



## Audience Profile

The manual is suitable for everybody seeking to determine the most effective and efficient tasks to operate and maintain their assets in the best possible condition. The manual systematically guides you through the task determination and the methods record in-house experience, address risk and optimise budget and profits. In particular, Asset Owners, Managers, Engineers, Planners, Trades people, Operators, Finance Managers, Safety Officers and all those who contribute in their roles to the development of the Asset Management Reference Plan that includes all operations and maintenance tasks.

## Objectives



To equip those active in the management of productive and infrastructure assets with the knowledge, skills and attitudes needed to optimise the quality and quantity of asset outputs (revenue), minimise risk and use of inputs (costs).

The course further aims to provide an understanding of:

- the role of asset management as a vital business driver;
- the essential tools required for effective and efficient management of assets, in the light of economics, safety, health and environment;
- the importance of accurate performance data and analysis and of decision making based on facts and life cycle costs.

## What makes our Asset Management approach different?

We approach maintenance in the meaning of 'maintaining function at the required performance level'. This has two implications:

- operators affect the performance of a function as much as maintainers, hence we cover operational and maintenance tasks and introduce operators performing minor maintenance to address any performance deterioration as soon as possible, reducing costs; and
- we perform maintenance when the asset or facility requires it to perform its function at the required performance level. This means that we do not perform maintenance to 'make an item look good'. This also reduces costs.

We address all issues that contribute to the maximisation of revenue and minimisation of costs and risk over all stages of the life of an asset or facility. We emphasise that existing assets may benefit from a one-off modification to its design or to changes to the operational or maintenance procedures, hence the material in the manual applies equally to existing and new assets.



## Contents

### 1. Asset Management Explained

Towards Most appropriate asset management practice  
What is asset management?  
What are the objectives and goals of asset management?  
Definitions and acronyms  
What are the benefits of achieving most appropriate asset management?  
Why should you improve asset management?  
What is the asset management process?  
How should you improve asset management?

### 2. What Is Needs Driven Asset Management?

Desired learning outcomes  
What are needs, assets and asset management?  
What are the client and business needs?  
What are physical assets?  
What is asset management?  
How to assess needs for existing assets?  
How do business and asset management interact?  
What are the business performance drivers?  
What are the business vision, mission, objectives, goals and values?  
Cascading objectives  
Conflicting business objectives  
How do you maintain the balance between revenue, costs and risk?  
What are the asset management objectives and enablers?  
What tools are available for developing business strategies?  
What is a business plan?  
What is a cost justification study?  
How to develop the asset strategy?

Main outcomes of Chapter Two

Syndicate exercise

### 3. How to Optimise Asset Design?

Desired learning outcomes  
Introduction  
How to match assets to needs?  
How do you determine asset demand?  
How to design for changing demand?  
How to design for operability, safety reliability, Maintainability, availability, transportability and compatibility?  
What is asset operability?  
How to ensure asset safety?  
How to deal with dangerous goods?  
What is a hazards and operability analysis?  
At what times do you perform operability and hazards analyses?  
What is asset reliability?  
What is asset maintainability?  
What is asset availability?  
How important is asset transportability?  
How to ensure asset compatibility?  
Finalise asset configuration  
How important is an accurate asset or facility register?  
Which asset register structure?  
How to collect data?  
How do you design for supportability?  
How do you optimise life cycle profit?  
Life cycle performance modelling  
What is capital planning?  
What is capitalisation of maintenance?  
Chapter Three for existing assets

Main outcomes of Chapter Three

Syndicate task

### 4. How Do You Develop The Asset Management Reference Plan?

Desired learning outcomes  
What is the asset management reference plan?  
A deliberately developed plan  
Which plan development logic do you follow?  
What are the objectives of the asset management reference plan?  
What are the benefits of an asset management reference plan?  
Which assets to cover first?  
What is the severity of fault consequences?  
What is the likelihood of occurrence?  
AS/NZS Risk management  
How to calculate risk?  
Do you need to consider detectability?  
How can you rank reliability costs?  
What tools exist for selecting tasks?  
How to select operational tasks?  
What are operational tasks and Asset Operations Optimisation?  
What are the six big losses?  
How do you eliminate the six big losses?  
How to reduce waste with Asset Operations Optimisation?  
How do you select maintenance tasks?  
What are causes for asset performance deterioration?  
How to select maintenance tasks with Reliability Driven Maintenance?  
What is the Reliability Driven Maintenance process?  
Which maintenance task choices are available?  
How to select maintenance tasks?  
How to select maintenance task frequencies?  
Can you use timeslots?  
What are the effects of RDM analysis on asset design?  
Tasks and Total Quality Management  
What is Total Quality Management?  
How do you develop standard task instructions?  
How to deal with emergency tasks?  
Are there other sources of maintenance tasks?  
One-off asset improvement tasks  
Asset replacement tasks  
Activities Related to statutory needs  
Contractor management  
Community service obligations  
How do you manage risk?  
AS/NZS Risk management  
What types of risk apply?  
What are the safety aspects of the maintenance management reference plan?  
How do you optimise life cycle costs?  
Chapter Four for existing assets  
Dynamic asset management reference plan  
Main outcomes of Chapter Four  
The following chapters  
Syndicate Tasks  
**5. How To Determine Resources and Specification?**  
Desired learning outcomes  
How to develop the work schedules?  
Operational planning  
How to package the maintenance work?  
How to level the workload?

Develop human resource needs  
 Develop first-line asset manager skill profiles  
 Develop second-line asset manager skill profiles.  
 Process team leader skill profile  
 Team approach  
 What are process-based teams?  
 What are empowered employees?  
 Allocate all asset management tasks to personnel  
 What organisational structure should you adopt?  
 How to estimate materials and spares needs?  
 How to estimate need for tools and equipment?  
 How to estimate need for workshops?  
 Can you maximise workshop use?  
 How to finalise asset or facility configuration and verify capability?  
 How do you optimise life cycle costs and budget forecasts?  
 How to optimise financial performance?  
 What is the effect of budget constraints on charges and cost recovery?  
 What are the consequences of arbitrarily changing the budget or resource availability?  
 How do you develop technical and performance specifications?  
 How to develop asset performance indicators?  
 What is the Overall Asset Effectiveness?  
 How does the Overall Asset Effectiveness relate to costs?  
 How do you interpret OAE calculations?  
 Overall Asset Utilisation  
 Occupational Health and Safety indicators  
 Client and stakeholder satisfaction  
 No financial performance indicators  
 Financial measures for councils and utilities  
 How to set-up service contracts?  
 How to establish legal and contractual needs?  
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 How do you avoid ambiguity in contracts?  
 Secure resources for the project  
 Chapter Five for existing assets  
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**6. How to Procure Assets and Resources?**  
 Desired learning outcomes  
 What are reliability audits and reviews, hazards and operability analysis?  
 What are reliability audits for new assets?  
 What are reliability reviews for existing assets?  
 How important is a hazards and operability analysis at this stage?  
 How to procure the asset?  
 Develop manuals and test plans  
 Asset operations manual  
 Asset maintenance manual  
 Develop asset commissioning inspection and test plans  
 Obtain the right personnel  
 Recruitment of first-line asset managers  
 Train first-line asset managers  
 Recruit second-line asset managers  
 Implement the new asset management organisation  
 Secure availability of required outside assistance  
 Install asset in facilities  
 How do you commission the process or asset?  
 Check maintainability  
 Another operability and hazard analysis  
 Update documentation  
 Finalise accurate asset register and database  
 Verify that all documents describe the asset as installed  
 Chapter Six for existing assets

Main outcomes of Chapter Six  
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**7. What Do You Need to Know About Computerised Asset Management?**  
 Desired learning outcomes  
 Do you need computerised asset management?  
 What is computerised asset management?  
 What other computer systems are around?  
 Computerised asset management systems  
 What functionality do you need?  
 What are the benefits of a computerised asset management system?  
 What are the pre-requisites for a computerised asset management system?  
 Which computerised asset management system?  
 How do you access the area of interest?  
 How does computerised work flow management work?  
 Work initiation based on the asset management reference plan  
 Work initiation based on breakdowns  
 What are work requests and work orders?  
 How do work orders link to procedures, access permits and needed resources?  
 What happens during work planning?  
 Who provides work order approval?  
 What is work scheduling?  
 How do you close a work order and enter the asset history?  
 How does computerised inventory management work?  
 What is the inventory catalogue?  
 What is stores receipting?  
 What is spares and materials issue and control?  
 What is the need for stores inventory counts?  
 How do you manage a return to vendor?  
 How should you reorder stock items?  
 How does computerised performance monitoring work?  
 Performance monitoring and continuous improvement  
 What is asset monitoring?  
 How do you monitor and control resources?  
 What is effectiveness monitoring?  
 How does computerised management reporting and analysis work?  
 Asset reports  
 Work progress reports  
 Spares/inventory usage  
 Budget or cost reports  
 Personnel performance reports  
 Decision support analysis  
 Document control  
 What is E-commerce and bar coding?  
 How do you implement a computerised asset management system?  
 What are the pre-requisites?  
 What is your system selection philosophy?  
 How do you select a system?  
 How do you implement a system?  
 Chapter Seven for existing assets  
 Main outcomes of Chapter Seven  
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**8. How to Improve Daily Asset Management?**  
 Desired learning outcomes  
 Maintain best conditions  
 The best asset status  
 Avoid the effects of asset deterioration on production  
 Avoid the effects of deterioration on safety, health and environment  
 Monitoring output performance  
 Recognising early signs of asset deterioration

Problem diagnosis and solving  
The best asset performance balance  
What is involved in daily asset or facility maintenance?  
Maintain the work environment  
Maintain asset output by minor preventive and corrective actions  
Maintain asset output by major preventive and corrective actions  
Calculate Overall Asset Effectiveness, Overall Production Output and Total Earning Capacity  
Continuous improvement and learning  
How can you improve employee productivity and the Overall Trade Effectiveness?  
Overall Trade Effectiveness  
What is the benefit of improving wrench time?  
Secondary functions and improved asset management  
Effectiveness and efficiency  
Monitoring resource use  
Operability and hazard analysis  
Plant safety and integrity  
The fourth operability and hazard analysis  
How do you manage an asset configuration change?  
Change as a result of continuous improvement activities  
Change as a result of evolving business performance needs  
What is effect of configuration change on capital or operational expenditures?  
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How to make the asset replacement decision  
What is asset rationalisation?  
Do you maintain asset integrity until disposal?  
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Main outcomes of Chapter Eight  
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**9. How to Change an Existing Asset Management System?**  
Desired learning outcomes  
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How to analyse current asset management practices?  
What is an asset management audit?

What are the essential performance elements for an audit?  
Structured audit interviews  
How to compare current asset management practices against a 'world best or most appropriate practices' chart?  
How to compare current asset management practices against a 'world best or most appropriate practices' matrix?  
What is a Strengths, Weakness, Opportunity, Threat analysis?  
How to establish improvement opportunities?  
Implementing change  
Establish and communicate the need for change  
Establish and communicate 'what's in it for them'  
Communications to achieve change  
Involve current personnel in the development of the new asset management tools  
How to change the daily asset management approach?  
Change operational and maintenance procedures  
Develop or change an asset management reference plan  
Change roles, responsibilities, authorities, knowledge, skills and attitudes  
Change organisational structure  
Change asset management support functions  
Effect of changed asset management approach on sourcing personnel  
Main outcomes of Chapter Nine  
**10. How To Write An Asset Management Plan?**  
Desired learning outcomes  
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Executive summary  
Part 1 - objectives and background  
Part 2 - load or demand forecasting  
Part 3 - asset analyses and task forecasting  
Part 4 - life cycle cost estimates  
Part 5 - asset management plan implementation  
Conclusions  
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**Bibliography**