

Chapter 2

The Asset Management Function

Chapter Aim: To describe the aim, structure and activities of asset management. To indicate the competencies needed by people who work in asset management.

Chapter Outcomes: After reading this chapter you will know:

- Why asset management is needed and what it's main activities are
- How the asset management function should be structured
- The need for personnel working in particular technical asset areas
- The need for financial, legal and engineering support
- The basic knowledge required by asset managers
- The personnel roles required in asset management and the competencies required for those roles
- What is meant by asset management policy
- What is meant by asset management strategy

Chapter Topics:

- The asset management function
- Structure
- Asset management groups
- Knowledge required for effective asset management
- Asset management activities
- Asset management policy
- Policy statement
- Asset strategy factors and model
- Personnel roles
- Personnel competencies
- Personnel development

2.1 The Asset Management Function

Asset management activities permeate to many levels of an organization, and are not confined to a central group. For this reason we shall use the term Asset Management Function as a flexible descriptor for the activities involved, and apply the term Asset Manager to those involved significantly, but not necessarily exclusively, in asset management activities.

The purpose of the Asset Management Function is to provide resources and expertise to support the acquisition, in-service support and disposal of the physical assets required by the organization. A central asset management function will be needed at company level, providing inputs to asset planning, taking a role in major acquisitions and developments and providing the systems and facilities needed to support assets throughout their life. Asset management is distinct from operations, and does not usually involve the direct design or building of the assets themselves. It is also normally distinct from maintenance, but the technical services functions which support maintenance are part of asset management. The exact terminology and reporting structures may vary from organization to organization.

2.2 Structure

Asset management activities and responsibilities impact on a wide range of roles within an organization are not confined to a specific department. However, in a large organization, effective asset management will benefit from the existence of recognized asset management personnel with expertise in specific areas. These may be formed into distinct groups, the title of which will depend on company history and structure.

An example in defence is the Defence Materiel Organization, which has divisions managing land, sea and air assets. Within each division are asset management groups referred to as System Program Offices (SPOs). Each SPO manages a particular group of prime assets, such as a type of ship or aircraft and all the associated subsidiary assets. In an airline, groups will correspond to the main aircraft types, with additional groups for ground handling equipment, sales systems and customer support systems. An asset management group consists of asset managers with suitable technical backgrounds, and personnel in accounting and finance, legal, contracting, procurement and engineering roles. The financial, legal and engineering staff will be co-located to asset management groups from their professional area. For particular projects, teams will be formed with personnel numbers and skills dependent on the content and size of the project. The asset management groups form a basis from which these teams can be formed.

The asset management groups have key roles in acquisition and development decisions, acquisition and development projects, and in creating and managing organization-wide systems for equipment support for new and existing assets.

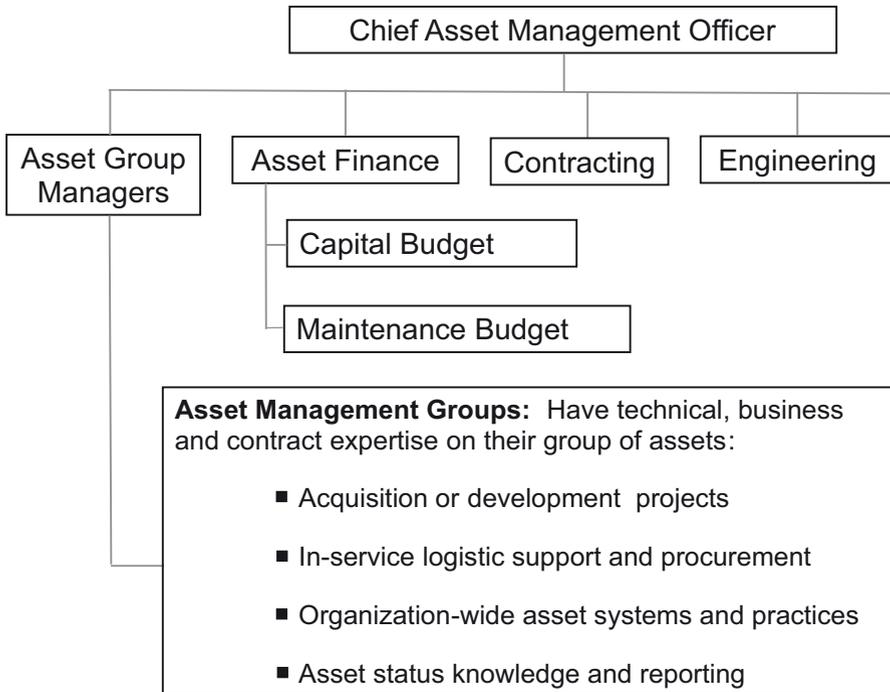


Fig. 2.1 Asset management group structure

Figure 2.1 illustrates this structure. The actual design, building and manufacture of major plant and equipment is generally not part of the asset management role.

The asset management groups just referred to can involve hundreds of personnel in a large organization. In a smaller organization the same types of tasks are undertaken and the same types of decisions are made, so that the logic of the processes carries through, even though the tasks may be handled by, say, a works manager, a works engineer or a maintenance superintendent in among a range of other commitments.

2.2.1 Asset Management Groups Example

Asset management groups are based around the various major equipment areas operated by the company. Figure 2.2 shows an example of the asset management groups for an electricity transmission company. The company installs and operates transmission lines and substations. There are asset management groups for ‘substations’ and ‘field’ with sub-groups for switchgear, transformers, transmission lines and so on. Each group is headed by an asset group manager, supported by technical, logistics, financial and commercial staff with competence in the particular field.

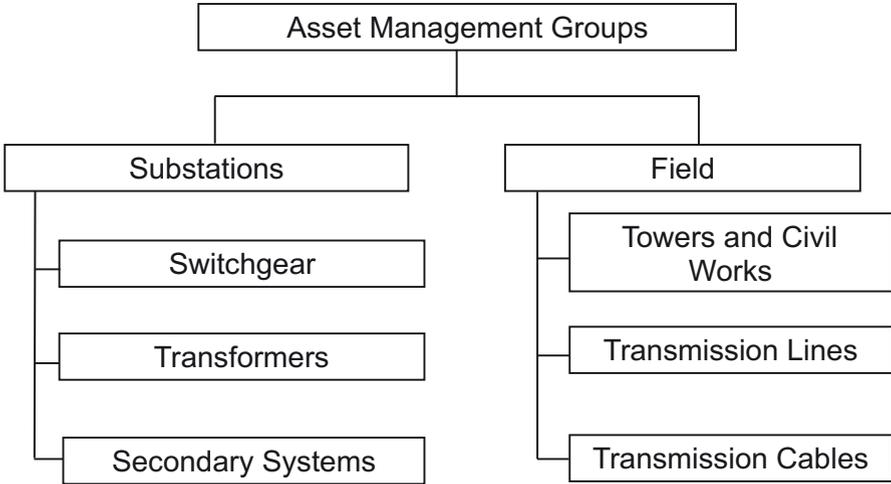


Fig. 2.2 Asset management groups example – electricity transmission

The asset management groups are involved in, and often have primary responsibility for projects of a wide range of types. For any particular project, a project team will be created, drawing on the most closely related asset management group, augmented by financial, contract and engineering specialists as necessary. These specialists may be involved with a particular project team on a full time or part time basis depending on the amount of work required. Project teams may bring in staff members from other asset management groups where multiple technologies are involved. For major projects, an *integrated project team* will be formed, which may be led from the business development group and will includes representatives from key stakeholder groups.

2.3 Asset Knowledge

The management of assets is dependent on knowledge about the organization’s assets, in terms of both current equipment, business role of the assets and future prospects. Asset managers need to have a practical working knowledge of the major assets at a management level so as to be able to make sound business decisions. They need to be aware of the assets which constitute elements in any given capability, that is, the array of subsidiary items which are necessary to support particular prime equipment. There is also a requirement for *configuration management* that is, keeping systematic track of changes to equipment configurations, such as technical upgrades and regulatory compatibilities.

For major items for which future capital decisions are required, it is advisable to list the date and type of the decisions that will be needed. For example, for a truck fleet, we need knowledge of the years of remaining effective life of vehicles, and of

Table 2.1 Asset management knowledge

| | |
|----|--|
| 1 | What assets have we got |
| 2 | Where are they located |
| 3 | What is the business significance of our major assets |
| 4 | What is the profit and loss position of our major assets |
| 5 | What is our asset utilization including peak load and seasonal factors |
| 6 | Are there gross imbalances – that is, major shortages, surpluses or misallocations of equipment or personnel |
| 7 | What is the condition of each major asset |
| 8 | Are reliability or availability issues significant |
| 9 | How much longer can specific assets last |
| 10 | Are there significant risks |
| 11 | Are maintenance costs a significant factor |
| 12 | What asset related developments and market opportunities exist |
| 13 | What has the market got to offer in terms of assets that we might usefully acquire |

the lead time for acquisition of replacements, so that we can plan our replacement strategy sufficiently far in advance. This knowledge, combined with an assessment of the future requirements of the business, and of developments in the types of vehicles available from manufacturers, will enable us to make sound and timely decisions within the constraints of business risk. A summary of points of knowledge which an asset manager may need to have is shown in Table 2.1.

2.3.1 Asset Management Activities

The asset management function has a role to play in relation to a substantial number of activities, as shown in Table 2.2 Asset management activities.

2.4 Asset Management Policy

A policy statement is a statement of the overall aims or principles adopted by an organization. A classic policy statement from history was made by a senator in ancient Rome: “Carthage must be destroyed”. PAS-55, the Asset Management specification, calls for an organization to have an asset management policy. Some suggested general points to be covered in the asset management policy statement are shown in Fig. 2.3 Asset policy statement.

Other aspects of policy may cover the assignment of authority and responsibility for specific areas of asset management to various office holders. For example, the company board to approve and monitor capital asset acquisition plans and to review

Table 2.2 Asset management activities

| | |
|----|--|
| 1 | Input to asset related aspects of business development at the concept planning stages |
| 2 | Input to pre-feasibility and feasibility analysis for asset developments including requirements analysis, input to financial analysis |
| 3 | Preparing business cases for asset related activities, can include preparing proposals, evaluating proposals and advising on the preparation of proposals |
| 4 | Development of recommendations for acquisitions, process improvements, replacement, refurbishment |
| 5 | Life cycle costing |
| 6 | Management of asset acquisition and/or development projects |
| 7 | Development and implementation of logistic support policies |
| 8 | Management of introduction into service |
| 9 | Setting maintenance policy and procedures |
| 10 | Applications of asset related technology e. g. new equipment developments, condition monitoring developments |
| 11 | Managing asset policies in regard to health, safety, environment, security requirements |
| 12 | Managing through life support provision, effectiveness and audit |
| 13 | Maintenance facilities and resources planning and provision |
| 14 | Maintenance outsourcing strategy and management |
| 15 | Configuration management |
| 16 | Technical input into computerized asset management systems structure and development |
| 17 | Input into the selection, implementation and user support for asset management information systems |
| 18 | Asset renewal/replacement/overhaul policy assessment and decisions |
| 19 | Arrange and carry out reliability and availability tests and evaluations |
| 20 | Equipment redeployment for asset management reasons |
| 21 | Equipment disposal |
| 22 | Asset related special studies |
| 23 | Asset implications of changed operating practices |
| 24 | Equipment leasing policy and management |
| 25 | Identifying and setting asset related emergency response strategies |
| 26 | Introduction and management of organization-wide asset related systems including the Computerized Maintenance Management System, Incident reporting systems, fault and failure reporting systems and responses |
| 27 | Spare parts management systems and spares control setting including rotatable repair parts policy and management, insurance spares |
| 32 | Pilot studies and trials organization and evaluation |
| 33 | Liaising with stakeholders on asset related topics |

Our organization has significant investment in plant, equipment, buildings, services and skilled and experienced personnel. Our policy for managing these assets is to pursue optimum sustainable performance in support of the development of shareholder value, whilst complying with requirements for health, safety and the environment. To achieve this we undertake to:

- Adopt a whole-of-life approach to the acquisition, operation, performance, maintenance and disposal of assets.
- Ensure legislative compliance in acquisition, operation, risk management, maintenance and disposal of assets.
- Proactively pursue world's best performance in all aspects of asset management.
- Ensure that the people involved in management of our assets are appropriately selected, developed and trained.
- Apply continuous improvement to managing our assets, to operational efficiency and to the enhancement of the skills of our people.

Fig. 2.3 Asset policy statement

asset performance records; the Chief Asset Management Officer to be responsible for reporting to the board the requirements for asset replacement, for preparing plans for asset replacement and preparing and monitoring in-service asset support strategies; operations managers to be responsible for managing risk within their operations areas.

Other policy principles are general in relation to business governance and practice, and may be in the form of references to other relevant documents. An example is procedures for ensuring a transparent choice of suppliers or service providers. However, we may also specify that interests of logistic support allow selection from a limited range of providers. Another example is that work is to be carried out in accordance with relevant legislation, standards and guidelines, including health, safety and environmental protection. Policies in relation to outsourcing and the retention of specific sets of skills within the organization may be established.

2.5 Asset Management Strategy

A strategy is a broad level plan set by senior management as a guide to how an organization intends to achieve its aims. Figure 2.4 illustrates an overall life cycle model and related asset strategy factors.

Under this heading, we set out the procedures, or refer to existing documents which specify procedures to be followed in managing assets. The asset strategy

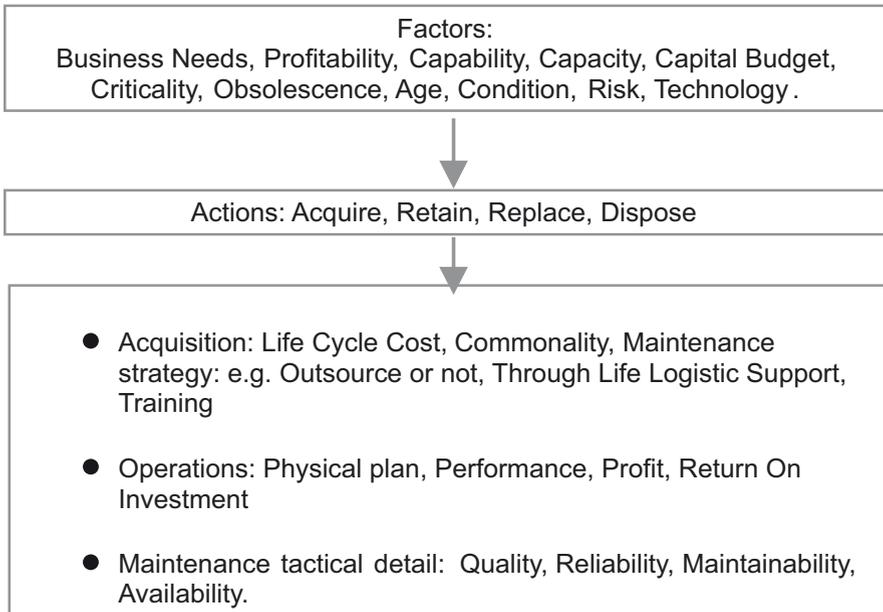


Fig. 2.4 An asset strategy model

will also specify authorities and responsibilities for action in relation to asset management activities. These may be incorporated in more generally based documents such as organization charts and job descriptions, but it is important that the asset management aspects are covered. Some examples are as follows.

2.5.1 Capital Items

Asset replacement plans are to be created and to be reviewed annually, and as required in the event of significant changes.

The age and condition of assets is to be monitored and taken into account in planning, so that issues of reliability and risk, and disruptions to business plans are minimized.

Capital expenditure proposals are to be prepared in accordance with the organizations standard procedures and timings, and will include a financial and/or cost-benefit analysis and a risk analysis.

2.5.2 In-Service Support

A systematic approach to the support of in-service assets is to be established and operated in accordance with the following requirements.

Asset maintenance plans, which may include outsourcing, are to be established and to be documented in the organization's maintenance management computer system.

Plans will be created and maintained, to deliver the required level of service of assets. Asset maintenance plans are to minimize life cycle costs consistent with achieving the outcomes specified.

Risk analysis of asset operations is to be undertaken in accordance with specified procedures. Risk management and mitigation strategies are to be implemented as indicated by the analysis.

The specified information management system is to be used for recording plans, procedures and work management.

Reporting procedures for asset related incidents, failures or defects and procedures for the analysis and response to these are to be established and intelligently followed.

Definitions and reporting procedures for asset performance indicators are to be applied.

Procedures for asset management and maintenance operating budgets are to be established and followed.

2.5.3 Business Strategy and Asset Strategy

The asset strategy must be responsive to and interact with the business strategy. Issues deriving from the business situation which will impact on asset management strategy include the following.

- Changes in demand for product or service.
- Changes in revenue and costs.
- Technological developments.
- New business developments
- Acquisitions
- Divestment, sale or phasing out;
- Redeployment;
- Changed operating practices;
- Equipment replacement/Leasing;
- Outsourcing or In-sourcing of services.

Other factors are the extent to which we plan for long term growth or to just do enough to meet short term requirements; degree of commitment to in-house repair and logistic support as opposed to use of outsourced support facilities; the use of redundancy to achieve system reliability, rather than seeking high reliability of individual items; the degree of co-ordination between related parts of a supply chain, e. g. electricity generation, transmission, and distribution; maintenance and replacement strategy in regard to run-to-failure, age-based, condition-based, spend-limit based replacement decisions.

2.6 Personnel Roles in Asset Management

The asset management function requires persons with business, technical, operations or service experience, who can work effectively with finance, contract and engineering specialists. The following are key personnel roles in asset management. The assignment of persons to these roles will depend on the size and structure of the organization, and the existence of a role does not necessarily imply that that role constitutes a full time job.

Asset Group Manager

An asset group manager is involved with a group of assets of a related type and has asset managers under him or her. In the electricity transmission example there are asset group managers for Substations and for Field Works.

Asset Manager: An asset manager is involved with a particular range of assets. For example, in the electricity transmission organization there are asset managers for Switchgear, Transformers and Secondary Systems within the substation asset group. Asset Managers require knowledge of relevant technologies and their operational context. They provide management and leadership for the group, and also provide input into business development in relation to their technical area.

Asset managers are likely to come from engineering or logistic backgrounds, but they need to be familiar with the business in its broader context, and with general accounting and financial concepts. Whilst the ultimate detail of accounting and finance will remain the province of specialists in those areas, most business decisions are based on estimates or forecasts made from the basis of combined technical and business knowledge. Here, asset managers have a key role to play in providing timely and sound input into business decisions. A company with a strong asset management presence is likely to outperform one where asset management is weak or non-existent, and it is particularly important that asset managers can provide a working link between the technical and the financial elements of the organization.

Project Manager: Acquisition and development projects constitute a major activity of the asset management function and require a high level of training, skill and experience in the project management field. Project managers are typically trained and certified in relation to the requirements of professional organizations such as the Project Management Institute and the Project Management Body of Knowledge (PMBOK).

Finance, accounting and costing: Personnel in these fields play an important role in assessing costs, assessing the financial viability of projects and in managing the finances of projects in progress.

Lawyers: Contracting and contract managers,

Procurement managers and officers:

Engineers: Engineers are required to provide technical knowledge essential to decisions relating to the organization's assets. This includes technical knowledge of

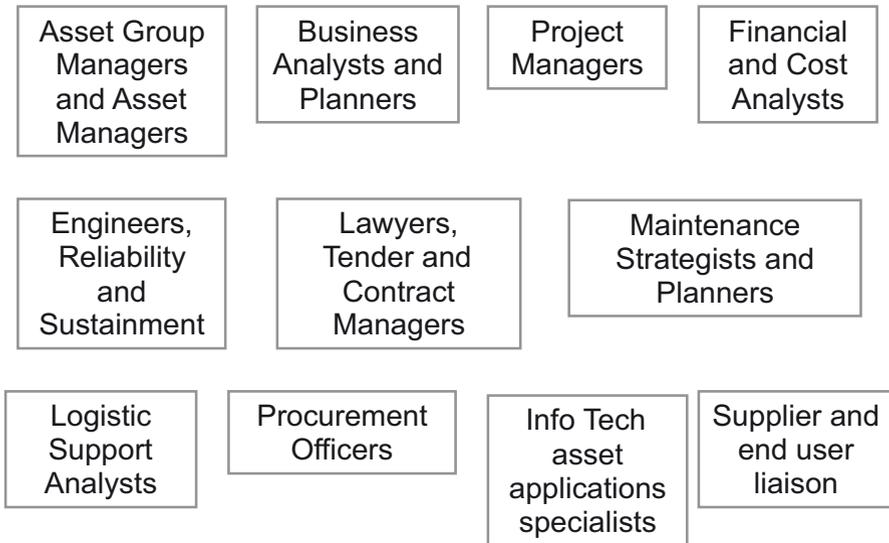


Fig. 2.5 Personnel roles in asset management

design and operation, and engineering and data analysis skills in reliability, maintenance, through life support and replacement decisions. Engineers may take “subject matter expert” roles which run across an organization. For example, an expert on draglines may advise on technical and asset related decisions across a range of sites.

Logisticians: Asset management is a mainstream area for the logistics specialist. The work involves applying such techniques as logistic support analysis and level of repair analysis. This activity area extends into configuration management, cataloguing of spares, identification and coding of maintainable items of equipment, setting inventory control parameters and ensuring that the distribution system for assets, consumables and spare parts is appropriate to needs. A mining company once purchased a vehicle to work underground but then found that it was too big to be taken down the shaft.

General staff: are also required covering human resource management and administrative functions.

Figure 2.5 summarizes the personnel roles which are relevant to the asset management function.

2.6.1 Competencies

Asset management needs competencies suited to the tasks involved, including appropriate knowledge, skills, experience, behaviour, attitudes and attributes.

The required background knowledge will involve an understanding of the technical areas of the business, the commercial needs of the business, skills in bringing together plans and projects and in presenting a balanced view of all aspects of an issue as a basis for business case development and decision making. Unlike many other areas of business, there is not an obvious direct educational feed-in to the asset management area.

The ability to work in a team and to share, mould and integrate opinions with logic and objective data are important. Members of the asset management groups will generally be drawn from technical, operational and service areas and will be people with substantial experience and competence in the relevant roles. Members in specialist roles such as finance, legal and engineering will combine their specialist knowledge with a thorough grounding in the operational and business environment of the organization. It is a staff job.

The asset management project teams will be selected for their combination of equipment knowledge and awareness of business requirements and processes. Equipment knowledge will assist them in identifying developments in their technical field, and assessing their practicality and business value. It is important to recognize and to provide sound responses to both customer pull and technology push. Table 2.1 Asset management knowledge and Table 2.2 Asset management activities provide check lists of areas of knowledge and experience which can be used in checking the competence of asset management personnel.

2.6.2 Personnel Development

Getting the right people into the right positions in asset management involves recognizing the competencies that are needed and recruiting, selecting and developing people to deliver these competencies. For any particular appointment it is useful to identify the main competencies needed and then assess individuals against this. A simple rating system for any competency is:

- 0 = None,
- 1 = Low,
- 2 = Medium,
- 3 = High.

This approach is illustrated in **Fig. 2.6** which is a spider diagram relating to the position of Asset Group Manager. The spider diagram helps in visualizing and presenting the competencies required for a particular post, and the competency status which has been assessed for a particular candidate. This can assist with decisions on appointments, and also identify where individuals would benefit from additional training and experience.

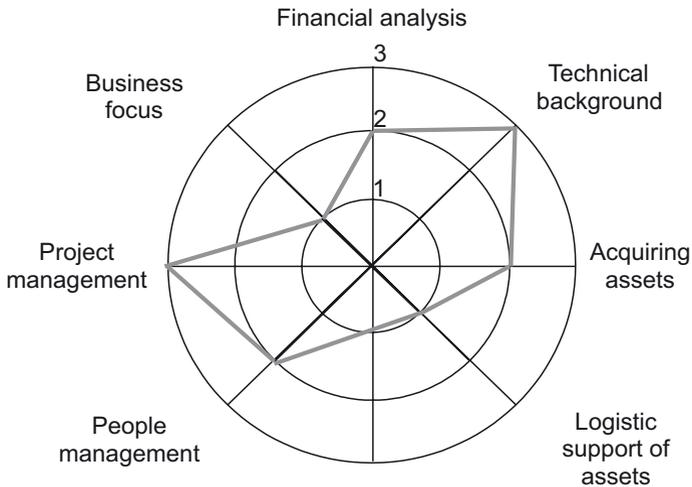


Fig. 2.6 Spider diagram

2.7 Exercise

2.7.1 *Pacific Earth Moving Part 2*

Pacific Earth Moving is a medium sized company which sells, maintains, and hires out excavators, bulldozers, graders, trucks and other earth moving equipment. Increased demand for the company's services has led to the approval of a proposal to implement a major expansion plan. Several senior managers who grew up with the business have recently retired and a new organizational approach is needed to implement developments.

You have been assigned to advise Pacific Earth Moving on establishing an organizational structure for asset acquisition and asset management for the future, and indicating what personnel should be recruited. Provide an outline of the proposed organization in the form of an organization chart and an indication of the personnel roles and competencies required by the company.

2.8 Asset Management – Who Needs It?

Every few weeks Jock would call in on his Pop at his old weatherboard house near the Yarra river at Warrandyte. Pop barracked for Richmond, unlike Jock who was a Brisbane Lions supporter. Pop also went along to the local oval every week to watch his youngest great-grandchild play for the Warrandyte Bloods in the local under 12s league. After the usual football banter, Jock told Pop about his new job.

“What do you mean asset management?”, asked Pop. Jock explained.

“We could have done with some of that in the early days of the war”, said Pop. Jock liked to hear Pop’s stories and waited for him to go on.

“Norway was a disaster”, said Pop. “We were supposed to block the German advance but we were landed without any of our stuff. We were sitting on a hillside with just our packs and rifles when an officer told us to start digging in. He didn’t stick around so we just took a couple of casual kicks at the rocks and sat down again.”

“Then my mate Happy Kershaw noticed a plane in the distance, and said that it was coming our way. Happy stood up and said, ‘It’s dropping something’.

“We watched idly as the something fell to the ground, and then jumped a mile as it gave an almighty bang. Realization dawned, as the plane veered away and we could see black crosses on its wings. After that we lay flat, and dug furiously with our bayonets and bare hands.

“Later that night we were pulled back and shipped out on a destroyer, but all our gear was lost. Someone must have learnt a lot about logistics from that little episode”, said Pop.