or identify risks to be managed.

### Artefacts

Typical artefacts within this subject include:

- Value Framework
- Criteria for decision-making
- Lifecycle Value Analysis processes and application criteria
- Lifecycle Strategies (initiatives) and Objectives (measures)

### Related Subjects

- 0.1. Whakapapa
- 3.1. Asset Management Strategy and Objectives
- 3.2. Demand Analysis
- 3.4. Planning
- 3.5. Decision-Making

### Āpōpō Learning

- AM 305 – Planning and Decision-Making
- AM 306 – Delivery
- AM 431 – Levels of Service

### Āpōpō Guide

- 3.6. Lifecycle Value Realisation

### Relevant Standards

- None

### Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate application of lifecycle value analysis techniques and business case development.

*Narrative includes examples from their work of the factors usually considered within business case development, optioneering and lifecycle value analysis which can include financial and non-financial drivers.*

OR

- Provide evidence of participation in planning activities that determine value, benefits and lifecycle costs of investments including business case development.

## 3.7. Resourcing Strategy and Management

### Definition

Determining the strategies, management of activities and processes to be undertaken by an organisation to engage people (internal and external), acquire and use assets (e.g., tools, equipment), materials and services to deliver its Asset Management Objectives and Asset Management Plans.

### Context

Resourcing strategy and management typically includes the analysis and planning necessary to determine the best way to establish, or procure, the resources required to deliver lifecycle activities. These are necessary to create, manage, maintain, and enforce contract and supplier management over the entire lifecycle of an asset, and take total cost of ownership into consideration. Resourcing strategy management considers the full supply chain including authoring, negotiations, adoption, definition of requirements, appraisal/selection of contractors, outsourcing-insourcing strategies, inventory and claim management. The processes used should be fair, equitable and legal and should also align with corporate standards, procedures, operating procedures, and legislation to ensure that negotiated savings reach the bottom line. Implementing resourcing strategy requires management of funds, personnel, facilities, tools, and materials in delivering Asset Management activities within a defined schedule.

Managing the resources required for the execution of each Asset Management activity includes:

- Financial budgeting and management
- Pricing strategies, either price-based strategies such as lump sum, bill of quantities, pricelist/price schedule or activity schedule strategies, or cost-based strategies such as cost reimbursable or target cost strategies
- Identification of critical spares, equipment, and materials
- Spare parts, special tools, and equipment procurement, storing and warehouse management
- Delivery arrangements that range from full internal provision, contracting for goods and services, partnerships, and shared services, to full outsourcing
- Diversity, equity and inclusion considerations or requirements in selection of suppliers.
- Standardised contracted Asset Management, maintenance services
- OEM and supplier commitment, partnering and management
- External and internal audit controls and procedures
- Application of risk assessment and management related to resources
- People resource management.

An outcome of the Resourcing Strategy should be a fully developed and agreed plan for the necessary resources to deliver the lifecycle strategies (both capital and operational) as defined in the Asset Management Plans.

### Artefacts

Typical artefacts within this subject include:

- Procurement or supply chain management policy, procedures, and plans

- Outsourcing- insourcing policy
- Supplier management including selection and assessment criteria
- Service Level Specifications
- Supplier database and contracts
- Materials management strategy (Stock and Non-Stock)
- Inventory records and materials/component catalogue
- Resourced operations, maintenance, and project plans
- Organisational structure, job specifications and labour agreements
- Training matrix and competency record retention strategy
- Management of Change (MoC)
- Internal and external audit assessment reports

### **Related Subjects**

- 3.4. Planning
- 6.2. Asset Creation and Acquisition
- 6.5. Maintenance Delivery
- 6.1. Systems Engineering
- 6.3. Integrated Reliability
- 5.3. Asset Management Data and Information Management
- 3.5. Decision-Making
- 5.5. Configuration Management
- 4.4. Competence Management
- 4.1. Asset Management Leadership

### **Āpōpō Learning**

- AM 203 – Lifecycle Planning
- AM 304 – Asset Management Strategy
- AM 305 – Planning and Decision-Making
- AM 431 – Levels of Service
- CC 102 – Carbon Emissions Analysis in Asset Management

### **Āpōpō Guide**

- 3.7. Resourcing Strategy and Management

### **Relevant Standards**

- ISO 5500x Series – Asset Management
- ISO 10845:1-8 Construction Procurement Collection 2020
- ISO 28000/1/2/3/4 - Specification for security management systems for the supply chain
- ISO 10007 - Configuration Management
- ISO 21500 series - Guidance on Project Management
- GFMAM Maintenance Framework

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of organisational procurement processes and resourcing strategy, and applied knowledge of how to address cost and risk within resourcing activities.

*Narrative describes the best way procure the resources required to deliver the full supply chain for lifecycle activities. The response should reference the MBIE procurement guidelines and government procurement rules.*

*Provides an example from their work of implementing a resourcing strategy to manage cost and risk, personnel, facilities, tools, and materials to deliver AM activities within a defined schedule.*

OR

- Provide evidence of participation in resource planning activities, and specifically the development of a procurement plan.

## 3.8. Shutdown and Outage Strategy and Planning

### Definition

An organisation's processes for the identification, planning, scheduling, execution, and control of work related to shutdowns, turnarounds, or outages (STOs). Definitions vary across industries and organisations but generally involve lengthy planned production stoppages or reduction in operations to perform maintenance in the case of shutdowns, and refurbishment, refitting, rebuild, or upgrading in the case of turnarounds. Outages are generally unplanned interruptions of shorter duration due to factors such as power supply interruptions or equipment failures. An STO event is measured as the period commencing from safe system shut down, hand-over for maintenance, isolation, performing the required work, system hand back to operations, to safe system start-up and restoration of required service levels. In some industries, this may also require certification before hand-back to operation, and recalibration to a larger system or network.

### Context

STO strategy and management involves an impact analysis, the development of strategy, policies, objectives, actions, processes, scope requirements, work packages, resourcing arrangements and approvals, and management of events that ensure effective management and alignment to the organisation's business continuity management. The strategy needs to find the optimum trade-off between the efficiencies of fewer but more extended shutdowns or outages that have a higher impact on production against more but shorter shutdowns or outages that have less impact on the organisation but result in less efficient delivery of work.

The planning and management activities within the scope of this subject include:

- Impact analysis and planning for all stakeholders and the environment.
- Development of STO strategy, objectives, and policies.
- Risk and contingency planning for catastrophic or costly issues occurring during the process.
- Asset infrastructure and business continuity planning.
- Development of STO management processes.
- Project Management best practices, scope and work package formulation, and application of critical path planning.
- Approval processes to undertake the shutdown inclusive of internal approvals and regulatory approvals.
- Communications to internal and external stakeholders affected.
- Post STO-event appraisal and improvement planning.

### Artefacts

Typical artefacts within this subject include:

- STO strategy, policies, procedures, and checklists
- STO work breakdown structure, work packages, schedule, resource plans and budgets
- Risk management plan
- Communications plan
- Level of authorities in the organisation for every stage of the shutdown or outage
- Documented acceptance criteria

- Management of Change (MOC) documentation
- Post-completion reports, and review and audit documentation

### **Related Subjects**

- 3.4. Planning
- 3.7. Resourcing Strategy and Management
- 6.5. Maintenance Delivery
- 5.5. Configuration Management

### **Āpōpō Learning**

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### **Āpōpō Guide**

- 3.8. Shutdown and Outage Strategy and Planning

### **Relevant Standards**

- ISO 21500 Series: Guidance on Project Management.
- ISO 10007: Configuration Management.
- GFMAM Maintenance Framework.
- ISO 10006 Guidelines for Quality Management in Projects.

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of what considerations are within a shutdown or outage strategy or process.

*Narrative including but not limited to: trade-offs, risks and impacts to service delivery, operations and production considerations within a shutdown strategy or process. Describe the elements within a shutdown scope of works, including but not limited to manpower, resources, materials and contractors.*

## 3.9. Contingency Planning and Resilience Analysis

### Definition

Contingency planning refers to the policies, plans, processes, and systems established by an organisation to respond and recover from a hazard event, crisis, or disaster. This includes ensuring continuity of critical organisational functions, services, and assets during the crisis, as well as resumption of normal operations thereafter. Contingency planning is informed by the outcomes of both conventional risk management processes and resilience analysis.

Resilience analysis is a risk-based process that assesses the ability of organisations and assets to withstand disruption and disturbance, deal with crisis, adapt to changing conditions and to prosper in the longer term. There are two equally important dimensions of resilience. Asset resilience refers to the ability of the asset or physical system to perform to an acceptable level during an event. Organisational resilience refers to the ability of an organisation to plan, manage, respond, and recover from an event to achieve the desired resilient outcomes.

### Context

A hazard is a potential adverse natural or human-induced physical event or trend that may result in business closure, injury or other health impacts, loss of life, damage and loss to property, infrastructure, service provision, ecosystems, and environmental assets. Potential hazards both proliferate and become more complex and drive the need for improved resilience. They tend to be extreme events and may include, and be exacerbated by pandemics, disruptive technologies, increasing levels of interdependent infrastructure systems, terrorist attacks, cyber-attacks, climate change and more frequent natural disasters of greater severity, global financial shocks and large-scale disruption of supply chain systems, and higher levels of customer expectations.

Risk management approaches often overlook events that are unpredictable or that have a low probability of occurrence coupled with high consequence. Resilience analysis supplements standard risk management frameworks and aims to identify these unpredictable or low probability/high consequence events so that mitigation processes and measures can be implemented to deal with these.

Resilience analysis can include, depending on the nature of the hazard, the complexity of asset systems, operating environment, and other factors such as:

- Identification of critical customers, processes, and assets, to determine minimum levels of service requirements for these.
- Assessment of the consequences of hazards in terms of service disruption and other economic, social, and environmental impacts. This could be done by assessing all the hazards or by assessing the consequences for a particular type of hazard.
- Determining current levels of vulnerability or resilience of assets or asset systems, considering factors such as assets' design parameters and ability to withstand shocks, asset redundancy, system modularity and the interconnectedness of infrastructure systems.
- Determining current levels of organisational resilience and ability to deal with and recover from shocks, whether the organisation's leadership and culture is suitably agile and adaptable to deal with hazards, and the systems, processes, and relationships in place to deal with contingencies.

- With consideration of the needs of critical customers, other customers, and assets, determine appropriate levels of resilience during the crisis or emergency response as well as asset system or business recovery phases.
- Develop strategies, actions, and plans to meet the requirements of resilient levels of services.

Contingency plans, also referred to as business continuity plans, include crisis management plans, disaster management plans or emergency response plans, and depending on context, other factors such as:

- Identification of critical services, functions, and assets.
- Identification and classification of hazardous events, crises, incidents and disasters by type and the strategies and actions for responding to these, based on prepared and tested scenarios.
- Strategies and planned actions that should, as appropriate, deal with emergency responses, crisis management, asset system recovery, business recovery, and business resumption.
- Establishing the level of command and the person in charge of each event type, inclusive of responsibilities and authorities, as well as escalation processes defining changes in structures, communication and reporting lines as an incident escalates.
- Identifying other support organisations with their specified responsibilities, needed for each type of event (or phase of an event).
- Reference to all needed contacts required during all scenarios.

Contingency plans should be formally approved by senior management and communicated and coordinated with stakeholders including customers, suppliers and other crisis or disaster management agencies as appropriate. Contingency planning is a continuous process of implementation, review, testing and updating or improvement. Personnel responsible for the management of contingencies must be periodically trained and responses tested to ensure preparedness. Contingency planning also requires identification and responses to new hazard types as the organisation's operating environment changes and evolves.

Following the realisation of a hazard event, the organisation should undertake an appraisal of the event, its impact, the effectiveness of the organisation's ability to adequately respond to the event, and improvement needs.

### **Artefacts**

Typical artefacts within this subject include:

- Documentation of types of hazards
- Documented asset criticality assessment, including assessment of asset vulnerability or resilience
- Documentation on critical customers and minimum service requirements
- Capital plans to reduce asset vulnerability
- A documented and approved contingency plan
- Approved and signed agreements between all parties and expectations during hazard events
- A responsibility matrix and escalation policy
- Reference to asset operating procedures

- Evidence of implementation of contingency plans, including regular review, training of, and testing of preparedness of contingency response teams
- Post hazard event appraisal and improvement plans

### **Related Subjects**

- 6.6. Incident Management and Response
- 2.6. Risk
- 3.5. Decision-Making
- 6.1. Systems Engineering

### **Āpōpō Learning**

- AM 433 – Risk and Resilience
- CC 101 – Introduction to Climate Adaptation in Asset Management

### **Āpōpō Guide**

- 3.9. Contingency Planning and Resilience Analysis

### **Relevant Standards**

- ISO 5500x Series – Asset Management
- ISO 22301: Business Continuity Management System

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of business continuity and contingency planning activities within an asset management context.

*Narrative includes but not limited to: business continuity planning activities such as resource planning, event/incident management, responsibility and decision trees, communications planning.*

OR

- Provide evidence of having developed or reviewed a business continuity or contingency plan for an organisation.

## 4.1. Asset Management Leadership

### Definition

Asset Management leadership is required to promote a whole Life Asset Management approach to delivering Organisational Strategic Plans and Asset Management objectives.

### Context

Leaders motivate their teams towards the successful completion of objectives by communicating established interpretations, sharing knowledge and skills to encouraging teamwork and leading by example.

Leadership competencies and skills include emotional intelligence, resilience, and effective communication. Asset Management leaders also need to take a transformation approach to encourage creativity and innovative thinking. Transformational leaders inspire and motivate people to embrace positive change and to continually improve the organisation's Asset Management system.

Leadership can be assigned, via a role in an organisation, or assumed, by an individual wanting to add value to their organisation. On that basis, all members of an organisation could have some degree of Asset Management leadership. However, people will naturally look to senior management for commitment in delivering Asset Management objectives that support and enhance their own leadership responsibilities.

Effective Asset Management leaders drive an Asset Management culture and supporting behaviours by engaging with people. They manage the continuity of competence and talent with a view to achieving Asset Management objectives. They also understand generational intelligence and recognise that there may be different approaches to work across the generations within their organisation.

For Asset Management to be successfully established, operate, and continuously improve, employees need to understand the objectives, and their role in achieving them. This requires leadership commitment from all levels of the organisation's management.

Leadership enables teamwork to be translated into planned results and the achievement of excellence. Sustainability of Asset Management has clear alignment between the organisation's strategic plans and the Asset Management activities delivered by employees. This alignment provides assurance that everybody understands how they contribute to achieve success in Asset Management.

Leadership commitment is required to develop the organisation based on the effort and competencies required to meet the needs of the organisation and remove the barriers to effective Asset Management.

### Artefacts

Typical artefacts within this subject include:

- Asset Management Policy
- Organisation chart

### Related Subjects

- 0.2. Manaakitanga
- 0.4. Whanaungatanga
- 0.6. Rangatiratanga
- 3.1. Asset Management Strategy and Objectives
- 4.2. Organisational Arrangements
- 4.3. Organisational Culture
- 3.6. Lifecycle Value Realisation
- 5.3. Asset Management Data and Information Management
- 3.5. Decision-Making
- 4.5. Organisational Change Management
- 2.1. Asset Management Policy
- 4.4. Competence Management
- 4.6. Knowledge Management

### **Āpōpō Learning**

- AM 302 – Organisational Strategy

### **Āpōpō Guide**

- 4.1. Asset Management Leadership

### **Relevant Standards**

- ISO 5500x Series – Asset Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the asset management leadership activities usually contained within an organisation’s Asset Management Strategy and Policy.

*Narrative provides examples from their work of the qualities and competencies of an Asset Management Leader. This may include resilience, emotional intelligence, effective communication, and how to initiate or develop asset management responsibilities and accountabilities within an organisation.*

## 4.2. Organisational Arrangements

### Definition

Describes how an organisation is arranged to facilitate an effective Asset Management culture and to acknowledge how Asset Management roles and responsibilities contribute to the achievement of Asset Management objectives.

### Context

The ability of an organisation to achieve its Asset Management objectives can be enhanced by leadership acknowledging and understanding how each role within the organisation contributes to successful outcomes. The way the organisation is then arranged, by way of structure, responsibilities, and lines of communication, will influence Asset Management culture, performance, and effectiveness.

Leadership may consider different types of organisational structures to achieve these outcomes. Organisational structures may look different depending on aspects such as:

- Cultural and social norms.
- Ownership structure – private, government, or listed company.
- Type of industry – products or services.
- Regulatory requirements.
- Maturity of the organisation – startup or established.
- Global span – regional site, single country, or multinational.

Regardless of the organisational structure, the organisational arrangements should provide alignment to Asset Management objectives and clarity of purpose and responsibility for all roles and/or reporting lines. This should enable relevant information to flow through the organisation to facilitate high performance outcomes and accountability.

The arrangements made should consider how they will affect the organisation's ability to shape Asset Management culture, manage competencies, capture, and share knowledge and manage change.

### Artefacts

Typical artefacts within this subject include:

- Asset Management roles and responsibilities including organisational chart
- Position or Job Description
- Responsible, Accountable, Consulted and Informed Charts (RACI Charts)
- Organisational Values
- Code of Conduct

### Related Subjects

- 3.1. Asset Management Strategy and Objectives
- 3.7. Resourcing Strategy and Management
- 4.1. Asset Management Leadership
- 4.3. Organisational Culture
- 4.4. Competence Management

## Āpōpō Learning

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## Āpōpō Guide

- 4.2. Organisational Arrangements

## Relevant Standards

- ISO 5500x Series – Asset Management

## Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of the organisational structure, roles and responsibilities usually contained within an organisation's Asset Management Strategy.

*Narrative describes organisational roles and responsibilities within an Asset Management Strategy. Provides an example from their work of examining the benefits and costs of both insourced and outsourced asset management teams and describes the differences, benefits and challenges between functional asset management structures, decentralised structures and matrix structures.*

## 4.3. Organisational Culture

### Definition

Culture as it pertains to an organisation is how its people think and behave in response to the organisation's vision, mission, values as well as the documented and undocumented rules, including social norms. Culture as it pertains to an organisation's Asset Management system is the processes that people follow to achieve Asset Management objectives.

### Context

An organisation with no clear vision, mission, and values, will likely result in an Asset Management system with no clear Asset Management objectives and will foster a reactive Asset Management culture. Consequently, organisations should establish and implement rules and processes to create a culture that supports the achievement of their Asset Management objectives.

Organisational culture is an indicator of Asset Management maturity and reflective of its leadership style. Understanding that culture is a factor which guides, influences, and shapes behaviour and is crucial to achieving organisational and Asset Management objectives.

Leadership styles, demographic composition, Asset Management processes and various other factors influence the organisational culture. Measurements strongly influence behaviour; therefore, a performance management system plays an important role in reinforcing the desired behaviours.

Culture should not be stagnant, it should evolve. The culture of the organisation needs to be regenerative and to embrace the positives emerging from newer and less experienced employees as well as professionals coming from different technical backgrounds and with different vocational experiences. It is important to promote a lifelong learning culture that encourages diversity of thought, equity, and inclusion.

To facilitate Asset Management co-ordination, the organisations that are coming from a culture of silos to a regenerative and unified culture. Breaking down organisational silos facilitates a culture that assists the successful implementation of an Asset Management system. A unified culture allows for collaboration across all organisational units and disciplines to meet increasing, and changing demands, and to ensure sustainable Asset Management strategies.

There is more than one type of culture, what is important is that the culture aligns to organisational objectives and ensures that they are achieved. Fundamentally a culture of stewardship and collaboration has a positive impact on achievement of objectives.

### Artefacts

Typical artefacts within this subject include:

- Organisational Strategy
- Asset Management Maturity Assessment Reports
- Audit Reports
- Management Review Reports
- Employee Surveys
- Change Management Plan

## Related Subjects

- 0.1. Whakapapa
- 0.5. Tikanga
- 3.1. Asset Management Strategy and Objectives
- 2.2. Asset Management System
- 4.1. Asset Management Leadership
- 4.2. Organisational Arrangements
- 4.5. Organisational Change Management
- 2.3. Asset Management Assurance and Audit
- 7.1. Outcomes and Impacts

## Āpōpō Learning

- AM 302 – Organisational Strategy

## Āpōpō Guide

- 4.3. Organisational Culture

## Relevant Standards

- None

## Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the considerations that contribute to creating excellent organisational culture within an asset management context.

*Narrative describes the asset management culture within an organisation you are familiar with, which features enhance a culture of excellence, what areas require improvement to improve the culture.*

## 4.4. Competence Management

### Definition

The processes used by an organisation to define, develop, and maintain an adequate supply of competent and motivated people who understand how to perform the activities needed to achieve its Asset Management objectives. This should include arrangements for managing competence from the boardroom to the workplace.

### Context

Competence management is about managing the ability of individuals in Asset Management roles to ensure they perform their work activities effectively and as required. This calls for a mix of practical Asset Management experience and skills underpinned by knowledge and understanding relevant to the activity being carried out. These requirements are strongly influenced by the organisational arrangements and individual behaviours. Asset Management is multidisciplinary and cross functional, requiring people who can work effectively in multidisciplinary teams, and are open to evidence, methodologies and approaches used by people with different experiences and knowledge and to integrate and interpret these into decision-making.

A strategic approach to managing competence and behaviour should cover the development of both individual and organisational competence. There are three central competencies (technical, behavioural, and work values) required that span a wide range of disciplines including engineering, finance, operations, maintenance, reliability, information systems, management, contract and supplier management, human resources, and organisational development.

The precise mix of competences that people and organisations need depends on their objectives, the context, and the circumstances they are operating in. Bringing these together to form coherent and effective Asset Management teams should be a central component of Asset Management strategy and planning.

Competencies can be gained through various means including but not limited to education, training, certification and on the job experience. A flexible organisational culture will embrace the increasingly diverse range of qualifications people are bringing to Asset Management, leveraging differences to positively influence achievement of Asset Management objectives.

As organisational Asset Management goals and objectives evolve, competencies must be managed to ensure alignment with the organisation's objectives. As such, individual competencies should be reassessed, and new competencies identified and gained. Typically, competencies are brought together in a human resources framework which is tailored to the organisation or occupational group with consideration of progression path and career growth and budgeted appropriately.

### Artefacts

Typical artefacts within this subject include:

- Competence Framework
- Competence assessment processes
- Training needs analysis

- Training course specifications
- Recognised qualifications

### **Related Subjects**

- 4.1. Asset Management Leadership
- 4.2. Organisational Arrangements
- 4.5. Organisational Change Management
- 3.1. Asset Management Strategy and Objectives
- 4.3. Organisational Culture
- 3.7. Resourcing Strategy and Management
- 4.6. Knowledge Management

### **Āpōpō Learning**

- AM 204 – Asset Management Enablers
- CW 101 – Introduction to Collaboration

### **Āpōpō Guide**

- 4.4. Competence Management

### **Relevant Standards**

- ISO 5500x Series – Asset Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the competencies required at operational, tactical and strategic asset management levels.

*Narrative considers technical, behavioural and work values within an asset management context.*

OR

- Provide evidence of having developed, reviewed or analysed asset management competency within an organisation, e.g. job description mapping or similar.

## 4.5. Organisational Change Management

### Definition

Organisational change management is a structured approach for managing the people side of change. It supports individuals through changes to Asset Management processes, technology, organisational alignment, and culture, with planning, implementation, communication, and sustainment of change to achieve the desired outcome.

### Context

Increasing maturity of assessment management practices will involve changes that impact the wider organisation. Organisational change management activities include change readiness, communications, training, resistance management, reinforcement, and feedback.

Successful organisational change management considers the following elements:

- An organisational change plan that considers known and unexpected events, including the documenting of objectives and the means to achieve them.
- An appropriate governance structure, with roles, responsibilities, and accountabilities.
- Ongoing commitment for organisational change by leadership across the organisation to guide organisational behaviour.
- Stakeholder participation should be encouraged through open, consultative, and continuous communication to create understanding of the organisational change.
- The human impacts of organisational change should be identified to align the workforce in support of change. Organisational culture should be considered when assessing the human impacts.

For individuals subject to change it is important that organisational change begins with understanding why it is occurring. Staff will likely engage and participate in organisational change when they understand the positive impacts of the changes.

Organisational change requires training and coaching for staff on new processes, tools, and skills to gain the knowledge required to adapt successfully. This enables staff to develop capabilities to implement change through demonstrated behaviours or performance.

Strategies may need to be developed to overcome resistance to change including identifying short term gains that can help accelerate change. Sustainable organisational change requires leadership commitment, effective communication, and reinforcement.

### Artefacts

Typical artefacts within this subject include:

- Organisational change management plan
- Stakeholder analysis
- Stakeholder engagement plan
- Communication plan
- Training plan
- Organisational change communications

### Related Subjects

- 0.5. Tikanga
- 4.1. Asset Management Leadership
- 3.1. Asset Management Strategy and Objectives
- 4.2. Organisational Arrangements
- 4.3. Organisational Culture
- 4.4. Competence Management
- 2.5. Management of Change
- 4.6. Knowledge Management

### **Āpōpō Learning**

- AM 308 – Improving Asset Management Maturity

### **Āpōpō Guide**

- 4.5. Organisational Change Management

### **Relevant Standards**

- ISO 5500x Series – Asset Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of organisational change management structured approaches for managing the people side of change.

*Narrative provides an example from their work of 1-2 change management activities which may include: change readiness, communications, training, resistance management, reinforcement, and feedback.*

## 4.6. Knowledge Management

### Definition

Knowledge management in Asset Management refers to the dynamic process of identifying, capturing, organising, and retaining knowledge, transforming tacit knowledge into explicit knowledge through socialisation, externalisation, combination, and internalisation.

### Context

The shared explicit knowledge about assets and their management enables informed, evidence-based, and timely decisions, resulting in improvements in the overall efficiency of equipment and processes throughout their lifecycle.

Treating knowledge management as a process promotes a culture of collaboration and sharing, facilitating the transfer of knowledge among leaders, teams, and other internal and external stakeholders. This reduces dependence on key individuals and mitigates risks associated with Asset Management and performance due to the loss of knowledge.

To implement knowledge management effectively, it is crucial to identify, and map critical knowledge related to assets, the management system, and Asset Management. Subsequently, it is important to identify the individuals who possess this knowledge, which should be externalised or shared, making it explicit through records or other documentation.

Once retained, this knowledge should be used to stimulate learning and innovation, enabling the conversion of individual explicit knowledge into shared explicit knowledge. Knowledge is dynamic, and as assets and technologies evolve and people and structures change, it is essential to establish regular practices for reviewing and updating knowledge and keeping it relevant.

The effectiveness of knowledge management in Asset Management can be assessed through relevant indicators that demonstrate how retained knowledge is being used in decision-making to ensure sustainable Asset Management and its results over time, mitigating associated risks and costs.

Leadership plays a crucial role in promoting the importance of knowledge management, which is interconnected with various other organisational features including culture, competency management and change management. Organisational culture should support and encourage knowledge sharing, creating an environment conducive to learning and collaboration.

### Artefacts

Typical artefacts within this subject include:

- Knowledge Management Strategy
- Knowledge Management Processes
- Critical Knowledge List
- Succession Plan
- Change Management Plan

### Related Subjects

- 0.4. Whanaungatanga

- 4.1. Asset Management Leadership
- 4.3. Organisational Culture
- 4.4. Competence Management
- 4.5. Organisational Change Management
- 3.1. Asset Management Strategy and Objectives
- 3.4. Planning
- 2.6. Risk
- 5.1. Asset Management Data and Information Strategy
- 5.5. Configuration Management
- 2.3. Asset Management Assurance and Audit
- 2.5. Management of Change
- 7.1. Outcomes and Impacts
- 2.2. Asset Management System

### **Āpōpō Learning**

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### **Āpōpō Guide**

- 4.6. Knowledge Management

### **Relevant Standards**

- ISO 5500x Series – Asset Management
- ISO 30401 – Knowledge Management Systems

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of knowledge management as a process within an asset management context.

*Narrative includes an example from their work of identifying, capturing, organising, and retaining knowledge within an organisation. Describes how they have mapped critical knowledge related to assets and management systems and identified the individuals who possess this knowledge.*

## 5.1. Asset Management Data and Information Strategy

### Definition

The strategic approach to the definition, collection, management, disposal, analysis, reporting and overall governance of Asset Management data and information necessary to support the implementation of an organisation's Asset Management strategy and objectives.

### Context

An Asset Management Data and Information Strategy describes how Asset Management data and information supports the delivery of the Asset Management Strategy and objectives, and what Asset Management Data and Information Systems and governance processes are necessary to acquire, maintain, and utilise data and information. An Asset Management Data and Information Strategy can be used to support business cases for improvement in data and information capture, technology, and software investment as part of a broader digital strategy to keep pace with emerging methods for Asset Management data and information use. The Asset Management Data and Information Strategy should be developed in alignment with an organisation's data, information and digital policies and strategies. These would typically include:

- An asset data and information model aligned to organisational standards that serves as a framework for the integration of asset data and information analysis and system interoperability across the asset portfolio and the organisation.
- The identification of data and information requirements necessary to support the organisation's processes, including opportunities to standardise systems for greater efficiencies for existing and future requirements.
- The identification of asset data and information requirements to support the organisation's analysis, decision-making and operational processes including achieving data quality requirements.
- Consideration and monitoring of emerging technologies such as digital twins, artificial intelligence, and predictive analysis.
- An analysis of the value provided by data and information requirements, including consideration of data quality requirements, in alignment with Asset Management and organisational objectives.
- Responsibilities and accountabilities for data and information management at a strategic level, including security, ethical governance, and responsible use of data.
- Processes for continued alignment of these requirements to the Asset Management objectives as the organisation's requirements evolve.
- A gap analysis of current data and information availability, management practices, and data and information flows against requirements, including consideration of data quality requirements.
- The identification of risks related to cyber security controls for Asset Management data and information and processes to control these risks in accordance with the organisation's cyber security strategy and policies.
- A description of the organisation's Asset Management data and information improvement programs.

### Artefacts

Typical artefacts within this subject include:

- Asset Management Data and Information Strategy
- Asset Management Data and Information Strategy Roadmap
- Asset Information Models
- Cyber security strategy and policy
- Data and information policy
- Digital strategy

### **Related Subjects**

- 0.3. Kaitiakitanga
- 1.1. Organisational Purpose and Context
- 5.2. Asset Management Data and Information Standards
- 5.3. Asset Management Data and Information Management
- 5.5. Configuration Management
- 5.4. Asset Management Data and Information Systems
- 3.1. Asset Management Strategy and Objectives
- 2.6. Risk

### **Āpōpō Learning**

- AM 202 – Understanding Requirements
- AM 303 – Knowledge Management

### **Āpōpō Guide**

- 5.1. Asset Management Data and Information Strategy

### **Relevant Standards**

- ISO 27000 Information technology — Security techniques — Information security management systems — Overview and vocabulary
- ISO 19650 - Building Information Modelling (BIM)
- ISO 8000 Data quality

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the elements usually contained in an Asset Information Strategy (AIS).

*Narrative includes but not limited to: policy, process, accountabilities, responsibilities and organisational and business objectives elements for asset information and data quality and asset management.*

OR

- Provide evidence of participation in developing an AIS (or AMIS) for an organisation.

## 5.2. Asset Management Data and Information Standards

### Definition

The specification of a consistent structure and format for the acquisition, maintenance and use of data and information required to support an organisation's activities, including defining and reporting on its purpose, value to the organisation, and its quality to ensure it is always fit for purpose.

### Context

Asset Management Data and Information Standards include the development of standards, specifications and guidance documents which are aligned to the organisation's Asset Management Data and Information Strategy. This ensures a consistent approach to the acquisition, maintenance, use and disposal of data and information across internal and external stakeholders and interoperability between Asset Management Data and Information Systems. A standardised approach supports the use of data driven technologies and enables data driven decision-making. Information Standards include defining methods for recording, securing, and managing the quality of all types of data. They typically include:

- Asset classification, naming and delineation data.
- Metadata for configuration management.
- Asset defect and performance data.
- Geospatial and physical location data.
- Financial and accounting data.
- Legal, regulatory, and local jurisdictional data.
- Asset utilisation data.
- Asset risk data.
- Operational status and performance data.
- Environmental data.

### Artefacts

Typical artefacts within this subject include:

- Organisational Data and Information Requirements
- Asset Data and Information Standards and Guidelines
- Asset Data Dictionary
- Data Quality Definitions and Guidelines
- Project Specific Data and Information Requirements
- Data Schemas

### Related Subjects

- 5.1. Asset Management Data and Information Strategy
- 5.3. Asset Management Data and Information Management
- 5.5. Configuration Management
- 5.4. Asset Management Data and Information Systems

### Āpōpō Learning

- AM 204 – Asset Management Enablers

- AM 303 – Knowledge Management

### **Āpōpō Guide**

- 5.2. Asset Management Data and Information Standards

### **Relevant Standards**

- ISO 27000 Information technology — Security techniques — Information security management systems — Overview and vocabulary
- ISO 19650 - Building Information Modelling (BIM)
- ISO 8000 Data quality

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the elements usually contained in an Asset Information Standard.

*Narrative includes but not limited to asset hierarchy, meta data, asset attributes such as condition and spatial position.*

OR

- Provide evidence of participation in the development or review of an asset information standard for an organisation.

## 5.3. Asset Management Data and Information Management

### Definition

The processes required for the management and governance of all Asset Management data and information.

### Context

Asset Management Data and Information Management includes the work processes and procedures related to treatment of data and information as an asset, including data governance and security over the lifecycle of the data and information. Asset Management Data and Information Management processes apply to data-driven analytical models used within the organisation's Asset Management Data and Information Systems to support data-driven decisions. Asset Management Data and Information Management includes consideration of the following:

- The treatment of data and information as an asset with data ownership and stewardship responsibilities defined across each stage of the data and information lifecycle.
- The identification of competency requirements and control of risks related to the governance and lifecycle management of data-driven processes and analysis.
- User-experience and data sharing requirements throughout the data and information lifecycle - from data creation and acquisition through maintenance, use, record retention, and data disposal.
- Access to information requirements, security protocols including data privacy constraints for data and information sharing with internal and external stakeholders, document and content management, regulatory requirements, and record retention processes.
- Control of data quality risks related to configuration management, management of change, and effective data transitions between stages of the asset lifecycle.
- Process is inclusive of both master and reference data and transactional and historical data and could include use of metadata enrichment practices.
- Assurance processes to ensure consistency with the asset information standards, cyber security requirements, and data and information access requirements.

### Artefacts

Typical artefacts within this subject include:

- Data management processes and procedures
- Data governance policy and procedures
- Data stewardship roles and responsibilities
- Data assurance and audit reports
- Records Retention Policy

### Related Subjects

- 5.1. Asset Management Data and Information Strategy
- 5.2. Asset Management Data and Information Standards
- 5.5. Configuration Management
- 5.4. Asset Management Data and Information Systems

## Āpōpō Learning

- AM 303 – Knowledge Management

## Āpōpō Guide

- 5.3. Asset Management Data and Information Management

## Relevant Standards

- GFMAM Maintenance Framework
- ISO 5500x Series – Asset Management
- ISO 27000 Information technology — Security techniques — Information security management systems — Overview and vocabulary
- ISO 8000 Data quality
- ISO 19650 - Building Information Modelling (BIM)

## Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the processes required for the management and governance of all Asset Management data.

*Narrative provides an example from their work of how data and information was owned, collected and managed within an organisation for the purpose of supporting asset management activities. Describes data governance considerations, including but not limited to data validation data quality processes, data assurance and audit, and expected life of data.*

## 5.4. Asset Management Data and Information Systems

### Definition

Asset Management Data and Information Systems support Asset Management activities and decision-making processes in accordance with the Asset Information Strategy and in support of all Asset Management processes in the GFMAM Asset Management Landscape.

### Context

Asset Management Data and Information Systems include the acquisition, maintenance, use and disposal of all data and information systems necessary to deliver asset information requirements defined in the Asset Management Data and Information Strategy. These support Asset Management objectives and organisational strategy. The holistic nature of Asset Management requires integration and interoperability across multiple asset information systems. They should integrate across functional areas, the asset lifecycle, and internal and external stakeholder systems. Asset Management Data and Information Systems include consideration of the following:

- The asset information systems, common data environment, and interoperable architecture necessary to deliver the information system requirements defined in the Asset Management Data and Information Strategy
- Alignment of Asset Management Data and Information System requirements to the organisation's digital strategies
- Periodic review of system utilisation to identify opportunities for emerging technologies to make processes more efficient or disrupt existing processes
- Consideration of the usability of data and information systems, including user experience for workplace diversity, and data and analytical literacy skills
- Analysis of the value of data and information and the costs and benefits of implementing and maintaining Asset Management Data and Information Systems to meet the organisation's requirements
- Asset Management Data and Information Systems implementation plan including governance arrangements
- An Asset Management Data and Information Systems migration plan to move from the current systems to the required architecture
- A lifecycle management plan for the data and information systems
- Clearly defined system roles, responsibility, ownership, and governance processes
- An assessment of internal, external, deliberate, and accidental data and information security risks and the development of a data and Information Security Management Plan that addresses mitigation actions, applicable standards, response protocols, remediation processes, and competence requirements.

### Artefacts

Typical artefacts within this subject include:

- Data and Information Systems Architecture
- Data and Information Systems Strategy and Business Cases
- Data and Information Systems Implementation and Migration Plan
- Data and Information Systems governance and ownership arrangements

- Data and Information Systems Lifecycle Management Plan
- Data and Information Security Management Plan.

### **Related Subjects**

- 5.1. Asset Management Data and Information Strategy
- 5.2. Asset Management Data and Information Standards
- 5.3. Asset Management Data and Information Management
- 5.5. Configuration Management

### **Āpōpō Learning**

- AM 204 – Asset Management Enablers
- AM 303 – Knowledge Management

### **Āpōpō Guide**

- 5.4. Asset Management Data and Information Systems

### **Relevant Standards**

- ISO 27000 Information technology — Security techniques — Information security management systems — Overview and vocabulary
- ISO 9001 Quality management
- ISO 19650 - Building Information Modelling (BIM)

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of Asset Management Data and Information Systems.

*Narrative includes the system elements usually considered within in an Asset Information System and a typical asset information system architecture. Describes 1-2 benefits and costs of an asset information system.*

OR

- Provide evidence of participation in the development or review or procurement of an asset information system for an organisation.

## 5.5. Configuration Management

### Definition

A management process for establishing and maintaining consistency of an asset's physical and functional attributes with its design and operational information throughout its lifecycle. Configuration Management provides knowledge of the current configuration of an asset and the relationship between that asset and the information relevant to its function within a system.

### Context

Configuration Management describes policies and processes for the identification, recording and monitoring, and information models for the management, of an asset's functional and physical status. Configuration Management typically includes:

- Identifying configuration management requirements for the management of master and reference data, including the recording and retention of historical data.
- Defining roles and responsibilities associated with implementing configuration change and its communication across internal and external stakeholders (both physical change and corresponding documentation and information).
- The development of configuration management policies and processes, including assurance processes.
- Consideration of the impact of physical configuration change on the operation of a system, including controls that are in place to execute configuration change.
- Maintaining up-to-date records of current and past configuration states.

### Artefacts

Typical artefacts within this subject include:

- Configuration Item Register
- Configuration Management Plan, Strategies and Records
- Configuration Baselines and Baseline Agreements
- Configuration Management Change and Variance Requests
- Configuration Status and Evaluation Reports
- System Release Reports and Approvals
- Asset Data and Information Models

### Related Subjects

- 6.1. Systems Engineering
- 5.1. Asset Management Data and Information Strategy
- 5.2. Asset Management Data and Information Standards
- 5.3. Asset Management Data and Information Management
- 5.4. Asset Management Data and Information Systems
- 2.5. Management of Change

### Āpōpō Learning

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### Āpōpō Guide

- 5.5. Configuration Management

#### **Relevant Standards**

- ISO 10007 Guidelines for configuration management
- SAE EIA-649-C Configuration Management Standard
- ISO 19650 - Building Information Modelling (BIM)

#### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of the asset management lifecycle.

*Narrative describes how assets have been managed and monitored throughout their lives to optimise reliability, consistency and performance.*

OR

- Provide evidence of undertaking lifecycle and asset configuration analysis for a group of assets within an organisation.

## 6.1. Systems Engineering

### Definition

Systems Engineering is an interdisciplinary, collaborative approach to derive, evolve, and verify a whole lifecycle balanced system solution which satisfies stakeholder expectations and meets organisational outcomes and targets. Systems Engineering enables an assurance function and considers holistic requirements with consideration for technical system and sub-system level, and associated interoperability.

### Context

Systems Engineering describes policies and processes for the requirements analysis, design, verification and validation strategies for system integration and interfaces from technical and non-technical system interactions for internal and external stakeholder. Systems Engineering processes also relate to managerial and technical activities with verification and validation being a critical element to assure that operational requirements are addressed appropriately across the whole asset lifecycle. Systems Engineering considers the importance of master data and the requirements of up to date and accurate technical information.

The implementation of requirements analysis within Systems Engineering involves breaking down of the system and sub-system to a technical systems design, understanding the interactions, and any organisational requirements (concept of operations) that will be confirmed in the commissioning phase. Systems Engineering is a continuous process that relies on application of risk management and assurance practices across and between all phases of the asset lifecycle.

### Artefacts

Typical artefacts within this subject include:

- Systems Engineering Management Plan
- System Description and documented Interface and Interoperability
- System Requirements Documents
- System Engineering Performance Measures
- System Analysis Plan and Reporting
- Documented Systems Engineering Processes and Standards
- Design deliverables
- Verification and Validation Strategy and Testing
- Organisational Requirements or Concept of Operations
- Transition/Handover documents
- Mobilisation Plans

### Related Subjects

- 0.5. Tikanga
- 6.2. Asset Creation and Acquisition
- 5.5. Configuration Management
- 2.5. Management of Change
- 6.3. Integrated Reliability
- 6.5. Maintenance Delivery

- 6.4. Asset Operations
- 6.7. Asset Repurposing and Disposal
- 2.6. Risk

### **Āpōpō Learning**

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### **Āpōpō Guide**

- 6.1. Systems Engineering

### **Relevant Standards**

- GFMAM Maintenance Framework
- ISO 10007 - Configuration Management
- ISO/IEC 15288 - Systems and Software Engineering
- ISO 21500 series - Guidance on Project Management
- ISO 31000 – Risk Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of the asset management system and elements within an asset management system.

*Narrative provides an example from their work of the elements of the asset management system, including but not limited to: management processes, design frameworks, human and other resources, procurement activities, organisational service levels and objectives.*

OR

- Provide evidence of participation within an asset management system development or review process within an organisation.

## 6.2. Asset Creation and Acquisition

### Definition

Asset Creation and Acquisition encompasses activities during the planning, acquisition, design, supply, change management, manufacturing, installation, and commissioning of assets and related systems as well as the transition through the stages of the asset lifecycle.

### Context

Asset Creation and Acquisition is the stage in an asset lifecycle where the organisation decides on the specifications and required outputs of an asset to deliver against requirements, Asset Management objectives, and the capability of an asset across the lifecycle. This subject describes policies and processes for the planning, acquisition, installation, commissioning, lifecycle operations and maintenance, asset renewal, replacement, upgrading, repurposing, decommissioning, and retirement of assets. It also includes elements of funding, arrangements for hand-over to operations, process status reporting, the monitoring and capture of actual costs and benefits analysis. It is critical to understand all system integration and interfaces from a technical and non-technical point of view and how any requirements (concept of operations) have been confirmed.

The asset owner should understand the asset's whole of life costs, financial management of the asset, future maintenance requirements ensuring maintainability and reliability requirements and possibly future upgrades or obsolescence concerns of major systems and how this would be achieved.

### Artefacts

Typical artefacts within this subject include:

- Acquisition Strategy
- Acquisition Agreement
- Asset information records
- Asset Registers and As-Built documentation

### Related Subjects

- 3.4. Planning
- 1.3. Asset Costing and Valuation
- 6.5. Maintenance Delivery
- 6.4. Asset Operations
- 6.3. Integrated Reliability
- 5.5. Configuration Management
- 6.1. Systems Engineering
- 3.5. Decision-Making
- 3.2. Demand Analysis

### Āpōpō Learning

- AM 305 – Planning and Decision-Making
- AM 306 – Delivery

### Āpōpō Guide

- 6.2. Asset Creation and Acquisition

#### **Relevant Standards**

- GFMAM Maintenance Framework
- ISO 10007 - Configuration Management
- ISO/IEC 15288 - Systems and Software Engineering

#### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the organisational processes usually undertaken for the acquisition, installation and commissioning of assets.

*Narrative on asset creation and acquisition processes including but not limited to: acquisition planning and investment decision-making, procurement, project management, handover and commissioning activities within an infrastructure planning and construction environment.*

OR

- Provide evidence of participation within one (1) organisational asset creation or acquisition activity, including but not limited to: asset acquisition, investment decision-making, procurement, project management, construction management, handover or commissioning.

## 6.3. Integrated Reliability

### Definition

The reliability of an asset or system is its ability to perform and operate as intended for its projected lifecycle, in a specific environment or under certain conditions.

Integrated Reliability is a holistic collection of policies, principles, processes, and systems used to deliver, monitor, and improve reliability, Asset Management and lifecycle delivery activities towards a system or asset. It is an approach that applies engineering principles and techniques to identify and mitigate potential failure modes, minimise downtime, and optimise performance throughout the whole lifecycle.

### Context

Reliability is an approach that applies reliability principles, methods, and techniques to minimise downtime, optimise asset performance, monitor asset health, and promote value throughout the asset's lifecycle. Reliability approaches consider the asset's operating context, its capacity to produce the demonstrated asset performance and stakeholder expectations.

Integrated Reliability deploys, develops, and designs policies, procedures, processes to support reliability, availability, and maintainability. The organisation should identify and develop Asset Management strategy programmes to manage the consequences of failure based on failure modes, operating context, criticality, risk and identified task effectiveness. It should also analyse maintenance, repair, operations (MRO) spares for criticality, redundancy, and required quantities. Integrated reliability also aims to identify, track, and monitor asset technical or process changes to improve reliability using a management of change (MOC) or the configuration management system. It should implement the specified reliability engineering processes, including the collection, analysing and interpretation of data from these systems to support monitoring, reliability and continuous improvement of assets or systems. As well, it should measure asset performance to identify potential actions to improve asset reliability and health with relevant and appropriate techniques. Performance of root cause analysis of identified incidents related to asset failure to determine all factors, causes and potential corrective actions to mitigate future occurrences is also an important aspect of integrated reliability.

### Artefacts

Typical artefacts within this subject include:

- Overall Production Functional Availability
- Operational Performance Reporting
- Asset Criticality and Risk
- Spares Analysis
- Standard Operating Procedures
- System Design Specifications e.g., Operating Context
- Asset Maintenance Strategy
- Reliability Modelling
- Root Cause Analysis

### Related Subjects

- 3.1. Asset Management Strategy and Objectives
- 5.1. Asset Management Data and Information Strategy
- 7.2. Monitoring
- 6.5. Maintenance Delivery

### **Āpōpō Learning**

- AM 306 – Delivery

### **Āpōpō Guide**

- 6.3. Integrated Reliability

### **Relevant Standards**

- GFMAM Maintenance Framework

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate application of asset reliability engineering processes as part of an asset management system.

*Narrative describes the artefacts including but not limited to: policies, principles, processes, and systems used to deliver, monitor, and improve reliability of a system or asset. Provides an example from their work of the engineering approach to identify and mitigate potential failure modes, minimise downtime, and optimise performance throughout the whole asset lifecycle.*

OR

- Provide evidence of undertaking a reliability engineering process within an asset management portfolio.

## 6.4. Asset Operation

### Definition

Asset Operation encompasses the policies, processes, procedures used by an organisation to operate their assets and achieve Asset Management strategic objectives.

### Context

Asset Operation provides a framework for communicating instructions on how to operate the assets within their design, maintenance, operational, reliability, safety, environmental and legal parameters.

Asset Operation includes the development and management of a relevant asset operations strategy and supporting plans to define the approach, and resources required for operations to ensure that the asset and or asset system that:

- Meets functional requirements
- Are operated within the required service level and operating parameters (as designed/specified)
- Meet legal and technical requirements such as health, safety and environment, security, and reliability
- Achieve and sustain defined levels of physical, functional, and financial performance
- Provide rationale, data, and evidence for continuous improvement.

### Artefacts

Typical artefacts within this subject include:

- Asset Operation Strategy
- Asset Operations Plan
- Standard Operating Practices and Procedures (SOPs)

### Related Subjects

- 3.1. Asset Management Strategy and Objectives
- 3.4. Planning
- 3.7. Resourcing Strategy and Management
- 5.5. Configuration Management
- 2.5. Management of Change

### Āpōpō Learning

- AM 203 – Lifecycle Planning
- AM 204 – Asset Management Enablers
- AM 306 – Delivery
- CC 102 – Carbon Emissions Analysis in Asset Management

### Āpōpō Guide

- 6.4. Asset Operation

### Relevant Standards

- ISO5500X Series – Asset Management Standards
- GFMAM Maintenance Framework

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of operations management, as part of asset management lifecycle activities.

*Narrative provides an example from their work of the factors 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.*

## 6.5. Maintenance Delivery

### Definition

Maintenance Delivery encompasses the management of maintenance work activities for tangible and intangible assets throughout their intended lifecycle. This subject also considers the importance of asset data and information record keeping within the maintenance environment, and the periodic review of how asset maintenance strategies should be periodically reviewed and updated to reflect an asset's useful life and its criticality.

### Context

Maintenance of assets is an integral function and value contributor to Asset Management. Maintenance delivery incorporates the maintenance work and management activities of identification, planning, scheduling, execution, and analysis. The specific asset maintenance strategies applied align to the asset lifecycle stage, criticality, and risk within the operational function for an organisation, the service the asset provides and the level of service to which it should be maintained, the asset's remaining useful life and its residual value. Maintenance strategies may change as the asset ages or if the operational context changes.

Shutdowns, turnarounds, and major outages are a significant maintenance delivery activity which has a strategic impact on the organisational capability to realise value. The effort to perform this aspect of maintenance delivery requires specific consideration for:

- Planning, scheduling, and an approval process for undertaking the shutdown, turnaround, or major outage.
- Communications with internal and external stakeholders.

Maintenance delivery contributes to organisational value through the balance of cost, risk, and performance. For asset intensive companies, the impact of maintenance delivery on their financial performance is significant.

### Artefacts

Typical artefacts within this subject include:

- Asset Maintenance Plans
- Maintenance strategies and actions
- Maintenance Work Management policies and procedures
- Shutdown, Turnaround, Major Outage Strategy
- Production Forecast

### Related Subjects

- 3.7. Resourcing Strategy and Management
- 3.6. Lifecycle Value Realisation
- 3.5. Decision-Making
- 5.5. Configuration Management
- 2.5. Management of Change
- 4.4. Competence Management
- 6.4. Asset Operation
- 5.3. Asset Management Data and Information Management

- 3.8. Shutdown and Outage Strategy and Planning
- 6.3. Integrated Reliability
- 3.5. Decision-Making

### **Āpōpō Learning**

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### **Āpōpō Guide**

- 6.5. Maintenance Delivery

### **Relevant Standards**

- GFMAM Maintenance Framework
- ISO 10007 - Configuration Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of the asset maintenance activities.

*Narrative provides an example from their work of implementing a maintenance programme development, maintenance and operations reporting functions, and maintenance as part of asset management lifecycle activities.*

OR

- Provide evidence of undertaking a maintenance programme or specification for a group of assets within an organisation.

## 6.6. Incident Management and Response

### Definition

Incident Management and Response is a structured approach for addressing incidents in a systematic manner, guided by the severity, risk or criticality of the incident. This a comprehensive approach that encompasses the entire incident lifecycle, encompassing the stages of incident identification, escalation, reporting, response, investigation, remediation, and data gathering. This framework may draw upon pre-established contingency plans and resilience analysis documents. Its primary objectives are to safeguard the well-being of individuals, both on-site and in the broader community, ensure an effective response to protect the environment, to preserve assets, and to uphold the reputation of the organisation.

### Context

Incident management and response outlines the policies, plans and processes required for effective response, communication, coordination, and investigation, internally and where relevant, to the public and external regulatory bodies. They include organisational, legal, and regulatory obligations for response plans.

### Artefacts

Typical artefacts within this subject include:

- Incident Management and Response Policy, Plans and Processes
- Communication Plan
- Risk Register
- Status Reports
- Post Incident Analysis

### Related Subjects

- 0.4. Whanaungatanga
- 3.9. Contingency Planning and Resilience
- 6.3. Integrated Reliability
- 6.1. Systems Engineering

### Āpōpō Learning

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### Āpōpō Guide

- 6.6. Incident Management and Response

### Relevant Standards

- GFMAM Maintenance Framework
- Local jurisdiction legal requirements

### Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of priorities that are considered for fault and incident management.

*Narrative of 2-3 priorities including but not limited to: detection and identification, fault analysis, incident response plans, communication, taking over/handing back sites, and resource plans.*

OR

- Provide evidence of participation within the development of a business continuity plan or participation within a fault, event, or incident response.

## 6.7. Asset Repurposing or Disposal

### Definition

Asset Repurposing or Disposal involves the processes used by an organisation to decommission, retire, repurpose, reclaim, and dispose of assets. This could be due to deterioration, technology improvements, obsolescence, or changes in performance, legal, regulatory and/or capacity requirements.

### Context

Asset Repurposing or Disposal includes the integration with other organisational strategic planning activities. This includes environmental and social focus on re-use, reclamation, recycling and reduction of waste and carbon footprint. This encourages organisations to include repurposing and recycling as key considerations in asset decommissioning activities as part of lifecycle management. The financial and risk management implications of asset repurposing or disposal are significant inputs to related organisational strategic and Asset Management decisions.

### Artefacts

Typical artefacts within this subject include:

- Environmental Impact Analysis
- Land Rehabilitation Plan
- Strategic Asset Management Plan
- Asset Disposal Plan
- Maintenance Plan for decommissioned assets

### Related Subjects

- 2.6. Risk
- 5.3. Asset Data and Information Management
- 3.5. Decision-Making
- 6.2. Asset Creation and Acquisition
- 3.2. Demand Analysis
- 2.5. Management of Change
- 5.5. Configuration Management

### Āpōpō Learning

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### Āpōpō Guide

- 6.7. Asset Repurposing or Disposal

### Relevant Standards

- GFMAM Maintenance Framework
- ISO 10007 - Configuration Management
- Local jurisdiction legal requirements

### Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of considerations for asset disposal.

*Narrative of 1-2 considerations including but not limited to: lifecycle cost, end of useful life, asset obsolescence/redundancy and residual value.*

OR

- Provide evidence of participation in developing an asset disposal plan within an AMP or similar.

## 6.8. Supply Chain Management

### Definition

Supply Chain Management is the process used by an organisation to ensure the provisioning of all equipment, tools, and resources to perform Asset Management activities are aligned with the Asset Management objectives.

### Context

Supply chain management includes all the activities necessary to acquire, manage, maintain, and enforce contract and supplier management over the entire lifecycle of an asset, taking total cost of ownership into consideration. It includes purchasing, inventory, warehousing, and contracting (authoring, negotiations, adoption, definition of requirements, appraisal and selection of contractors, outsourcing-insourcing strategies, and claim management). Its processes align with corporate standards, procedures, operating procedures, legislation, and organisational values of fair, equitable and legal approach to purchasing and contracts.

### Artefacts

Typical artefacts within this subject include:

- Forward Works Plan or Forecast Plan.
- Procurement Purchasing Policy.
- Contractor Policy and selection criteria.
- Service or supply contract Policy and selection criteria.

### Related Subjects

- 3.1. Asset Management Strategy and Objectives
- 6.2. Asset Creation and Acquisition
- 6.5. Maintenance Delivery
- 6.3. Integrated Reliability
- 5.3. Asset Management Data and Information Management
- 5.5. Configuration Management
- 2.5. Management of Change
- 3.7. Resourcing Strategy and Management

### Āpōpō Learning

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### Āpōpō Guide

- 6.8. Supply Chain Management

### Relevant Standards

- GFMAM Maintenance Framework

### Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate application of a procurement plan and a supply chain management process for delivery of services.

*Narrative provides an example from their work of 1-2 elements of a procurement plan which could include organisational objectives, specified project or LOS outcomes, procurement method, evaluation criteria, minimum conforming attributes for suppliers/contractors. Describes 2-3 factors of supply chain management from the following range: planning, sourcing/procurement, production, operations, delivery/distribution, logistics and workflow management and return on investment.*

OR

- Provide evidence of participating in or developing a procurement plan that follows the MBIE Government Rules of Sourcing and procurement guidelines.

## 7.1. Outcomes and Impacts

### Definition

Outcomes and impacts processes that assess the extent to which the implementation of Asset Management activities achieve Asset Management objectives. They also assess to what extent the Asset Management objectives contribute to the achievement of the organisational objectives to meet stakeholder needs and expectations.

Review of outcomes and their impact being delivered against the organisational and Asset Management objectives is also an aspect of outcomes and impacts. This enables adjustments to be made to objectives by an organisation to ensure that the desired outcomes and impacts are achieved.

### Context

The specification of the required value to be realised and the subsequent desired outcomes and impacts will depend on the needs and expectations of an organisation's stakeholders, the organisational value framework, as well as the organisational and Asset Management objectives.

In general, what generates value is the decision-making process around the identification and subsequent implementation of value drivers and value enablers that have an impact on performance, cost and/or the risk. This aids the realisation of value to meet the desired outcomes and impacts.

Outcomes and impacts realisation provides a basis for assessing progress towards the achievement of desired outcomes and impacts through the management of assets.

It enables the translation of quantitative and qualitative metrics established for monitoring asset health, performance of the Asset Management system, and the effectiveness of Asset Management overall.

In assessing outcomes, it is important to understand the factors that contribute to or hinder the realisation of outcomes and impacts. This is necessary to inform future strategies, effective decision-making and the continual improvement of value realisation.

The frequency and regularity of outcome and impact reviews must be maintained at an appropriate level to help prevent any deviation from attaining Asset Management and organisational objectives.

### Artefacts

Typical artefacts within this subject include:

- Outcomes and Impacts reporting
- Milestone trend charts
- Value Framework
- The Organisational Value Generation Model

### Related Subjects

- 0.3. Kaitiakitanga
- 0.6. Rangatiratanga

- 7.2. Monitoring
- 7.3. Continuous Improvement
- 2.2. Asset Management System
- 3.1. Asset Management Strategy and Objectives
- 3.4. Planning
- 3.5. Decision-Making
- 2.6. Risk
- 1.2. Stakeholder Management
- 4.1. Asset Management Leadership
- 2.5. Management of Change
- 2.3. Asset Management Assurance and Audit
- 5.4. Asset Management Data and Information Systems.

### **Āpōpō Learning**

- AM 101 – Introduction to Asset Management
- AM 307 – Performance Management
- GOV 101 – Infrastructure Leadership and Governance
- CW 101 – Introduction to Collaboration

### **Āpōpō Guide**

- 7.1. Outcomes and Impacts

### **Relevant Standards**

- None

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of what is usually contained in an outcomes and impacts assessment or maturity assessment.

*Narrative provides an example of the asset management activities assessed and/or evaluated that contribute to achieving Asset Management objectives and organisational objectives to meet stakeholder needs and expectations. Includes 1-2 quantitative and qualitative metrics for monitoring asset health, performance of the Asset Management system, and the effectiveness of Asset Management overall.*

OR

- Provide evidence of participation in, or completing, an asset management maturity assessment.

## 7.2. Monitoring

### Definition

Monitoring is a dynamic process that relies on the effective use of data and metrics (financial and non-financial) to continuously evaluate the value realisation of assets and their management throughout their lifecycle.

The core of this monitoring process is data-driven analysis that enables decision-makers to make informed choices about asset utilisation, investment, and optimisation. By having a clear understanding of the value realised by assets, organisations can fine-tune their strategies, leading to an improvement in asset performance and overall effectiveness.

### Context

Effective Asset Management provides assurance in the achievement of organisational objectives and realisation of organisational sustainability. It does this through value realising and sustaining value from the investment, use, maintenance, and disposal of assets. In doing so, it aims to balance cost, performance, and risk requirements, as well as the diverse needs of stakeholders and accomplish well-defined Asset Management objectives. It aims to achieve these in line with broader goals of the organisation.

Defining the value indicators and assessing them against value realised enables continuous monitoring at different levels within an organisation. This can be used to improve decision-making processes and support continuous value realisation.

Monitoring value realisation can be performed on a single asset or a portfolio of assets, with the latter providing a more systemic view when considering the organisational outcomes and impacts.

The metrics used to monitor value realisation must be able to show the value realised at each stage of the lifecycle, and clearly demonstrate the results achieved. This is then used to assess the outcomes and impacts realised against desired objectives. Adjustments are then made as part of the ongoing value realisation process.

### Artefacts

Typical artefacts within this subject include:

- Asset health and performance objectives and data - defined or captured in reports; or embedded in and derived from 24/7 continuous performance and condition monitoring systems
- Dashboards show indicator results, balance between cost, performance, and risk
- Cost data
- Risk Management Outcomes
- Asset Performance and Health Objectives
- Asset Performance and Health Reports

### Related Subjects

- 0.5. Tikanga
- 3.6. Lifecycle Value Realisation
- 7.1. Outcomes and Impacts

- 7.3. Continuous Improvement
- 3.5. Decision-Making
- 2.6. Risk
- 3.1. Asset Management Strategy and Objectives
- 5.1. Asset Management Data and Information Strategy
- 5.4. Asset Management Data and Information Systems
- 1.3. Asset Costing and Valuation
- 5.2. Asset Management Data and Information Standards
- 6.5. Maintenance Delivery
- 5.4. Asset Management Data and Information Systems.

### Āpōpō Learning

- AM 201 – Telling the Story of Asset Management
- AM 304 – Asset Management Strategy
- AM 307 – Performance Management
- AM 308 – Improving Asset Management Maturity
- CC 102 – Carbon Emissions Analysis in Asset Management

### Āpōpō Guide

- 7.2. Monitoring

### Relevant Standards

- None

### Competencies

To be declared Competent or Higher in this subject you must:

- Demonstrate application of the processes to monitor, measure and evaluate asset management system and asset performance against organisational and asset management outcomes.

*Narrative provides an example from their work of the attributes of a high performing asset management system, including but not limited to: fit for purpose, people resources, asset health and level of investment. Includes 1-2 asset metrics (financial and non-financial) to continuously evaluate the value realisation of assets and their management throughout their lifecycle. These metrics can include: asset cost, utilisation, investment, and optimisation.*

OR

- Provide evidence of having developed or reviewed asset levels of service and/or performance targets within an AMP, SAMP or similar planning document.

## 7.3. Continuous Improvement

### Definition

Continuous Improvement is an ongoing process of analysing performance, identifying opportunities, and making incremental changes to increase the value generated by assets.

### Context

Continuous Improvement allows organisations to adapt their approach to value realisation and respond to the changing nature of organisational operating environments, stakeholders' needs and expectations, and organisational objectives.

Knowledge gained from outcomes and impacts realisation and monitoring value will identify the need to adapt through improvement, to realise the value the organisation sets out to achieve (desired outcomes and impacts). Continual improvement of decision-making criteria and processes should be considered, to ensure alignment with desired outcomes and impacts, and better balance cost, risk, and performance.

All asset lifecycle stages influence the ability of an asset to realise value effectively. Therefore, continual improvement is dependent on the organisation's ability to identify and enable improvement across the whole asset lifecycle.

Although individual assets can realise value to an organisation, it is important to consider the system of assets in the decision-making process to optimise value generated from assets.

Increased value can also be created from technology and innovation, supporting the achievement of organisational objectives.

Sustainability is a key Asset Management principle, and organisations should consider a wider sustainability lens when identifying and implementing improvements.

### Artefacts

Typical artefacts within this subject include:

- Decision-making criteria and processes.
- Asset Management maturity assessment.
- Improvement / monitoring strategies and plans.

### Related Subjects

- 7.1. Outcomes and Impacts
- 7.2. Monitoring
- 3.1. Asset Management Strategy and Objectives
- 3.4. Planning
- 3.5. Decision-Making
- 4.1. Asset Management Leadership
- 4.3. Organisational Culture
- 4.4. Competence Management
- 4.5. Organisational Change Management
- 2.1. Asset Management Policy
- 2.2. Asset Management System

- 2.3. Asset Management Assurance and Audit
- 2.5. Management of Change

### **Āpōpō Learning**

- AM 101 – Introduction to Asset Management
- AM 204 – Asset Management Enablers
- AM 307 – Performance Management
- AM 308 – Improving Asset Management Maturity
- CC 101 – Introduction to Climate Adaptation in Asset Management

### **Āpōpō Guide**

- 7.3. Continuous Improvement

### **Relevant Standards**

- ISO 5500x Series – Asset Management

### **Competencies**

To be declared Competent or Higher in this subject you must:

- Demonstrate applied knowledge of continuous improvement within an asset management context.

*Narrative provides an example from their work of analysing asset performance, identifying opportunities, and making incremental changes to increase the value generated by assets. Includes 1-2 factors that can increase the value of the asset management system, such as: technology, innovation, and sustainability.*