Āpōpō Knowledge Framework

The Āpōpō Knowledge Framework is a technical competency framework which mirrors the GFMAM Asset Management Landscape.

It should be read in conjunction with the Āpōpō Pou Herenga – Community Competency Framework.

There are six subject groups and 39 subjects.

Subject Group	Subject
1. Strategy and Planning	1. Asset Management Policy
	2. Asset Management Strategy and Objectives
	3. Demand Analysis
	4. Strategic Planning
	5. Asset Management Planning
2. Asset Management Decision-Making	6. Capital Investment Decision-Making
	7. Operations and Maintenance Decision-Making
	8. Lifecycle Value Realisation
	9. Resourcing Strategy
	10. Shutdowns and Outage Strategy
3. Lifecycle Delivery	11. Technical Standards and Regulations
	12. Asset Creation and Acquisition
	13. Systems Engineering
	14. Configuration Management
	15. Maintenance Delivery
	16. Reliability Engineering
	17. Asset Operations
	18. Resource Management
	19. Shutdown and Outage Management
	20. Fault and Incident Response
	21. Asset Decommissioning and Disposal
4. Asset Information	22. Asset Information Strategy
	23. Asset Information Standards
	24. Asset Information Systems
	25. Data and Information Management
5. Organisation and People	26. Procurement and Supply Chain Management
	27. Asset Management Leadership
	28. Organisational Structure
	29. Organisational Culture
	30. Competence Management
6. Risk and Review	31. Risk Assessment and Management
	32. Contingency Planning and Resilience Analysis
	33. Sustainable Development
	34. Management of Change
	35. Assets Performance and Health Monitoring
	36. Asset Management System Monitoring
	37. Management Review, Audit and Assurance
	38. Asset Costing and Valuation
	39. Stakeholder Engagement

1. Asset Management Policy

Definition

The principles and mandated requirements derived from and consistent with the organisational / corporate plan, providing a framework for the development and implementation of the asset management strategic plan and the setting of the asset management objectives.

Context

The Asset Management Policy provides a set of principles and a framework for the development and implementation of an organisation's approach to asset management (sometimes implemented within an asset management system). The Asset Management Policy should also provide the principles that guide the development of the organisation's 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 top management, effectively communicated and regularly reviewed with a commitment to continual improvement of the asset management system.

Artefacts

Typical artefacts within this Subject include:

- Asset Management Policy

Related Subjects

- Asset Management Strategy

Relevant Standards

- Clause 5.2 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of what elements are usually contained within an asset management policy.
- Have participated in or authored/co-authored the development or review of an asset management policy for an organisation.

2. Asset Management Strategy

Definition

The strategic plan for the management of the assets of an organisation that will be used to achieve the organisational / corporate objectives.

Context

The Asset Management Strategy describes the long-term approach to management of the physical assets. It would typically include a set of strategic statements that describe the current and future service levels the organisation is planning to deliver and the current and future Asset Management capabilities that the organisation needs in order to sustainably deliver these outcomes.

The Asset Management Strategy would typically include:

- Asset management objectives based upon scenario analyses that includes measurable objectives on the expected economic, environmental and social performance of an organisation's asset portfolio.
- Key accountabilities for both the activities covered by the Asset Management Strategy and for the implementation and ongoing maintenance of the Asset Management Strategy.
- The decision-making criteria that are used to undertake lifecycle cost and risk analysis to determine the optimum asset interventions,
- How the organisation will develop its asset information to support such analysis and how the organisation will manage uncertainty associated with its asset information
- A reference to the overall Asset Management System that describes the management system that the organisation has implemented / is implementing including a description of how the Asset Management Strategy fits into the Asset Management System.
- The methodology for determining asset and network criticality.

Artefacts

Typical artefacts within this Subject include:

- ☐ Asset Management Strategy
- ☐ Asset Management Objectives
- ☐ Strategic Asset Management Plan (SAMP)

Related Subjects

- Asset Management Policy
- Stakeholder Engagement
- Demand Analysis
- Strategic Planning

Relevant Standards

- Clause 4.4 of ISO 55001
- Clause 6.2.1 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of what is usually contained within an asset management strategy, strategic asset management plan and an asset management system.
- Be able to describe the HOW versus the WHAT that differentiate AM Strategy and SAMP.
- Provide or articulate examples of asset management objectives and system elements.
- Have participated in or authored/co-authored the development or review of an asset management strategy or strategic asset management plan for an organisation.

3. Demand Analysis

Definition

The processes an organisation uses to both assess and influence the demand for, and level of service from, an organisation's assets.

Context

Demand analysis typically includes the analysis of future demand for the product or services being offered and the requirements this demand will place on the asset portfolio.

There are several elements of Demand Analysis that need to be considered:

- Historic demand
- Drivers for demand
- Future demand and change in demand over time
- Changes in required levels of service
- Current and future utilisation and capability of assets
- Impact on the future performance, condition and capability

Demand analysis also considers the use of non-asset solutions where demand may exceed supply and demand also needs to be managed in order to reduce the demand or reduce the required level of service.

Artefacts

Typical artefacts within this Subject include:

- Demand Forecasts
- Historical Demand Analysis
- Demand Scenarios
- Demand Management Strategy
- Service Level Specifications

Related Subjects

- Asset Management Strategy
- Strategic Planning

Relevant Standards

- Clause 4.2 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of typical micro/macro trends that affect infrastructure assets and services.
- Be able to describe the process of assessing demand.
- Provide or articulate at least three examples of demand analysis elements.
- Have participated in or completed demand analysis for an asset group or organisation.

4. Strategic Planning

Definition

The processes an organisation uses to undertake strategic asset management planning.

Context

Strategic planning includes the processes for determining long-term renewal, enhancement and maintenance work volumes, associated risks and costs to meet the asset management objectives. This includes assessing how the organisation addresses the requirements identified during demand analysis and how the Strategic Asset Management Plan supports the overall organisational corporate plan.

Strategic planning would typically involve the development of a strategic planning framework that describes how Demand Analysis and the required levels of service are considered and modelled in the development of the organisation's proposed maintenance, renewal and enhancement work volumes.

The strategic planning processes should enable organisations to develop work volumes and costs for different scenarios to reflect potential changes in risk, demand, output requirements or funding constraints from different stakeholders.

Artefacts

Typical artefacts within this Subject include:

- Strategic Asset Management Plan (SAMP)
- Work volumes and costs

Related Subjects

- Asset Management Strategy
- Stakeholder Engagement
- Demand Analysis
- Asset Management Planning

Relevant Standards

- Clause 4.4 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of strategic asset management planning activities including how to set asset management objectives and levels of service which support organisational outcomes.
- Be able to describe the differences between strategic, tactical and operational planning activities.
- Have participated in or completed a strategic asset management plan for asset group or organisation.

5. Asset Management Planning

Definition

The activities to develop the Asset Management plans that specify the detailed activities and resources, responsibilities and timescales and risks for the achievement of the asset management objectives.

Context

Strategic Planning addresses the strategic planning activities undertaken within an organisation. Asset Management Planning is the process of developing the detailed Asset Management Plans that include the following:

- A review of previous Asset Management Plan(s) with recovery plans where applicable
- The activities that an organisation intends to undertake in order to deliver the Asset Management objectives and level of service
- The costs associated with delivering these activities
- The outcomes expected from the application of these activities
- The resources necessary to execute asset management plans
- Integration of Asset Management Plans with other organisational plans e.g. financial plans, health and safety plans and human resource plans)
- The activities necessary to deliver activities to statutory, regulatory, industry and technical standards where applicable
- How the plan will be approved, monitored, reviewed and updated

Artefacts

Typical artefacts within this Subject include:

- Asset Management Plans
- Work volumes and costs
- Resource plans

Related Subjects

- Strategic Planning
- Resource Strategy
- Shutdown & Outage Strategy

Relevant Standards

- Clause 6.2.2 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of 3-4 asset management planning activities, including 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.

- Be able to describe the differences between strategic, tactical and operational asset planning activities.
- Have participated in or completed an asset management plan for asset group.

6. Capital Investment Decision-Making

Definition

The processes and decisions to evaluate and analyse scenarios for decisions related to capital investments of an organisation. These processes and decisions may relate to new assets for the organisation (e.g. Greenfield projects) and/or replacements of assets at end of life (CAPEX sustaining programs).

Context

Capital Investment Decision-Making includes an evaluation approach of alternative investments with a vision of long-term benefits (asset lifecycle perspective). This approach includes steps of definition, characterisation, evaluation and analysis that drive the best options to decision-making managers.

Capital Investment Decision-Making would typically include:

- Defining the scope of the investments that are subject to analysis of alternatives
- The assumptions for each investment option including the demands and level of service required
- The consideration of the information that need to be collected or estimated for each option
- The consideration of all lifecycle costs
- The consideration of risk, how this changes over time and how this is valued and evaluated
- Undertaking lifecycle cost analysis to allow the comparison of alternative options from the perspective of the asset lifecycle
- Analysis of the present value and annualised costs and risks for each of the options being considered

Artefacts

Typical artefacts within this Subject include:

- Prioritising process for Capital Investments
- Lifecycle Costing algorithms

Related Subjects

- Asset Management Strategy
- Demand Analysis
- Strategic Planning
- Operations & Maintenance Decision-Making
- Lifecycle Value Realisation

Relevant Standards

- ISO 15686 - Buildings and constructed assets – Service life planning

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of 3-4 capital investment decision making activities including but not limited to business case development, prioritisation, optioneering, and lifecycle analysis.
- Be able to describe the differences between capital and maintenance/renewal asset planning activities.
- Provide evidence of undertaking 2-3 capital investment decision making methodologies including but not limited to MCA, BC, BBC, NPV for capital investment or asset portfolio.

7. Operations & Maintenance Decision-Making

Definition

The management activities and processes involved in determining the Operations and Maintenance requirements in support of the Asset Management objectives and goals.

Context

Operations & Maintenance Decision-Making is the determination of the Operations and Maintenance activities necessary to meet the Asset Management objectives, taking into account organisational and applicable regulatory policies.

The Operations & Maintenance Decision-Making decision process typically consider:

- Customer quality requirements (product and service)
- Current asset capability (throughput, product / service flexibility, quality)
- Use of FMECA / RCM or similar techniques to determine maintenance activities
- The organisation's agreed cost – risk balance to determine activity intervals including consideration of asset and network criticality
- Forecasting medium and long term (3+ years) production / service requirements based upon projected demand
- Perform financial analysis of production tactics (production cost structure defined by assets and their operations)
- Documentation of maintenance requirements in specifications and standards
- Evaluate O&M impact of capital project proposal alternates (lifecycle costing, long and short-term impact).

Artefacts

Typical artefacts within this Subject include:

- Asset capability requirements
- Maintenance Requirements Analysis documents
- Maintenance standards and specifications

Related Subjects

- Capital Investment Decision-Making
- Accounting Practices
- Maintenance Delivery
- Asset Operations

Relevant Standards

- Clause 6.1 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of operations and maintenance decision making activities including financial analysis and forecasting expenditure based on asset performance and lifecycle costs.

- Be able to describe the differences between capital and maintenance/renewal asset planning activities.
- Provide evidence of undertaking 1-2 maintenance decision-making methodologies including but not limited to failure mode analysis, just in time, run to fail, and reliability centred maintenance with an asset portfolio.

8. Lifecycle Value Realisation

Definition

The activities undertaken by an organisation to balance the costs and benefits of different renewal, maintenance, overhaul and disposal interventions.

Context

Lifecycle Value Realisation refers to the methods used, to ensuring the best total value is obtained, in asset acquisition, creation, utilisation, maintenance, improvements, renewals and disposals to meet the organisation's objectives. This requires consideration of the interaction between these activities, and determination of the right combination, including costs, risks, performance and sustainability effects. Value relates to the contribution to the organisational objectives and may be manifested in various ways and are not always easy to quantify. However, the maximum total value often equates to the lowest whole lifecycle cost of the asset, within any absolute constraints or commitments.

Lifecycle Value Realisation would typically include:

- Evaluation processes and criteria for their usage including the level of detail required in relation to decision criticality and decision complexity
- A multi-disciplined approach and the quantification of value, direct and indirect intervention costs, risks, performance, operating and maintenance costs
- Consideration of the systems context for the asset, since the lifecycle of an individual item may be constrained by, or may contribute to, a different timescale of required performance or asset management responsibility
- System modelling to determine whether the lifecycle value solution will deliver the required demands and levels of service expected by stakeholders

Artefacts

Typical artefacts within this Subject include:

- Methodologies for determining value
- Criteria for decision-making
- Lifecycle Value Analysis processes and application criteria

Related Subjects

- Asset Management Strategy Demand Analysis
- Strategic Planning
- Capital Investment Decision-making
- Operations & Maintenance Decision-making

Relevant Standards

- Clause 6.1 of ISO 55001
- Clause 6.2 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of lifecycle value analysis techniques and business case development.
- Have participated in (evidence of) planning activities that determine value, benefits and lifecycle costs of investments.

9. Resourcing Strategy

Definition

Determining the activities and processes to be undertaken by an organisation in order to procure and use people, plant, tools and materials to deliver the Asset Management Objectives and Asset Management Plan(s).

Context

A Resourcing Strategy typically includes the analysis necessary to determine the best way to establish or procure the required resources to deliver the Asset Management objectives and the activities defined in the Asset Management Plan(s). These resources include:

- Competent Labour
- Spares
- Plant and equipment
- Special tools and equipment
- Hardware and software

The Resourcing Strategy should consider the costs and risks of outsourcing the provision of resources and how to best integrate the available resources across the organisation in order to cost effectively deliver the Asset Management Plan(s).

Where resources are being procured externally to the organisation, the Resourcing Strategy should include an assessment of the costs and risks relating to the timing and quantities of the resources to be procured, including any internal storage or management costs.

Artefacts

Typical artefacts within this Subject include:

- Resource Strategy
- Procurement plans for the purchase of resources
- Spares management strategy
- Resourced project plans

Related Subjects

- Asset Management Planning
- Resource Management

Relevant Standards

- Clause 7.1 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of organisational procurement processes and policy, and how to assess cost and risk within resourcing activities.
- Have participated in (evidence of) resource planning activities, and specifically the development of a procurement plan.

10. Shutdown and Outage Strategy

Definition

The activities taken by an organisation to develop a strategy for shutdown and outages.

Context

Shutdown and Outage Strategy includes the procedures and requirements to enable organisations to reduce downtime and outages whilst considering the cost to carry out the activities defined in the Asset Management Plan efficiently and safely during planned outages.

The Shutdown and Outage Strategy would typically include:

- Shutdown or Outage objectives that are agreed by all the parties involved, including operations, maintenance, engineering, projects, central production planning, contractors or service providers among others.
- Analysis of the trade-off between the efficiencies of fewer but longer shutdowns or outages (that have a higher impact on the business production) against more but shorter shutdowns or outages (that have less impact on the business but result in less efficient delivery of work).
- Preliminary scope requirements defining the scope of work to be undertaken with well understood risks and consequences identified and agreed upon by all parties involved.
- A final scope and package including the final shutdown scope, schedule (including shutting down and starting up the asset or facility required time), the scope of work, materials required, manpower, contractors and other resources required.
- Scope challenge exercises to ensure the strategy is robust.

Artefacts

Typical artefacts within this Subject include:

- Shutdown & outage strategy
- Shutdown and outage procedure and packaging requirements
- A long-term planned outages schedule
- Level of authorities in the organisation for every stage of the shutdown or outage.

Related Subjects

- Asset Management Planning
- Contract & Supplier Management
- Shutdown & Outage Management

Relevant Standards

- None

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of what considerations are within a shutdown or outage strategy or process including but not limited to trade-offs, risks and impacts to service delivery, operations and production.

- Describe the elements within a shutdown scope of works, including but not limited to manpower, resources, materials and contractors.

11. Technical Standards & Legislation

Definition

The processes used by an organisation to ensure its asset management activities are compliant with the relevant technical standards and legislation.

Context

Technical Standards and Legislation includes processes for the identification, applicability updating and compliance assurance of standards and legislation in the Asset Management context.

Artefacts

- Register of applicable technical standards and legislation

Related Subjects

- Asset Management Policy
- Asset Management Strategy Strategic Planning
- Asset Management Planning

Relevant Standards

- None identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of which industry or professional technical standards and compliance standards would be applicable to two asset management portfolios.
- Provide evidence of technical standards applied within an asset management planning document prepared, developed or contributed to by the applicant.

12. Asset Creation & Acquisition

Definition

An organisation's processes for the acquisition, installation and commissioning of assets.

Context

Asset Creation & Acquisition describes policies and processes for the acquisition, installation and commissioning of assets. This subject also includes elements of approval and releasing of funding, arrangements for hand-over to operations, the monitoring and capture of actual costs and benefits analysis. The development of requirements analysis, design and verification and validation strategies are covered in Systems Engineering.

The management activities within the scope of this subject are:

- Application of Investment Policies
- Application of Investment Processes
- Development of Construction Processes
- Execution of Construction Processes
- Project Management
- Development of Commissioning Processes
- Execution of Commissioning Processes
- Hand back to Operations

Artefacts

Typical artefacts within this subject include:

- ☐ Acquisition Strategy
- ☐ Acquisition Request
- ☐ Acquisition Agreement
- ☐ Acquisition Agreement Change Request
- ☐ Acquisition Communication Report
- ☐ Programme Management Framework
- ☐ Project Management Procedures
- ☐ Project Technical Management Plan
- ☐ Work Breakdown Structure
- ☐ Project Schedules
- ☐ Project Budgets
- ☐ Verification Report
- ☐ Traceability Mapping
- ☐ Validation Report
- ☐ Construction Progress Reports
- ☐ Acceptance Criteria Documents
- ☐ Delivery Acceptance Report

Related Subjects

- Capital Investment Decision-making

Standards

- Numerous Construction Codes Identified
- Numerous Specific Commissioning Codes Identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the organisational processes usually undertaken for the acquisition, installation and commissioning of assets, 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.
- Provide evidence of participation within at least two organisational activities within this subject area, including but not limited to: acquisition, investment decision making, procurement, project management, construction management, handover or commissioning.

13. Systems Engineering

Definition

An interdisciplinary, collaborative approach to derive, evolve and verify a lifecycle balanced system solution which satisfies customer expectations and meets public acceptability.

Context

Systems Engineering describes policies and processes for the requirements analysis, design and evaluation of assets. Systems Engineering processes relate to managerial and technical activities. Verification and validation execution is considered as part of Asset Creation and Acquisition. The management activities within the scope of this subject are:

- Generation of Systems Engineering Policies
- Development of System Engineering Processes
- Execution of Systems Engineering Processes

Artefacts

Typical artefacts within this subject include:

- Systems Engineering Management Plan
- System Description Documents
- System Requirements Documents
- System Engineering Performance Measures
- Traceability Mapping Documents
- System Analysis Plan
- System Analysis Report
- Documented Systems Engineering Processes
- Verification Strategy
- Validation Strategy
- Validation Processes

Related Subjects

- Configuration Management

Standards

- ISO/IEC 15288:2008 Systems and software engineering - System lifecycle processes
- MIL-STD-499 Military Standard System Engineering Management.

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the asset management system and elements within an asset management system, these can include (but not limited to) management processes, design frameworks, human and other resources, procurement activities, organisational service levels and objectives.
- Provide evidence of participation within an asset management system development or review process within an organisation.

14. Configuration Management

Definition

A management process for establishing and maintaining consistency of a product's physical and functional attributes with its design and operational information throughout its life.

Context

Configuration Management describes policies and processes for the recording and monitoring of an asset's functional, physical and support status. Configuration Management is closely aligned with the principles and requirements of Systems Engineering. The management activities within the scope of this subject are:

- Generation of Configuration Management Policies
- Development of Configuration Management Processes
- Execution of Configuration Management Processes

Artefacts

Typical artefacts within this subject include:

- Configuration Management Plan
- Configuration Management Strategy
- Configuration Management Records
- Configuration Baselines
- Configuration Baseline Agreements
- CM Change / Variance Requests
- Configuration Status Reports
- Configuration Evaluation Reports
- System Release Reports
- System Release Approvals

Related Subjects

- Systems Engineering

Standards

- AS/ISO 10007:2003 Quality Management Systems – Configuration Management
- EIA-649-A 2004 National Consensus Standard for Configuration Management
- MIL-STD 973 Configuration Management (Cancelled)

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the asset management lifecycle, and how assets are managed and monitored throughout their lives to optimise reliability, consistency and performance.
- Provide evidence of undertaking lifecycle and asset configuration analysis for a group of assets within an organisation.

15. Maintenance Delivery

Definition

The management of maintenance activities including both preventive and corrective maintenance management methodologies.

Context

The organisation of maintenance activities within an agreed policy including definition of maintenance specifications, standards and schedules, maintenance execution procedures, procedures for missed maintenance and the capture and utilisation of maintenance and inspection measurements and results.

These activities include:

- Identifying the resources needed to support maintenance assurance processes.
- Implementing the responsibilities and accountabilities for asset maintenance delivery and improvement as part of the asset management system processes.
- Day to day application of processes that integrate maintenance delivery processes with engineering, finance, HR, IT, operations etc.
- Authorisation of funding sufficient resources and support systems to support asset investment planning.

Artefacts

Typical artefacts within this Subject include:

- Maintenance staffing requirements (quantity & skills/certification)
- Maintenance tools and relevant infrastructure requirements.
- Maintenance strategy and tactics.
- Maintenance information systems infrastructure.

Related Subjects

- Operations & Maintenance Decision-Making
- Whole Life Cost & Value Optimisation
- Reliability Engineering
- Asset Operations

Standards

- None identified.

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the asset maintenance activities, including maintenance programme development, maintenance and operations reporting functions, maintenance as part of asset management lifecycle activities.
- Provide evidence of undertaking a maintenance programme or specification for a group of assets within an organisation.

16. Reliability Engineering

Definition

The processes for ensuring that an item shall operate to a defined standard for a defined period of time in a defined environment.

Context

Reliability Engineering typically includes the following elements:

- Day to day application of processes that integrate Reliability Engineering processes with engineering, finance, HR, IT, maintenance and operations.
- Identify the resources needed to support reliability assurance.
- Work within the responsibilities, authorities and accountabilities for asset reliability improvement.
- Specify and design the responsibilities, authorities and accountabilities (and supporting measures) for asset reliability improvement as part of the asset management system processes, including the asset management system itself.
- Application of proprietary or predetermined methodologies for analyses to support asset management decision making during asset conception stages.
- Implement the change management responsibilities, authorities and accountabilities of the asset management system related to reliability.
- Specify and design the change management responsibilities, authorities and accountabilities as part of the asset management system processes, including the asset management system itself.
- Implement the specified reliability engineering processes (as part of the asset management system), including the collation of information and data to support continual improvement.
- Specify and design the reliability engineering competencies (and supporting measures) as part of the asset management system processes.
- Development and design of processes and plans to support RAMS Modelling.

Artefacts

Typical artefacts within this Subject include:

- ☐ RAMS Modelling Output
- ☐ RCM Analysis Output
- ☐ Weibull Plots and Analysis
- ☐ Completed Root Cause Analyses

Related Subjects

- Asset Management Strategy
- Capital Management Investment Strategy
- Whole Life Cost and Value Optimisation
- Asset Performance and Health Monitoring

Relevant Standards

- None Identified

Competencies

To be declared competent in this subject you must:

- Describe asset reliability engineering processes as part of an asset management system.
- Provide evidence of undertaking a reliability engineering process within an asset management portfolio.

17. Asset Operation

Definition

The processes used by an organisation to operate its assets to achieve the business objectives.

Context

Asset Operation is concerned with processes that provide instructions to Operators about how to operate the assets within the appropriate design, maintenance and operational parameters. This includes the development of an Asset Operations strategy and plans that outline the approach, activities and resources involved in managing and implementing operations.

Artefacts

Typical artefacts within this Subject include:

- Criteria for the required processes
- Control of the processes in accordance with the criteria
- Documented information to the extent necessary to have confidence and evidence that the processes have been carried out as planned
- Treating and monitoring of operational risks

Related Subjects

- Asset Management Strategy
- Strategic Planning

Relevant Standards

- None Identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of operations management, as part of asset management lifecycle activities.
- Describe how risk can be treated within an operational context.

18. Resource Management

Definition

Implementing the Resourcing Strategy to manage the use of funds, people, plant, tools and materials in delivering asset management activities.

Context

Managing the resources required for the execution of each asset management activity, including:

- Finances
- Competent Labour
- Spares
- Special tools and equipment
- Hardware and software
- Data and Information
- Training.

Integrating the resource utilisation across the organisation and across all asset management activities.

Artefacts

Typical artefacts within this Subject include:

- Organisational Structure
- Job specifications
- Materials Catalogue
- Inventory Records
- Training records
- Tools
- Performance appraisals

Related Subjects

- Resourcing Strategy
- Operations & Maintenance Decision-Making
- Configuration Management
- Maintenance Delivery
- Competence Management
- Procurement & Supply Chain Management

Relevant Standards

- None Identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of organisational procurement processes and policy, and how to assess cost and risk within resourcing activities.
- Provide evidence of people and resource management as part of a contract for service delivery and/or project management for an organisation
- Have participated in the implementation of a procurement plan.

19. Shutdown and Outage Management

Definition

An organisation's processes for identification, planning, scheduling, execution and control of work related to shutdowns or outages.

Context

Shutdown and Outage Management describes policies and processes for the implementation of the shutdown and outage strategy to ensure the effective management of shutdowns and outages. This subject includes processes relating to the identification and filtering of shutdown work, planning and scheduling, work execution and control and the development of lessons learned.

The management activities within the scope of this subject include:

- Development of Shutdown Management Policies
- Development of Shutdown Management Processes
- Execution of Shutdown Management Processes
- Project Management

Artefacts

Typical artefacts within this subject include:

- Shutdown Work List
- Work Packages
- Shutdown Management Procedures
- Shutdown Work Breakdown Structure
- Shutdown Schedules
- Shutdown Budgets
- Shutdown Progress Reports
- Acceptance Criteria Documents
- Post Completion Reports

Related Subjects

- Operations & Maintenance Decision-Making
- Resourcing Strategy
- Shutdowns & Outage Strategy
- Maintenance Delivery
- Procurement & Supply Chain Management

Standards

- None Identified

Competencies

To be declared competent in this subject you must:

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

20. Fault and Incident Response

Definition

Responding to failures and incidents in a systematic manner, including incident detection and identification, fault analysis, use of standard responses, temporary and permanent repairs as well as the taking over and handing back of sites.

Context

Developing plans to respond to unplanned events and managing the resources required for the response to the events, including:

- Competent Labour
- Spares
- Special tools and equipment
- Data and Information
- Communications
- Escalation criteria.

This includes the Integration of the response plans across the organisation and ensuring the cause of failure is effectively captured to allow subsequent analysis of failure data.

Artefacts

Typical artefacts within this Subject include:

- ☐ Risk register
- ☐ Safety plan
- ☐ Standby roster
- ☐ Communication plan
- ☐ Response plans
- ☐ Operating procedures
- ☐ Emergency stores
- ☐ Tools and equipment
- ☐ Skilled staff

Related Subjects

- Contingency Planning & Resilience Analysis
- Risk Management

Relevant Standards

- None Identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of 2-3 priorities that are considered for fault and incident management including but not limited to detection & identification, fault analysis,

incident response plans, communication, taking over/handing back sites, and resource plans.

- Describe the elements within a business continuity plan.
- Provide evidence of participation within a fault or incident response.

21. Asset Decommissioning & Disposal

Definition

The processes used by an organisation to decommission and dispose of assets due to ageing or changes in performance and capacity requirements.

Context

Asset Decommissioning & Disposal develops and applies processes to decommission and dispose of assets due to ageing or changes in performance and capacity requirements. This includes the integration of Asset Disposal Plans with other organisational planning activities (e.g. financial plans, human resource plans).

This decision process includes the consideration of costs and benefits of rationalisation using a whole life approach, the impact of asset rationalisation on other infrastructure and the processes for disposal of assets.

Factors to be considered in these processes include:

- Environmental Impact of disposal
- Land rehabilitation
- Residual value of assets
- Continued service delivery

Artefacts

Typical artefacts within this Subject include:

- Environmental Impact Analysis
- Land Rehabilitation Plan
- Outage Management Plan
- Asset Disposal Plan
- Logistics Plan

Related Subjects

- Shutdown and Outage Strategy
- Lifecycle Value Realisation
- Risk Assessment and Management
- Asset Information Management

Relevant Standards

- Environmental
- Service level
- Legislation regarding asset disposal

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of considerations for asset disposal including but not limited to: lifecycle cost, end of useful life, asset obsolescence/redundancy and residual value.

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

22. Asset Information Strategy

Definition

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

Context

An Asset Information Strategy describes how asset information supports the delivery of the Asset Management Strategy and objectives and what Asset Information Systems and governance processes are necessary to deliver that asset information. An Asset Information Strategy would typically include:

- A policy on asset information
- The identification of asset information needs to support the organisation's decision-making and operational processes including data quality and accuracy requirements.
- Responsibilities and accountabilities for information management.
- Processes for continued alignment of these needs as the organisation's requirements evolve.
- A gap analysis of current information availability against information needs, including consideration of data quality and accuracy requirements.
- An analysis of the costs and benefits of providing for these asset information needs, including consideration of data quality and accuracy requirements.
- The information system business requirements necessary to support the organisation's business processes and information needs.
- Processes for the improvement of asset information and data quality.
- A description of the organisation's asset information improvement programmes.

Artefacts

Typical artefacts within this Subject include:

- Asset Information Policy
- Asset Information Strategy
- Asset Information Business Cases
- Asset Information System Business Requirements

Related Subjects

- Asset Management Strategy
- Asset Information Standards
- Asset Information Systems
- Data & Information Management

Relevant Standards

- Clause 7.5 of ISO 55001
- ISO 27000/1/2

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of elements usually contained in an Asset Information Strategy (AIS) including but not limited to policy, process, accountabilities, responsibilities and organisational and business objectives for asset information and data quality and management.
- Provide evidence of participation in developing an AIS (or AMIS) for an organisation.

23. Asset Information Standards

Definition

The specification of a consistent structure and format for collecting and storing asset information and for reporting on the quality and accuracy of asset information.

Context

Asset Information Standards includes the development of standards and guidelines that ensure a consistent approach to the recording of asset information to meet the asset information needs defined in the Asset Information Strategy. This includes defining common methods for recording the following:

- The asset hierarchy
- Attributes of assets that are required and the acceptable values for these
- The geographical position of assets
- Condition grades
- Categorising and recording asset defects
- Categorising and recording causes of asset failure
- Categorising and recording consequences of asset failure
- Utilisation of assets.

Asset Information Management also includes defining the required quality and accuracy for all asset information, including common methods for how quality and accuracy is defined and assessed.

Artefacts

Typical artefacts within this Subject include:

- Asset Information Standards and Guidelines
- Asset Data Dictionary
- Data Quality Definitions and Guidelines

Related Subjects

- Asset Information Strategy
- Asset Information Systems
- Data & Information Management

Relevant Standards

- Clause 7.5 of ISO 55001
- ISO 27000/1/2

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of elements usually contained in an Asset Information Standard including but not limited to: asset hierarchy, meta data, asset attributes such as condition and spatial position.

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

24. Asset Information Systems

Definition

The asset information systems an organisation has in place to support the asset management activities and decision-making processes in accordance with the Asset Information Strategy.

Context

Asset Information Systems includes the provision, operation and maintenance of all Asset Information Systems necessary to deliver the asset information requirements defined in the Asset Information Strategy. Asset Information Systems includes consideration of the following:

- The asset information systems and architecture necessary to deliver the information system business requirements defined in the Asset Information Strategy
- Analysis of the costs and benefits of implementing new or updated asset information systems to meet the business requirements.
- How the asset information system requirements can be delivered in accordance with the organisation's IT strategy.
- An evaluation of how systems can be used to automate business processes.
- An assessment of whether to acquire a 'vanilla' best of breed solution and align the business processes to the system, or to modify an existing system or to develop a bespoke software solution.
- Asset Information Systems implementation plan including governance arrangements.
- An asset information system migration plan to move from the current systems to the required architecture.
- Clearly defined system ownership responsibilities.

Artefacts

Typical artefacts within this Subject include:

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

Related Subjects

- Asset Information Strategy
- Asset Information Standards
- Data & Information Management

Relevant Standards

- Clause 7.5 of ISO 55001
- ISO 27000/1/2

Competencies

To be declared competent in this subject you must:

- Describe the system elements usually considered within in an Asset Information System and a typical asset information system architecture.
- Demonstrate knowledge of the benefits and costs of an asset information system.
- Provide evidence of participation in the development or review or procurement of an asset information system for an organisation.

25. Data and Information Management

Definition

The data and information held within an organisation's asset information systems and the processes for the management and governance of that data and information.

Context

Data and Information Management covers the data held within an organisation's asset information systems and the quality and accuracy of that data, compared to the requirements defined in the Asset Information Strategy and asset information standards.

Data and Information Management includes the processes for data management which would typically include a definition of data owners, consumers, validation processes, and the expected life of the data. This includes any data collection and maintenance plans where the Asset Information Strategy has shown a gap in the organisation's current asset information.

Data and Information Management also includes the governance processes for providing the organisation with a level of assurance that the data and information within the organisation's asset information systems is fit for purpose and is consistent with the asset information standards and quality and accuracy requirements.

Artefacts

Typical artefacts within this Subject include:

- Data collection plans
- Data management procedures
- Data governance procedures
- Data assurance and audit reports

Related Subjects

- Asset Information Strategy
- Asset Information Standards
- Asset Information Systems

Relevant Standards

- Clause 7.5 of ISO 55001
- ISO 27000/1/2

Competencies

To be declared competent in this subject you must:

- Describe how data and information is typically owned, collected and managed within an organisation for the purpose of supporting asset management activities.
- Demonstrate knowledge of data governance, including but not limited to data validation data quality processes, data assurance and audit, and expected life of data.

26. Procurement & Supply Chain Management

Definition

The processes used by an organisation to ensure that all outsourced Asset Management activities are aligned with the Asset Management objectives of the organisations and to monitor the outcomes of these activities against these objectives.

Context

The activities necessary to create, manage, maintain, and enforce contract and supplier management over the entire lifecycle of an asset. Procurement & Supply Chain Management includes authoring, negotiations, adoption, definition of requirements, appraisal & selection of contractors, outsourcing – insourcing strategies and claim management. These elements are of high priority with regard to realising expected savings. Procurement & Supply Chain Management needs to align with corporate standards and to ensure that negotiated savings reach the bottom line.

Procurement & Supply Chain Management typically focuses on:

- Selection criteria for external contractors
- Safety in design where applicable
- Standardised contract processes
- Improved contract compliance
- Internal – external collaboration
- Warehouse management
- Monitoring & review of supplier performance.

Artefacts

Typical artefacts within this Subject include:

- Procurement Policy
- Outsourcing- insourcing Policy
- Contractor selection criteria
- Contracts
- Service Level Specifications
- Supplier assessments, including review reports
- Improvement plans

Related Subjects

- Strategic Planning
- Asset Creation & Acquisition
- Maintenance Delivery

Relevant Standards

- ISO 28000/1/2/3/4 - Specification for security management systems for the supply chain
- ISO 17365 - Supply chain applications of RFID. Transport units
- ISO 17364 - Supply chain applications of RFID. Returnable transport items (RTIs)

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the elements within an organisational procurement policy.
- Demonstrate knowledge of what is usually contained within a procurement plan for delivery of services. This is including but not limited to organisational objectives, specified project or LOS outcomes, procurement method, evaluation criteria, minimum conforming attributes for suppliers/contractors.
- Demonstrate knowledge of functions of supply chain management 2-3 factors from the following range: planning, sourcing/procurement, production, operations, delivery/distribution, logistics and workflow management and return on investment.

27. Asset Management Leadership

Definition

The leadership of an organisation required to promote a whole life asset management approach to deliver the organisational and Asset Management objectives of the organisation.

Context

Leadership can be defined as the exercise of power to influence people toward a vision and a purpose. Leaders have the ability to influence each other to achieve the objectives of the organisation, to encourage teamwork and to lead by example. In the context of Asset Management therefore, Leadership is concerned with the influence of people to deliver the Asset Management strategy and objectives of an organisation.

Asset Management Leadership covers the planning and establishment of the organisational leadership team, defining its responsibilities and accountabilities for Asset Management and defining the leadership style needed to support Asset Management in the organisation. It includes the need to identify the interfaces of Asset Management activities with other organisational activities. The leadership style of an organisation should support the achievement of the organisational and Asset Management objectives. For asset management to be successful, employees should understand these objectives, and their role in achieving them and this requires leadership from all levels of the organisation.

Leadership is a process involving leaders and followers. It enables teamwork to be translated into planned results, potentially achieving a level of excellence. Leadership becomes a process when it becomes more active and there is no longer a single leader. In this case, role models for all are guided by the values and beliefs of the organisation, which are consistent with their culture and context and teamwork is visible.

Artefacts

Typical artefacts within this Subject include:

- Leadership Management Strategy
- Leadership Competencies
- Leadership Gap Analysis
- Leadership Continuity Management Plan
- Leadership Accountability Descriptions

Related Subjects

- Asset Management Strategy
- Organisational Structure
- Organisational Culture
- Competence Management

Relevant Standards

- Clause 5.1 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the asset management leadership activities usually contained within an organisation's Asset Management Strategy and Policy.
- Describe the qualities and competencies of an Asset Management Leader.
- Describe how to initiate or develop asset management responsibilities and accountabilities within an organisation.

28. Organisational Structure

Definition

The structure of an organisation in terms of its ability to deliver the organisational and Asset Management objectives.

Context

The design of an Organisational Structure determines how roles and responsibilities are assigned within an organisation and sets the requirements for information flows between different departments, functions and management levels. The appropriate organisational design depends on a number of internal and external elements that can affect organisational structure such as:

- Size of the organisation
- Ownership structure – private, government, listed company
- Type of industry, products or services
- Objectives and strategies of the organisation
- Maturity of the organisation – start-up or established business
- Diversity of the organisation – single site, single country or large multinational
- Cultural background.

All of these can have an impact on the performance of the organisation, the way an organisation is structured, the leadership style and acceptable behaviours. Organisational design can also create different outcomes in behaviour and culture. It is therefore important to align the organisation's design with the desired leadership style and culture: misalignment can lead to a less than desirable outcome. Different organisational structures include:

- Functional structure
- Decentralised structure
- Matrix structure.

Artefacts

Typical artefacts within this Subject include:

- Organisational Chart
- Organisational Roles, Responsibilities and Authorities
- Job Descriptions or Position Descriptions.

Related Subjects

- Asset Management Strategy
- Organisational Culture
- Asset Management Leadership
- Competence Management

Relevant Standards

- Clause 5.3 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the organisational structure, roles and responsibilities usually contained within an organisation's Asset Management Strategy.
- Describe the benefits and costs of both insourced and outsourced asset management teams.
- Describe the differences, benefits and challenges between functional asset management structures, decentralised structures and matrix structures.

29. Organisational Culture

Definition

The culture of an organisation in terms of its ability to deliver the organisational and Asset Management objectives.

Context

Culture is an extremely complex phenomenon. Culture is the lens through which individuals understand the world. To understand a culture, one must understand that much of human communication occurs through a system of symbols, and these symbols are dependent on context. It is important to understand that these symbols have no absolute meaning where they differ between cultures and contexts. Every culture has its rules, values, behavioural patterns and myths maintained by rites and rituals.

Culture is a way of giving meaning to experience. All knowledge is relevant to culture. The wrong cultural lenses can inhibit excellence if, for example, an organisation sees through the lens of complacency, and not of operational discipline.

Understanding culture as a factor which structures our actions is crucial. There is no “standard” or “rulebook” for excellence in workplace culture; but excellence in workplace culture is what enables excellence in Asset Management. The culture of an organisation serves as a blueprint for making decisions. The culture of a company is always dynamic, and the goal is to identify and understand the processes of the culture of an organisation; not to change the culture directly, but to manage through it.

Organisational Culture is about the process of defining and then developing a culture that supports the goals of the organisation and will help to deliver the Asset Management objectives of an organisation.

Artefacts

Typical artefacts within this Subject include:

- Culture Management Strategy
- Defined Organisational Values
- Outputs from Culture Surveys
- Behavioural patterns, Rites and Rituals

Related Subjects

- Asset Management Leadership
- Organisational Structure
- Competence Management

Relevant Standards

- Clause 4.1 of ISO 55001

Competencies

To be declared competent in this subject you must:

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

30. Competence Management

Definition

The processes used by an organisation to systematically develop and maintain an adequate supply of competent and motivated people to fulfil its asset management objectives including arrangements for managing competence in the boardroom and the workplace.

Context

Competence Management is about managing the ability of individuals in asset management roles to perform their work activities as well as expected. This calls for a mix of practical and thinking skills, underpinned by knowledge and understanding relevant to the activity being carried out, and is strongly influenced by personal attributes and by a person's attitudes and beliefs. Because asset management is multidisciplinary and cross functional, it requires people who can work effectively in multidisciplinary teams; are open to the evidence, methodologies and approaches used by people from different backgrounds and know how to integrate and interpret these in decision-making.

A strategic approach to managing competence and behaviour should cover the development of both individual and organisational competence. People come into asset management roles from a range of different professional, technical, operational and commercial backgrounds, bringing with them different concepts, perspectives, methodologies and networks. Knitting these together to form coherent and effective asset management teams should be a key component of Asset Management strategy and planning.

Competence requirements describe what people should be able to do and what they need to know and understand. They are typically brought together in frameworks which are tailored to the organisation or occupational group. Best practice frameworks combine definitions of input requirements, output measures and desired behaviours.

Competence Management also includes the periodic assessment of individuals against a competence framework, the identification of training needs or other development needs and the delivery of the required training and development.

Artefacts

Typical artefacts within this Subject include:

- Competence Framework
- Competence Assessment Processes
- Training Needs Analysis
- Training Course Specifications

Related Subjects

- Asset Management Leadership
- Organisational Structure
- Organisational Culture

Relevant Standards

- Clause 7.2 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the competencies required at operational, tactical and strategic asset management levels.
- Have developed, reviewed or analysed an asset management competency assessment within an organisation.

31. Risk Assessment and Management

Definition

The policies and processes for identifying, quantifying and mitigating risk and exploiting opportunities.

Context

Risk Assessment and Management describes policies and processes for the identification, assessment, analysis and treatment of risks and opportunities. Risk Assessment and Management is common to all subjects within the Asset Management Landscape.

The management activities within the scope of this subject are:

- Generation of Risk Management Policies
- Development of Risk Management Processes
- Execution of Risk Management Processes
- Alignment of strategic, tactical and operational risks and risk registers
- Risk mitigation strategies

Artefacts

Typical artefacts within this subject include:

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

Related Subjects

- Asset Management Strategy
- Lifecycle Value Realisation
- Capital Investment Decision-making
- Operations & Maintenance Decision-making

Standards

- ISO 31000:2009 - Risk management — Principles and guidelines
- IEC/ISO 31010 - 2009 Risk management – Risk assessment techniques
- HB 327:2010 - Communicating and consulting about risk

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of typical risk management processes within operational, tactical and strategic asset management activities.
- Be able to describe how to identify, quantify and mitigate risks within an asset management context.
- Have developed, reviewed or analysed an asset management risk management policy, process or framework within an organisation.

32. Contingency Planning & Resilience Analysis

Definition

The processes and systems put in place by an organisation to ensure it is able to either continue to operate its assets to deliver the required level of service in the event of an adverse impact or maintain the safety and integrity of the assets (whether or not the operate).

Context

Establish the required procedures and documents to guide the person in charge of the assets during the event to take the appropriate decisions in such critical times based on well prepared and tested scenarios.

These documents will typically include:

- Identifying the various events, incidents, and disasters.
- Establishing the level of command and the person in charge of each event type.
- Identifying the required support organisations, with their specified responsibilities, needed for each type of event (or phase of an event).
- Classifying the events and the recommended actions according to each type of event.
- Reference to all needed contacts required during all possible scenarios.

All the possible scenarios need to be put to test during regular times to evaluate both the processes put in place and the reaction of personnel during these adverse events.

Artefacts

Typical artefacts within the subject include:

- Written and approved contingency plan
- Approved and signed agreements between all parties and expectations during these events
- Responsibility matrix and escalation policy
- Reference to assets operating procedures

Related Subjects

- Faults & Incident Response

Relevant Standards

- None Identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of business continuity and contingency planning activities within an asset management context including but not limited to resource planning, event/incident management, responsibility and decision trees, communications planning.
- Have developed or reviewed a business continuity or contingency plan for an organisation.

33. Sustainable Development

Definition

The interdisciplinary, collaborative processes used by an organisation to ensure an enduring, balanced approach to economic activity, environmental responsibility and social progress to ensure all activities are sustainable in perpetuity.

Context

Sustainable Development entails ensuring that all Asset Management processes support the organisation's sustainability framework. This entails integration of the Asset Management strategy, policy and plans with the organisation's strategic plans and activities and stakeholder needs.

It ensures appropriate systems are put into place to collect and collate information needed to manage assets across their whole lifecycle.

Factors to be considered in these processes include:

- Environmental Impact of Asset Management Plans
- Social Impact of Asset Management Plans
- Financial Impact of Asset Management

Artefacts

Typical artefacts within this Subject include:

- Environmental Impact Plan
- Social Development Plan
- Skills Development Plan
- Financial Plan
- Asset Management Strategy and Policy

Related Subjects

- Asset Management Policy
- Asset Management Strategy
- Capital Investment Decision-Making
- Lifecycle Value Realisation
- Risk Assessment and Management
- Asset Information Management

Relevant Standards

- None Identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of 2-3 factors within sustainability planning within an asset management context, including but not limited to: environmental considerations, social

impact, decarbonisation, broader outcomes, circular economy, energy efficiency, resources management.

- Have developed or reviewed a sustainability plan or sustainability section of an AMP or SAMP for an organisation.

34. Management of Change

Definition

An organisation's processes for the identification, assessment, implementation and communication of changes to people, 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 of mitigating the impacts of change.

The management activities within the scope of this subject are:

- Development of Change Management policies
- Development of Change Management processes
- Execution of Change Management processes

Artefacts

Typical artefacts within this subject include:

- Documented Management of Change Process
- Change Management Register
- Change Management Plan

Related Subjects

- Risk Assessment and Management

Standards

- None Identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the change management process as it relates to people, asset management processes, service delivery and assets themselves.
- Describe how change can be communicated within an organisational context.

35. Asset Performance and Health Monitoring

Definition

The processes and measures used by an organisation to assess the performance and health of its assets using performance indicators.

Context

Asset Performance and Health Monitoring typically include the following elements:

- Define critical measures across all of the asset lifecycle stages that clearly link to the organisational objectives.
- Establish monitoring programs for the evaluation of performance measures, analysis of outcomes and the use of this information for management decision making and action plans.
- Establish clear criteria for understanding when there is a deviation of the asset from the required level of performance.
- Establish processes that provide essential information to determine whether the asset is performing in accordance with its management policies, standards, strategic plans, procedures, objectives and performance targets.
- Establish process for monitoring, measuring and evaluating the performance of the asset across all stages of the lifecycle.
- Monitor asset performance against the prescribed criteria and identify where there are deviations between the desired level of performance and the current level of performance.
- Establish monitoring and reporting that allows for the prediction of future asset performance and health.

Artefacts

Typical artefacts within this Subject include:

- Asset Performance Reports
- Asset Health Reports
- Asset Performance Objectives
- Asset Health Objectives

Related Subjects

- Asset Management Strategy
- Asset Management Systems Monitoring

Relevant Standards

- None Identified

Competencies

To be declared competent in this subject you must:

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

- Have developed or reviewed asset levels of service within an AMP, SAMP or similar planning document.

36. Asset Management System Monitoring

Definition

The processes and measures used by an organisation to assess the performance and health of its Asset Management System.

Context

Asset Management System Monitoring is concerned with assessing the performance of or organisation's Asset Management System - as opposed to the performance of the assets and asset systems which is covered by the subject: Asset Performance and Health Monitoring. Note, Asset Management System is the management system used to manage an organisation's assets and not the Asset Information System(s) which is discussed as a separate subject.

The primary aim of Asset Management System Monitoring is to evaluate the extent to which the Asset Management System is fit for purpose and is that the organisation is delivering its Asset Management objectives. There are three key aspects to Asset Management System Monitoring:

- An assessment as to whether the Asset Management System is fit for purpose.
- An assessment of the extent to which the organisation is following the processes, decision-making criteria and other guidance that is defined within the Asset Management System.
- An assessment as to whether the outcomes from the processes, decision-making criteria and other guidance are in line with the expected outcomes. This is likely to include the consideration of asset performance (as discussed in the Asset Performance and Health Monitoring subject) as well as the evaluation of process performance and the performance of the people involved in running the Asset Management System.

These aspects are typically assessed by a combination of assurance processes and audits.

Artefacts

Typical artefacts within this Subject include:

- Asset Management Steering Group meetings
- Management Review Meeting minutes

Related Subjects

- Asset Performance and Health Monitoring
- Management Review, Audit & Assurance

Relevant Standards

- Clauses 9.1, 9.2 & 9.3 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the process to monitor asset management system performance against organisational and asset management outcomes.

- Describe the attributes of a high performing asset management system within an organisation, including but not limited to: fit for purpose, people resources, asset health and level of investment.

37. Management Review, Audit & Assurance

Definition

An organisation's processes for reviewing and auditing the effectiveness of its asset management processes and asset management system.

Context

Management Review Audit & Assurance describes policies and processes for internal assurance processes, audit policies and procedures, internal and third-party audits, processes for reviewing audit findings and corrective actions and the use of external benchmarking.

The management activities within the scope of this subject are:

- Development of Audit Policies
- Development of Audit Processes
- Execution of Audit Processes

Artefacts

Typical artefacts within this subject include:

- ☐ Audit policy
- ☐ Documented audit procedures
- ☐ Audit schedule
- ☐ Documented audit methodologies
- ☐ Documented audit results

Related Subjects

- Assets Performance & Health Monitoring
- Asset Management System Monitoring

Standards

- ISO 19011:2011 - Guidelines for auditing management systems

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the steps usually undertaken to audit asset management maturity, practices and system performance against organisational and asset management policy and delivery outcomes.
- Provide evidence of participation in an asset management practice/system maturity review or audit.

38. Asset Costing & Valuation

Definition

An organisation's processes for defining and capturing 'as built', maintenance and renewal unit costs and the methods used by an organisation for the valuation and depreciation of its assets.

Context

Asset costing is the structure/framework that defines the composition of all costs related to an asset. Asset Valuation refers to accounting or econometrics rules that allow the value estimation or prediction for assets over their lifecycle through the variation of Asset Costing over its operating life horizon. Asset Costing makes the assets' decomposition of an organisation (asset portfolio of individual assets and asset systems) and the accounting decomposition match.

Artefacts

Typical artefacts within this Subject include:

- Expenditure reports
- Asset valuation register
- Documented valuation methodology
- Documented costing processes

Related Subjects

- Asset Management Planning
- Capital Investment Decision-Making
- Lifecycle Value Realisation
- Asset Information Systems
- Data & Information

Relevant Standards

- Relevant accounting standards
- None Identified

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the accounting basis for an asset valuation and methods of asset depreciation.
- Provide evidence of undertaking a lifecycle costing for an asset group or portfolio.
- Provide evidence of developing or reviewing/verifying an asset operations, renewal or capital programme.

39. Stakeholder Engagement

Definition

The methods an organisation uses to engage with stakeholders.

Context

Stakeholder Engagement describes policies and processes for scenario development, identifying, communicating and interacting with Asset Management stakeholders.

The management activities within the scope of this subject are:

- Development of Stakeholder Policies
- Application of Stakeholder Processes
- Execution of Stakeholder Processes
- Elicitation of Stakeholder Requirements

Artefacts

Typical artefacts within this subject include:

- Documented stakeholder analysis
- Stakeholder management plan
- Documented stakeholder scenarios for approval

Related Subjects

- Asset Management Policy
- Asset Management Strategy
- Demand Analysis
- Strategic Planning
- Asset Management Planning
- Capital Investment Decision-Making
- Operations & Maintenance Decision-Making

Standards

- Clause 4.2 of ISO 55001

Competencies

To be declared competent in this subject you must:

- Demonstrate knowledge of the types of stakeholder engagement activities an organisation may use within an asset management context.
- Provide evidence of preparing a stakeholder engagement plan or undertaking stakeholder engagement and analysis for an AMP, SAMP, or similar strategic asset management planning document.