

Asset Management Maturity Assessment Tool

Final Report

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Commerce Commission



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Glossary

AMMAT	Asset Management Maturity Assessment Tool
AMP	Asset Management Plan
EDB	Electricity Distribution Business
PAM	PAS 55 Assessment Methodology
PAS	Publicly Available Specification
IAM	Institute of Asset Management
ISO	International Standards Organisation
IT	Information Technology

Executive summary

The Commerce Commission has engaged Parsons Brinckerhoff (PB) to assist with the development of a tool that can be used to assess the maturity of asset management capability and practices within New Zealand Electricity Distribution Businesses (EDBs). The scope provided by the Commission stated that development of the tool should have regard to:

- The purpose of information disclosure regulation and the Part 4 purpose statement;
- Logistical and cost considerations in assessing the asset management planning capability of 29 electricity distribution businesses;
- Existing standards of good infrastructure asset management practice; and
- Approaches adopted in other sectors or countries in assessing the maturity of asset management capabilities.

Since the Commission first published the Electricity Information Disclosure Handbook to provide guidance to EDBs on the contents of asset management plans (AMPs), there has been considerable international progress on the standardisation and development of asset management capabilities and processes. This international work is now encapsulated in the PAS 55 standard published by the Institute of Asset Management (IAM).

In consideration of existing standards and approaches taken in other sectors/countries, PB has based the asset management maturity assessment methodology on PAS 55. This has involved adapting the current PAS 55 Assessment Methodology (PAM) tools to meet the objectives of this project. The native PAM includes a questionnaire containing 121 questions that comprehensively assess the maturity of asset management systems based on 5 levels of maturity.

The tool that has been developed to assess the maturity of EDB asset management is the Asset Management Maturity Assessment Tool (AMMAT). This tool consists of a self-assessment questionnaire containing 31 questions and accompanying guidance notes. The maturity assessment questions are designed to cover the full range of asset management system components and activities while having regard to information that is already disclosed in AMPs.

The proposed approach has been developed in consideration of the compliance effort placed on EDBs noting that they may be required to complete a self-assessment for public disclosure. Given the range of EDB sizes in New Zealand and that the smaller EDBs generally have limited resources to undertake this type of activity, the AMMAT is designed to balance the needs of minimising compliance effort whilst having regard to the project scope provided by the Commission.

In PB's opinion, the proposed approach to assessing asset management maturity within New Zealand EDB's delivers:

- Tangible evidence of a systematic, cross-disciplinary and optimised approach to asset management;
- A knowledge that the business has the processes in place to correctly blend short term requirements with the sustainable delivery of long term goals;
- A means to identify improvement opportunities and to track performance improvements over time assisting continuous improvement;
- Improved means to demonstrate competent asset stewardship and governance to stakeholders;

- A benchmarking opportunity, enabling comparison of performance with other organisations;
- Self-assessment including comprehensive guidance for each question; and
- A means to identify competencies required for good technical and operational risk management.

Stakeholder consultation during development of the proposed AMMAT included a pilot phase, a workshop and trials aimed at gathering feedback from interested parties. Aside from the provision of asset management related concept definitions and some minor useability updates to the tool, the general feedback was positive in terms of its objective, design and applicability. One common concern expressed by stakeholders related to whether the adoption of a tool based on an existing standard would lead to a regulatory requirement for formal compliance with an asset management standard such as PAS 55. We consider that compulsory PAS 55 compliance may not be desirable primarily because the cost of formal assessment (as opposed to self-assessment) to PAS 55 is significant (particularly for small organisations) and if compliance is made compulsory it follows that there must be some formal assessment of the level of compliance.

PB's recommendation for implementation of the tool is to add a requirement into the Information Disclosure regulations for EDBs to complete an AMMAT self-assessment and disclose the results in a dedicated section of the AMP. Feedback obtained from stakeholder consultation indicates that the exercise of self assessment is valuable and the subsequent publication of the results would be informative to stakeholders. PB considers the AMMAT to be consistent with regulatory objectives, by:

- Encouraging EDB's to improve the efficiency and effectiveness of their operations by adopting best practice asset management processes consistent with those used in a competitive market; and
- Simulating the efficiency drivers of a competitive environment by allowing both internal and external stakeholders to compare the performance of an EDB against its peers.

Given the progress EDBs have made in terms of compliance with the Information Disclosure regulations with AMPs over recent times, PB has not recommended any other changes to existing AMP requirements.

PBs recommendation for frequency of AMMAT completion and disclosure is for EDBs to update the AMMAT at least as often as the AMP is updated and publicly disclosed. Publishing the AMMAT with the AMP will keep the integrity of the current AMPs intact and allow EDBs to report on the continuous improvement in their asset management systems at a frequency which reflects the time typically taken to make improvements to asset management systems.

1. Introduction

1.1 Background and objective

The Commerce Commission (the Commission) is currently reviewing the Information Disclosure requirements for electricity distribution businesses (EDBs), including those relating to Asset Management Plans (AMPs), in light of the new Part 4 purpose statement among other considerations. Part 4 of the Commerce Act supports a continued requirement for publicly disclosing AMPs. As the condition, suitability, and management of an EDB's assets are critical determinants of the price and quality of services consumers receive, each EDB's plans to develop and manage those assets will determine the long-term benefits its consumers will receive.

Previous AMP reviews have taken an essentially compliance based approach, with the contents of the AMP compared against the Information Disclosure requirements. However, a higher compliance rating does not necessarily correlate to the quality of the plan, or the organisation's capability to implement the plan successfully. The Commission has therefore considered how to extend the analysis of AMPs to provide additional insight into the quality of asset management planning.

The Commission has requested Parsons Brinckerhoff (PB) to:

- Develop an approach to assess the maturity of the asset management capability and practices within EDBs that support their AMPs; and
- Recommend changes to the information disclosure requirements in respect of any issues identified as a result of the work.

Commission scope¹ stated, "...an approach should be developed with regard to:

- a) *the purpose of information disclosure regulation and the Part 4 purpose statement;*
- b) *logistical and cost considerations in assessing the asset management planning capability of 29 electricity distribution businesses;*
- c) *existing standards of good infrastructure asset management practice; and*
- d) *approaches adopted in other sectors or countries in assessing the maturity of asset management capabilities."*

1.2 Methodology

In response to the Commission scope of work and guidelines, PB has proposed adapting an existing asset management maturity assessment methodology. The rationale for this is discussed in Section 3.

¹ *Information Disclosure Regulation – Electricity Lines Services and Gas Pipeline Services - Update on Process, 15th April 2011, paragraph 37. Commerce Commission*

The Commission requested PB to adopt a collaborative approach, by engaging with regulated suppliers in the development of an assessment methodology. To this end the development of a tool incorporated the following stakeholder consultation phases:

- **Pilot Phase:** PB has consulted with one EDB on the form and content of a draft version of the AMMAT in order to obtain early feedback regarding compliance effort, relevance and information availability.
- **Workshop phase:** This workshop was jointly hosted by the Commission and PB to obtain feedback on the draft version of the AMMAT and accompanying report issued to stakeholders. Workshop attendees were given the opportunity to submit questions both before and during the workshop.
- **Trial phase:** Following stakeholder feedback from the Pilot and Workshop consultations, PB trialled an updated AMMAT version on two EDBs. Findings from this phase have been incorporated into this final report and recommendations to the Commission.

This report also provides a discussion of options for changes to the current Information Disclosure requirements in respect of any issues identified as a result of this work.

1.3 Scope

The Commission identified that the proposed methodology may also be considered for application to the gas distribution sector, however this report focuses on application of the assessment tool to Commission's objectives relating to the EDBs.

1.4 Limitations

The recommended assessment methodology is not equivalent to and does not require a full PAS 55 compliance audit and certification process. It is only designed to address the specific objectives relating to this project brief.

2. Review of Requirements

This section examines the current Information Disclosure requirements relating to asset management and compares these with the requirements for assessing asset management maturity. PB considers that by applying the PAS 55 Assessment Methodology (PAM), the recommended approach has regard to existing standards of good infrastructure asset management practice and to approaches that are adopted in other sectors or countries. The approach must also have regard to:

- Logistical and cost considerations in assessing the asset management planning capability of the EDBs; and
- The purpose of Information Disclosure regulation and the Part 4 purpose statement.

In taking account of the logistical and cost considerations, PB considers it appropriate that unnecessary overlap with existing information already being disclosed by the EDBs be minimised.

2.1 Current Information Disclosure requirements

2.1.1 Part 5 of the Information Disclosure Requirements

The current Information Disclosure requirements for New Zealand electricity distribution businesses are set out in the Electricity Distribution (Information Disclosure) Requirements 2008² and the associated Electricity Information Disclosure Handbook³ (the Handbook). Among other things, EDBs are required to prepare AMPs and disclose these publicly. The handbook notes that “the objective of the AMP disclosure requirement is to encourage the development of best practice asset management processes” and “that the AMP must contain sufficient information to make an informed judgment as to the extent that an EDB’s asset management processes meet best practice criteria.”

The Commerce Amendment Act 2008 repealed the provisions of Part 4 of the Commerce Act 1986⁴ and substituted new provisions which the Commerce Commission is currently implementing in new regulations. The information disclosure requirements which currently are in place were prepared under the earlier provisions of the Act. However, the Commission has indicated⁵ that, in its preliminary view, a continued requirement for EDBs to publicly disclose an AMP will serve to fulfil the statutory purpose of the new information disclosure regime.

² <http://www.comcom.govt.nz/electricity-information-disclosure-requirements/>

³ Commerce Commission, *Regulation of Electricity Lines Businesses Information Disclosure Regime Electricity Information Disclosure Handbook*, 31 March 2004 (as amended 31 October 2008).

⁴ The updated Act is available for download from <http://www.legislation.govt.nz/act/public/1986/0005/latest/DLM87623.html>

⁵ Commerce Commission, *Information Disclosure Discussion Paper*, 29 July 2009, chapter 8

2.1.2 Part 4 Purpose Statement

The purpose of Part 4 of the Act (the new Part 4 purpose) “is to promote the long term benefit of consumers ... by promoting outcomes that are consistent with outcomes produced in competitive markets such that suppliers of regulated goods or services –

- Have incentives to innovate and to invest, including in replacement, upgraded, and new assets; and
- Have incentives to improve efficiency and provide services at a quality that reflects consumer demands; and
- Share with consumers the benefits of efficiency gains in the supply of the regulated goods or services, including through lower prices; and
- Are limited in their ability to extract excessive profits.”

Further to this, Section 53A of the Act states, “The purpose of information disclosure regulation is to ensure that sufficient information is readily available to interested persons to assess whether the purpose of this Part is being met.”

2.2 Current AMP requirements

The current AMP requirements are categorised under the areas included in Figure 2.1:

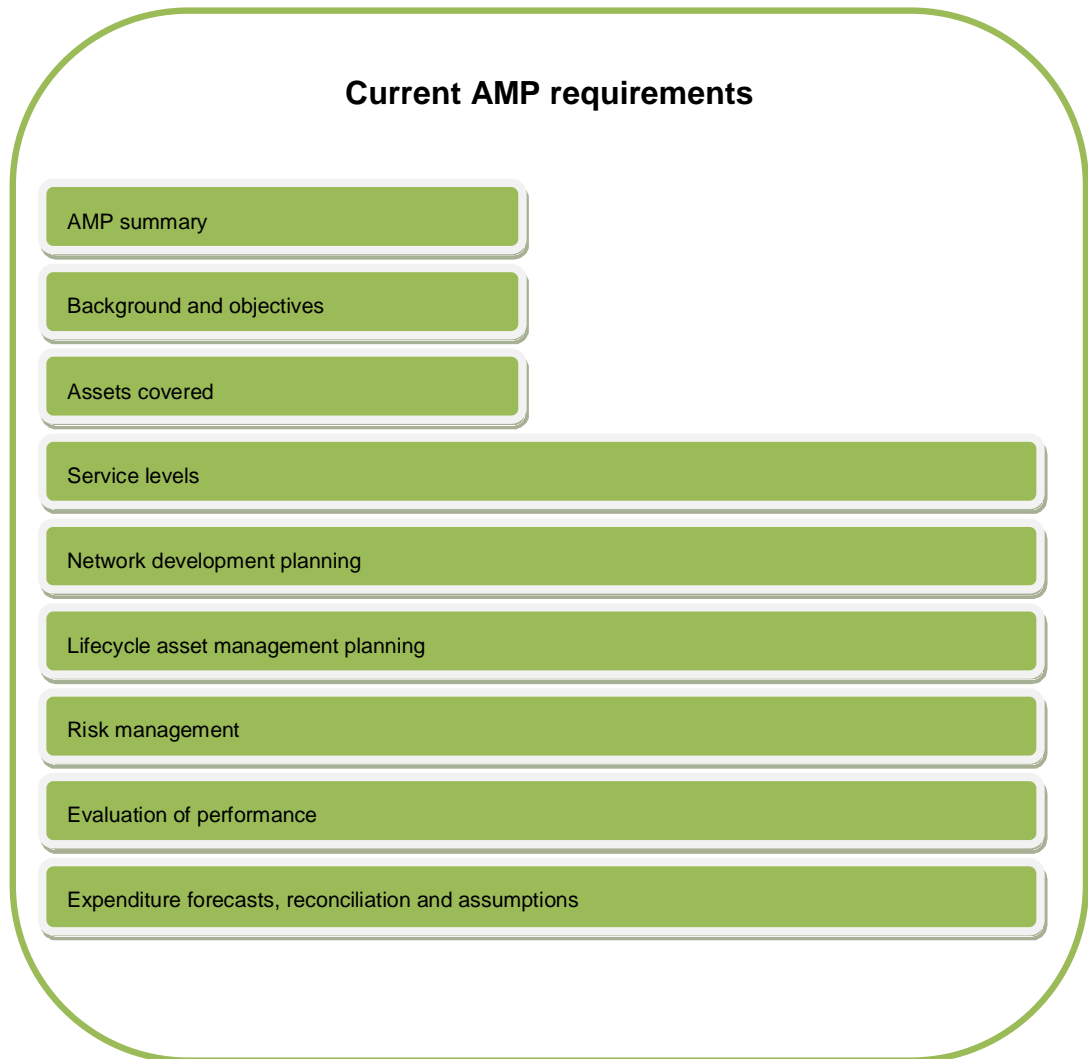


Figure 2.1 Current AMP disclosure requirements

Pursuant to the current regulatory objectives, the Information Disclosure Requirements (the Requirements) generally have a functional focus, and seek to demonstrate the functional capabilities and processes of an asset management system within an EDB.

Assets to be managed include not just physical assets such as transformers and cables, but they include licenses, reputation, workforce, experience, knowledge, data and intellectual property. An asset management system is comprised of a number of key components which when efficiently integrated provides assurance that assets are being managed effectively. The main components are:

- Systems – IT systems, GIS, SCADA, CRM systems,
- People – authorised, experienced, trained individuals

- Processes – procedures, standards, manuals which govern activity
- Strategy – policies, targets, plans and objectives which define and direct activity.

Currently the Requirements focus on process and some key aspects of the strategy and IT systems used in an asset management system.

PB considers that the current disclosure requirements have resulted, over time, in a significant improvement in the standard of AMPs and that it is likely that most EDBs have also improved their asset management practices as a result of the disclosure requirements. This form of continuous improvement appears to be well accepted by the EDBs and is evidence of the disclosure requirements having a positive impact on asset management practices.

PB considers that the EDB AMPs allow an informed judgement as to whether an EDB has developed efficient processes and functionality in some of the key components of an asset management system. EDB AMPs generally contain comprehensive and detailed accounts of the organisation's capabilities with respect to lifecycle asset management planning, network development planning and risk management. The AMPs also contain summary level information about the systems employed and any outsourcing arrangements. PB does not consider the current disclosure requirements cover all key processes or key components of an asset management system which enable an interested party to determine how efficient (or mature) a business is in its approach to asset management.

2.3 Asset management maturity definition

The scope provided by the Commission described an intent to assess asset management maturity of capability and processes (practices) within a business. Assessment of maturity would provide an indication to stakeholders as to whether an asset management system was:

- 'immature', meaning not well developed; or
- 'mature', meaning well developed and operating akin to best practice, and experienced in its approach to asset management.

The AMP is only one key component of an efficient asset management system which requires an effective mix of strategy, systems, people and processes in order to be considered mature. Without an understanding of how mature an asset management system is with regard to the four core components it is difficult to judge how effective the AMP will be in achieving the organisation's objectives.

The scope of this project is to assist the Commission in developing an approach which can be used to assess the maturity of an EDB's processes and capabilities in delivering optimal asset management. In assessing maturity the AMMAT seeks to answer two main questions:

- How 'mature' or skilled is the business in some key areas of asset management not demonstrated by the current requirements or AMP?
- How well have they implemented their skills?

2.4 Assessment area identification

PB completed a high level analysis of the asset management capabilities typically demonstrated in an AMP and the core capabilities which should be demonstrated by a mature asset management system⁶ within an organisation operating in a competitive market. As discussed in Section 3.1, PB considers the PAS 55 an appropriate source given its aim to provide international best practice for asset management using experience from asset managers of a broad range of assets in both regulated and unregulated organisations. This identified a set of capabilities which were not typically demonstrated in an AMP, and hence could not sufficiently be assessed by external stakeholders.

In light of this report's objective for assessing the maturity of asset management within an EDB, PB has identified 6 main assessment areas to be targeted by the AMMAT. Maturity of asset management can be demonstrated in the way the organisation manages its processes and the way it manages its people. Each of the six assessment areas can be classified as having a **PROCESS** focus or a **PEOPLE** focus. This will assist a business when completing the assessment.

The six main capability assessment areas are:

- Asset strategy and delivery; (PROCESS oriented)
- Documentation, controls, and review; (PROCESS oriented)
- Systems, integration and information management; (PROCESS oriented)
- Communication and participation. (PROCESS oriented)
- Structure, capability and authority; (PEOPLE oriented)
- Competency and training; and (PEOPLE oriented)

A description of the six assessment areas is contained in Sections 2.4.1 to 2.4.6. Whilst these are not a complete list of competencies required by a mature asset management system, they aim to provide further definition of the focus for the AMMAT.

2.4.1 Asset strategy and delivery

An EDB asset management system with a mature asset strategy and delivery capability would:

- Ensure its asset management strategy is consistent with any of the organisation's other policies and strategies;
- Take into account the lifecycle of assets when defining its asset strategy;
- Translate its asset management strategy into practical plans for all parties who have a role in delivering that strategy;
- Have plans to identify and respond to incidents and emergency situations;

⁶ The list of core capabilities was derived from the PAS 55 assessment clauses, included in Appendix B.

- Have documented processes to ensure asset management plans are implemented in such a way that cost, risk and asset system performance are appropriately controlled;
- Ensure appropriate preventative and corrective actions are taken to address root causes; and
- Establish processes to identify and assess asset related risks throughout the asset lifecycle.

2.4.2 Documentation, controls and review

A mature EDB asset management system should:

- Establish documentation to describe the key components of the asset management system and links between them.
- Develop processes around the documentation, control and review of key components.
- Where an organisation outsources components of the asset management system, it should have implemented sufficient controls to ensure:
 - ▶ the efficient and cost effective delivery of the asset management strategy; and
 - ▶ it retains core asset knowledge relating to the business.
- Key components of the asset management system should be regularly reviewed and include procedures for regular audits.

2.4.3 Systems, integration and information management

A mature EDB asset management system should:

- Ascertain asset management information requirements which cover the whole of life cycle from both internal and external sources;
- Ensure appropriate systems and processes are in place to adequately record asset condition and related performance;
- Enable the mobilisation of technology, people and processes that create, secure, make available and destroy the information required to support the asset management system; and
- Ensure appropriate controls are in place to ensure the quality and accuracy of asset management information.

2.4.4 Communication and participation

A mature EDB asset management system should include the following key components:

- Ensure that all business staff are aware of and aligned with the organisations policies, objectives and strategies. Personnel should be fully engaged in the efficient and cost effective delivery of the asset management requirements.

- If an organisation outsources any components of its asset management system, then the external service providers should be made aware of the organisation's policies, objectives and strategies.
- Effective communication should be received from external service providers to the organisation which confirms they are delivering the plan in the most efficient manner.
- An organisation should ensure that the key aspects of its AMP are communicated to all stakeholders involved in the delivery of the plan and obtain confirmation that the plan is being appropriately adhered to.

2.4.5 Structure, capability and authority

A mature EDB asset management system should:

- Consist of a plan which is realistic and which can be implemented in an efficient and cost effective manner. This involves ensuring that the organisational structure, capability in terms of people and process and authorities exist in the organisation in order for this to happen;
- Practice continual improvement relating to its core capabilities and seek to expand its knowledge of all things affecting its asset management approach; and
- Ensure that the responsibilities of delivering the asset management strategy, objectives and plan are allocated to those with the necessary authority to fulfil them.

2.4.6 Competency and training

A mature EDB asset management system should:

- Ensure that the organisation possesses the appropriate competencies to deliver the asset management strategy. This requirement extends to third parties responsible for delivering an outsourced component of the asset management system;
- Be able to identify future competency requirements and training needs which are necessary to ensure the efficient and cost-effective delivery of the organisation's strategic plan; and
- Identify asset risk information and ensure this is integrated in determining competency and training requirements.

2.5 AMMAT assessment areas and current requirements

A summary comparison of the assessment areas against current AMP requirements is included in Table 2.1.

Table 2.1 Comparison of AMMAT with current requirements

AMMAT Assessment Area	Comparison with current requirements
Asset strategy and delivery	AMP's vary in their approach to describing how the business ensures it has the necessary capabilities to deliver the overall asset management strategy, objectives and plan. Most AMPs only contain limited information in the area of delivery which means it is difficult to assess the EDB's asset management maturity with respect to their delivery capability.
Documentation, controls, and review	Current information requirements do not require EDBs to discuss what documentation is used to manage the business or how the necessary controls or reviews are integrated into the asset management system.
Systems, integration and information management	Summary descriptive information is covered, but the requirements do not assess processes which seek to integrate and manage key systems and asset related data within the business.
Communication and participation	Current requirements pay only minor attention to the communication and participation processes required to deliver an effective asset management system.
Structure, capability and authority	Current requirements do not require EDB's to demonstrate how the organisational structure, capabilities and authorities support the strategic objectives.
Competency and training	Current requirements do not require an EDB to disclose how business staff are trained, and developed and possess the relevant competencies to deliver the asset management strategy and objectives.

Figure 2.2 demonstrates the cross-functional application of the AMMAT assessment areas over the current AMP requirements:

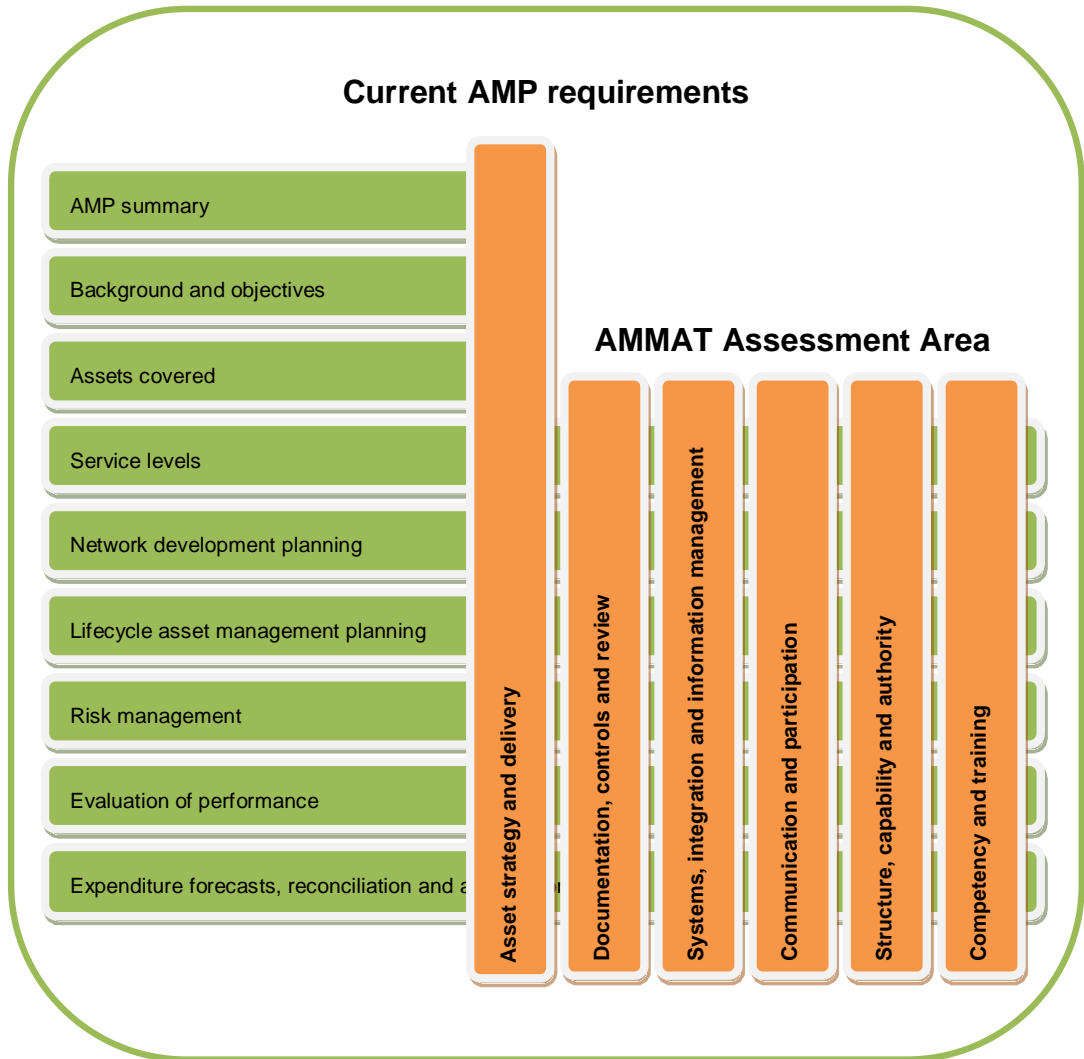


Figure 2.2 AMMAT assessment areas and AMP requirements

3. Maturity Assessment Tool

3.1 PAS 55

Since the Commission first published the Electricity Information Disclosure Handbook to provide guidance to EDBs on the contents of asset management plans, there has been considerable international progress on the standardisation and development of asset management capabilities and processes. This international work is now encapsulated in the PAS 55 standard published by the Institute of Asset Management (IAM)⁷.

Work is currently being undertaken by the International Standards Organisation (ISO) to develop an international asset management standard to be named ISO 55000; and this work is based on PAS 55. The PAS 55 Assessment Methodology was developed to provide international best practice for asset management using experience from asset managers of a broad range of assets.

PB has based the asset management maturity assessment methodology on PAS 55. This involved adapting the current PAS 55 Assessment Methodology (PAM) tools to meet the objectives of this project. The native PAM includes a questionnaire containing 121 questions that comprehensively assesses the maturity of asset management systems based on 5 levels of maturity.

3.2 Assessment areas vs. PAM questions

As identified in Section 2.4 there are six main assessment areas included in the AMMAT. PB has reviewed the 121 questions in the PAM against what it considers to be the most important aspects of asset management, and rationalised them to 31 questions which best fit the project objectives and guidelines that include having regard to logistical and cost considerations of compliance.

The questions primarily focus on areas of asset management not specifically covered by the current Information Disclosure requirements and are designed to provide insight into the maturity level of asset management for target capability areas within an electricity distribution business.

Following pilot feedback from Powerco, PB has also considered the nature of the selected questions and the possibility that the AMP will already contain sufficient information to elicit a response to an AMMAT question. Our primary aim has been to select questions that meet the objectives of the tool but also that are not likely to be answered by current information in the AMP and do not involve a simple yes/no response. Our secondary aim has been to select questions that cover the full range of asset management activities.

The PAM questions aligned to each of the capability assessment areas of the maturity assessment tool are:

- Asset strategy and delivery (PROCESS)

⁷ <http://www.theiam.org/>

- ▶ PAM questions 10, 11, 26, 33, 69, 91 and 109
- Documentation, controls, and review; (PROCESS)
 - ▶ PAM questions 45, 59, 82, 88, 95, 105 and 113.
- Systems, integration and information management; (PROCESS)
 - ▶ PAM questions 31, 62, 63 and 64
- Communication and participation. (PROCESS)
 - ▶ PAM questions 3, 27, 42 and 53
- Structure, capability and authority; (PEOPLE)
 - ▶ PAM questions 29, 37, 99 and 115
- Competency and training; (PEOPLE)
 - ▶ PAM questions 40, 48, 49, 50 and 79

The 31 questions included in the AMMAT are comprised of the following functional areas of asset management as categorised in the PAS 55 assessment methodology:

- Asset management policy (1 question)
- Asset management strategy (2 questions)
- Asset Management Plan (4 questions)
- Contingency planning (1 question)
- Structure, authority and responsibilities (3 questions)
- Outsourcing of asset management activities (1 question)
- Training, awareness and competence (3 questions)
- Communication, participation and consultation (1 questions)
- Asset management system documentation (1 question)
- Information management (3 questions)
- Risk management process (1 question)
- Use and maintenance of asset risk information (1 question)
- Legal and other requirements (1 question)
- Life cycle activities (2 questions)
- Performance and condition monitoring (1 question)

- Investigation of asset related failures, incidents and non-conformities (1 question)
- Audit (1 question)
- Corrective and preventative action (1 question)
- Continual improvement (2 questions)

The AMMAT has been developed by extracting questions from the PAM rather than developing a new (merged) set of questions, i.e. the questions in the AMMAT are a sample of the PAM questions. Sampling of the PAM questions is a more efficient method of producing the AMMAT over merging questions for the following reasons:

- If an organisation is already familiar with PAS 55, compliance requirements are minimised by avoiding re-assessment against a new set of merged questions.
- The AMMAT remains directly aligned with the PAS 55 specification requirements. This gives an EDB freedom to pursue full PAS 55 compliance (in which case a response to the AMMAT questions will already have been completed).
- Merging would often result in the focus for a question becoming blurred, and assessment evidential requirements becoming too large for a single question.

3.2.1 Omitted questions

As discussed above, only a subset of the PAM questions have been selected to effectively and consistently assess the maturity of asset management capabilities and processes in New Zealand EDBs.

The PAM questions not included in the AMMAT were excluded for the following reasons:

- There was considerable overlap with information already contained in an AMP.
- The AMMAT already included a question or questions which covered the key aspects of a particular area of assessment.

3.3 Benefits of the methodology

The key benefit of the AMMAT is that it intrinsically incorporates elements of best practice infrastructure asset management practices and the approach adopted in other sectors and countries to assessing asset management maturity.

Other benefits arise from the “incremental” nature of the AMMAT. That is, the tool has been specifically designed to minimise overlap with current requirements, to involve self-assessment, and to place little additional compliance burden on the EDBs. Our primary aim in developing the tool has been to foster the continuous improvement approach that has resulted from the current disclosure requirements. We consider that the development of a tool that is simple to use, readily accepted by the EDBs and capable of future expansion/development is likely to result in continuous improvement of asset management practices.

The AMMAT should demonstrate a level of compliance with the PAS 55 requirements, and in turn provide a view of the maturity level across the assessment areas. It also provides:

- Tangible evidence of a systematic and optimised approach to asset management;
- A knowledge that the business correctly blends short term requirements with sustainable delivery of long term goals;
- A means to identify improvement opportunities and to track performance improvements over time assisting continuous improvement;
- A means to demonstrate competent asset stewardship and governance to stakeholders;
- A benchmarking opportunity, enabling comparison of performance with other organisations;
- Self-assessment including comprehensive guidance for each question; and
- A means to clarify competencies required for good technical and operational risk management.

3.4 Tool design

The AMMAT is a Microsoft Excel based application. It consists of the three main components:

- Summary sheet: An overview and introduction to the tool including definitions of key terms.
- Questions and main assessment sheet:
 - ▶ For each question the tool also provides guidance on:
 - Why the question is being asked;
 - Who should be able to respond; and
 - What sort of evidence could be reviewed in order to assess the maturity level.
- Results: Provides a descriptive and graphical representation of the assessment results.

In terms of compliance effort, a reasonable investment is required for completing the first self-assessment using the AMMAT, however subsequent reviews would typically only involve minor updates to evidence and scores previously recorded.

3.5 Implementation options

Publishing the results of a self-assessment (either the question responses or summary results tables) would be consistent with regulatory objectives, by:

- Encouraging EDB's to improve the efficiency and effectiveness of their operations by adopting best practice asset management processes consistent with those used in a competitive market; and
- Simulating the efficiency drivers of a competitive environment by allowing both internal and external stakeholders to compare the performance of an EDB against its peers.

PB has identified three main disclosure options for the tool.

- Option 1: Modify the regulations to require EDBs to include the self-assessment in their annual AMP disclosure.
- Option 2: Modify the regulations to require EDBs to submit an annual AMMAT self-assessment as a separate document to their AMP.
- Option 3: Include the AMMAT as a non-compulsory disclosure exercise aimed at promoting best practice within EDB's. This would involve no change to regulations.

One option discounted by PB was to convert the 31 questions contained in the AMMAT into a number of new AMP content requirements. In PB's opinion, this would involve an unnecessary compliance requirement since the AMMAT already includes a defined format and structure for capturing and reporting self-assessment information. Converting the questions into requirements would lose the benefits of the self-assessment and the scoring functionality contained within the tool. Further, the inclusion of additional capability information in the AMP could lead to the AMP becoming less relevant for stakeholders.

The focus and objectives of an AMP is different to that of the AMMAT. There is a risk that by including asset management system competency requirements assessed in the AMMAT within an AMP, the focus and objectives of the document will be blurred. For example, an AMP does not usually explain an organisation's documentation, review and controls capability and processes, although they are an essential component of an asset management system.

3.5.1 Option 1 (preferred option)

Inclusion of the AMMAT in an Appendix (or similar subsection) of the AMP would not detract from or alter the current form of the AMP. Given the defined and prescriptive format of the AMMAT, compliance requirements should be kept to a minimum. The integrity of the current AMPs and the AMMAT is maintained.

Feedback obtained from stakeholder consultation indicates that the exercise of self assessment is valuable and the subsequent publication of the results would be informative to stakeholders and consistent with current AMP document objectives.

3.5.2 Option 2

This option is very similar to Option 1, but instead of integrating the AMMAT into the current AMP requirements, new requirements would be specified to accommodate separate disclosure of self-assessments.

PB is unsure of the benefit of separating out disclosure of the AMMAT self-assessment results from the current AMP document, believing it would be more straightforward for EDBs to include a complete copy of the self-assessment within a distinct section of their AMP.

3.5.3 Option 3

This option involves no changes to regulations however this option is not consistent with a key attribute of public information disclosure requirements which allows both internal and external stakeholders to compare the performance of an EDB against its peers.

Whilst this option may minimise additional compliance requirements for an EDB, PB does not believe this option represents the best outcome for stakeholders.

3.5.4 Timing and frequency of AMMAT reviews

It is PB's view that once an initial AMMAT review has been completed, it should be revisited each year by the EDB. This should ensure that changes to the asset management system are accurately reflected in the ratings and evidence provided in the tool. Additionally, any gaps that were identified as a result of the review, and have subsequently been addressed by the EDB, will have been tested and the appropriate updates made in the AMMAT.

Given AMP's are currently updated annually PB recommends that the AMMAT is revisited and publicly disclosed at the same frequency. Publishing the AMMAT with the AMP will keep the integrity of the current AMPs intact and allow EDBs to report on the continuous improvement in their asset management systems at a frequency which reflects the time typically taken to make improvements to asset management systems.

4. Consultation

Consultation on the draft AMMAT included:

- A workshop held on June, attended by PB, the Commerce Commission, EDB's and other interested parties; and
- A trial phase consisting of a review of the AMMAT and feedback provided by two EDBs.

A summary of the feedback is included in Section 4.1.

4.1 Workshop and trial phase feedback

Definition of key terms

To provide some additional clarity around some of the most important asset management related concepts and phrases, a number of key definitions have been added into the AMMAT. These are:

- Asset Management
 - ▶ Systematic and coordinated activities and practices through which an organisation optimally and sustainably manages its assets and asset systems, their associated performance, risks, expenditures over their lifecycles for the purpose of achieving its organisational strategic plan.
- Organisational strategic plan
 - ▶ Overall long-term plan for the organisation that is derived from, and embodies, its vision, mission, values, business policies, stakeholder requirements, objectives and the management of its risks.
 - Note. Some organisations call this Corporate Plan, Corporate Strategic Plan or Business Plan.
- Asset Management Policy
 - ▶ Principles and mandated requirements derived from and consistent with the organisational strategic plan, providing a framework for the development and implementation of the asset management strategy and the setting of the asset management objectives.
- Asset Management Strategy
 - ▶ Long-term optimised approach to management of the assets, derived from, and consistent with, the organisational strategic plan and the asset management policy.
 - Note 1. The asset management strategy converts the objectives of the organisational strategic plan and the asset management policy into a high-level, long-term action plan for the assets and/or the asset management system.

- Note 2. The high-level long-term action plans for the assets and the asset management objectives are normally the outputs of the asset management strategy. These elements together form the basis for developing more specific and detailed asset management plans
- Asset Management Information
 - ▶ Meaningful data relating to assets and asset management.
 - ▶ Note – Examples of asset management information include asset registers, drawings, contracts, licenses, legal, regulatory and statutory documents, policies, standards, guidance notes, technical instructions, procedures, operating criteria, asset performance and condition data, or all asset management records.
- Asset Management Information system
 - ▶ System for the storage, processing and transmission of asset management information.

These definitions have been sourced from the PAS 55-1:2008⁸ specification as these were considered to be consistent with the objectives of the AMMAT.

What level of rigour/effort is required?

The level of effort required to complete the AMMAT should be consistent with a gap analysis exercise rather than the level typically involved with an audit for certification. An audit involves a systematic, independent process for the collection and analysis of evidence to support a rating whereas the AMMAT is intended to be used by providing a reference to supporting evidence or an explanation of the self-assessment.

PAS 55 specifically notes that only a small number of key documents are required. The level of documentation within an asset management system should be proportionate to factors such as the size of the company, complexity of processes and competence of personnel.

An example of key tasks involved in completing an assessment can be summarised as:

- Appointing a coordinator who will be responsible for all matters concerning the assessment, including:
 - ▶ Organising the people within the organisation, who will be acting as respondents to the questions;
 - ▶ Arranging for all information to be captured within the AMMAT; and
 - ▶ Reporting to the organisation on the results of the assessment.
- Determine the scope of the asset management system that it wishes to assess;
- Consider the form it wishes the assessment process to take. In this context, the principal formats are generally taken to be interviews, facilitated groups/panels or a combination of the two;

⁸ PAS55-1:2008 - Asset Management. Institute of Asset Management. September 2008.

- Arrange for appropriate outsourced service providers and stakeholders, to act as respondents during the assessment exercise;
- Provide appropriate pre-assessment communication (and training where appropriate) to ensure that, as a minimum, the proposed respondents are aware of the AMMAT process and the part within it that they are being asked to play.
- Identify which questions are to be asked of which respondents.

Who is expected to complete the AMMAT?

PB expects the network asset manager or similar level individual to take responsibility for completing and maintaining the AMMAT.

Is PAS 55 experience/knowledge a pre-requisite for completing the AMMAT?

An experienced asset manager should be able to understand the generic asset management concepts and definitions contained within the AMMAT and relate these to an EDB's own organisational structure, systems and processes. Part of the value of a formal asset management system is the definition and standardisation of terms. This assists employees, suppliers and other stakeholders (such as the Commission) to understand, and improve, asset management concepts and processes.

Rating subjectivity

The definitions provided in the AMMAT for each maturity rating should provide sufficient information for an EDB to objectively identify the level currently being achieved by the organisation.

Compulsory PAS 55 compliance

Organisations managing assets should be continuously working to improve asset management. However there are two reasons why compulsory PAS 55 compliance may not be desirable. Firstly, the cost of formal assessment (as opposed to self-assessment) to PAS 55 is significant (particularly for small organisations) and if compliance is made compulsory it follows that there must be some formal assessment of the level of compliance. Secondly, there are other asset management frameworks in place and evolving (such as the new ISO standard) that also define good asset management. We consider that it would be better for organisations with the level of asset management maturity exhibited by the EDBs to expend effort to understand the components of good asset management and improve any weaknesses rather than focus efforts on achieving full PAS 55 compliance.

Appendix A

Asset Management Maturity
Assessment Tool

Appendix B

Full set of PAM questions

Question No	Clause No	2008 Clause	Question	Why
1	4.1	General requirements	What has the organization done to establish an asset management system?	In order to conform to the requirements of PAS 55, an organization must establish, document, implement and maintain an asset management system, and continually improve its effectiveness in accordance with the requirements set out in the whole of Clause 4. The extent to which an organization has achieved this can only be assessed once all the questions within this assessment tool have been addressed. This question simply seeks to explore whether or not the organization has set up an asset management system.
2	4.1	General requirements	What has the organization done to define the scope of its asset management system to ensure that it is appropriate to its asset management activities?	PAS 55 provides for an organization to determine the scope and boundaries of its asset management system. Whilst this may be applied to the whole organization or to sections thereof, the organization must be careful to consider all aspects of its asset management activities and design an asset management system that is appropriate to its needs.
3	4.2	Asset management policy	To what extent has an asset management policy been documented, authorised and communicated?	Paragraph 4.2 i) requires an organization to document, authorise and communicate its asset management policy. A key pre-requisite of any robust policy is that the organization's top management must be seen to endorse and fully support it. Also vital to the effective implementation of the policy, is to tell the appropriate people of its content and their obligations under it. Where an organization outsources some of its asset-related activities, then these people and their organizations must equally be made aware of the policy's content. Also, there may be other stakeholders, such as regulatory authorities and shareholders who should be made aware of it.
4	4.2	Asset management policy	To what extent does the organization's overall asset management policy align with its organizational strategic plan?	Paragraph 4.2 a) requires the asset management policy is consistent with the organizational strategic plan and is 'derived from' it.
5	4.2	Asset management policy	To what extent does the asset management policy align with other organizational policies and other requirements including mandatory, statutory and regulatory requirements to which the organization is committed?	In setting an organization's asset management policy, it is important that it acknowledges the need to comply with applicable legislation, regulatory and statutory requirements and is consistent with any other organizational policies (such as environmental, health and safety, legislative and regulatory matters) such that there are no differences or conflicting requirements between them, as required by Paragraphs 4.2 c) and f).
6	4.2	Asset management policy	What has the organization done to ensure that its overall asset management policy aligns with its overall risk management framework?	It is important that an organization's asset management policy is consistent with the approach that it uses toward risk management. 'Consistency' in this context is a requirement of PAS 55 to ensure that the organization's asset management policy is fully aligned with its risk management framework and that there are no differences or conflicting requirements between them.
7	4.2	Asset management policy	How does the organization's overall asset management policy demonstrate a commitment to continual improvement in asset management and asset management performance?	While Paragraph 4.6.5.2 of PAS 55 contains further requirements regarding continuous improvement activities, paragraph 4.2 h) places a requirement on an organization to include a clear reference to its approach towards continual improvement. This question examines how clearly the policy states the importance of continual improvement to the asset management process.
8	4.2	Asset management policy	How does the organization ensure that its asset management policy is regularly reviewed? How is this managed, and how is the need for changes to the policy identified and implemented?	Once produced, an organization should ensure that its asset management policy is kept up to date by such activities as regular reviews and responding to changes to the organization's strategic plan or other policies, etc. that could affect the asset management policy. This question is looking for evidence of a review process to ensure that the asset management policy remains consistent with the organizational strategic plan.
9	4.3.1	Asset management strategy	What has the organization done to ensure that its asset management strategy is derived from and consistent with its asset management policy and the organizational strategic plan?	This question looks for evidence of an organizational long-term asset management strategy that has been derived from, and is consistent with, the organization's asset management policy and the organizational strategic plan, as required by Paragraph 4.3.1 a).
10	4.3.1	Asset management strategy	What has the organization done to ensure that its asset management strategy is consistent with other appropriate organizational policies and strategies, and the needs of stakeholders?	In setting an organization's asset management strategy, it is important that it is consistent with any other policies and strategies that the organization has and has taken into account the requirements of relevant stakeholders. This question examines to what extent the asset management strategy is consistent with other organizational policies and strategies, as required by Paragraph 4.3.1 b) and has taken account of stakeholder requirements as required by Paragraph 4.3.1 c). Generally, this will take into account the same policies, strategies and stakeholder requirements as covered in drafting the asset management policy but at a greater level of detail.

Question No	Clause No	2008 Clause	Question	Why
11	4.3.1	Asset management strategy	In what way does the organization's asset management strategy take account of the lifecycle of the assets, asset types and asset systems over which the organization has stewardship?	Good asset stewardship is the hallmark of a PAS 55 compliant organization. A key component of this is the need to take account of the lifecycle of the assets, asset types and asset systems. This requirement is recognised in 4.3.1 d) of PAS 55 and this question explores what an organization has done to take lifecycle into account in its asset management strategy.
12	4.3.1	Asset management strategy	What has the organization done to ensure that its asset management strategy takes account of asset-related risks and asset and asset system criticalities?	When an organization is developing its asset management strategy, it is important that risk assessment and asset criticality are given due consideration this is reflected in paragraph 4.3.1 e). There are linkages to the risk management aspects of PAS 55 set out in Section 4.4.7.
13	4.3.1	Asset management strategy	To what extent does the organization's asset management strategy reflect the function(s), performance and condition of its existing asset systems and critical assets?	Paragraph 4.3.1 f) of PAS 55 considerations that an organization's asset management strategy should reflect the present state function, performance and condition of its assets.
14	4.3.1	Asset management strategy	How does the asset management strategy state the desired future function, performance and condition of assets?	Paragraph 4.3.1 g) of PAS 55 considerations that an organization's asset management strategy should reflect the future state function, performance and condition it requires of its assets.
15	4.3.1	Asset management strategy	How does the asset management strategy describe the approach and principal methods by which assets will be managed?	The asset management strategy provides the foundation for the production of the asset management objectives and plan(s). It therefore needs to include the information necessary for this to be done. The question tests how effectively the requirement of Paragraph 4.3.1 h) to set out the approach and principal methods by which assets and asset systems will be managed has been met.
16	4.3.1	Asset management strategy	To what extent does the asset management strategy enable specific asset management objectives and plan(s) to be produced, optimised and prioritised?	Paragraphs 4.3.1 i) and j) of PAS 55 require the asset management strategy to contain the necessary information, direction, guidance and criteria to enable asset management objectives and plan(s) to be produced, optimised and prioritised.
17	4.3.1	Asset management strategy	What has the organization done to ensure that its overall asset management strategy is communicated to relevant stakeholders, including service providers, where there is a need to ensure that these persons/organizations are aware of their asset management strategy related obligations?	Section 4.3.1 k) requires that the appropriate people/organizations are informed of the content of the asset management strategy and their obligations under it. This includes relevant stakeholders and service providers.
18	4.3.1	Asset management strategy	What does the organization do to ensure that its asset management strategy is reviewed periodically to ensure it remains effective and consistent with asset management policy, organizational strategic plan and other policies and strategies?	Section 4.3.1 l) contains the specific requirement for the organization to periodically review its asset management strategy. The question examines whether there is a process for ensuring the asset management strategy is reviewed and updated to ensure its continuing effectiveness and also to reflect any changes that are made to the organization's asset management policy or organizational strategic plan.
19	4.3.2	Asset management objectives	How has the organization established its asset management objectives?	Section 4.3.2 requires an organization to establish and maintain asset management objectives while Paragraph 4.3.2 b) requires that the organization's asset management objectives should be derived from and consistent with its asset management strategy and therefore be complete in their coverage and consistent with the organization's asset management policy and organizational objectives.

Question No	Clause No	2008 Clause	Question	Why
20	4.3.2	Asset management objectives	To what extent are the organization's asset management objectives measurable, i.e. capable of being demonstrated as achieved through objective assessment.	Measurable asset management objectives are necessary to enable an organization to demonstrate that its asset management policy is being implemented and its asset management strategy achieved. Section 4.3.2 a) requires that asset management objectives are measurable and/or capable of being demonstrated through objective assessment as having been achieved. An organization may wish to ensure objectives are, as far as practicable, SMART (i.e. specific, measurable, achievable, realistic and time-based).
21	4.3.2	Asset management objectives	What has the organization done to ensure that its asset management objectives take account of asset-related risks?	When an organization is developing its asset management objectives, it is important that asset-related risks are given due consideration as required by Paragraph 4.3.2 h) to ensure that the objectives are achievable. There are linkages to the risk management aspects of PAS 55 set out in Section 4.4.7.
22	4.3.2	Asset management objectives	How does the organization ensure legal, regulatory, statutory, stakeholder and business requirements are considered when establishing and reviewing asset management objectives?	In setting its asset management objectives an organization needs to consider a wide range of factors and influences, both internal and external, as set out in Paragraphs 4.3.2 f) (legal, regulatory, statutory requirements) and g) (stakeholder and business requirements). Deriving the asset management objectives from the asset management strategy should help ensure that relevant factors are considered and that there are no inconsistencies or inherent conflicts.
23	4.3.2	Asset management objectives	How does the organization communicate its asset management objectives to relevant stakeholders, including service providers, who need to be aware of the objectives in order to meet their obligations?	Section 4.3.2 d) requires that the organization communicates, alongside its asset management policy and strategy, its asset management objectives to all stakeholders and parties (including contracted service providers) who need to be aware of the objectives in order to meet their asset management objectives. Communication is two way and should include feedback.
24	4.3.2	Asset management objectives	How do the asset management objectives demonstrate the organization's commitment to continuous improvement?	Paragraph 4.3.2 c) places a requirement on an organization that its asset management objectives should be consistent with its commitment to continual improvement. Paragraph 4.3.2 i) gives examples (technology, process, human factors and other improvement opportunities) as ways in which this commitment can be demonstrated. This question examines how clearly the objectives reflect the organization's commitment to continual improvement.
25	4.3.2	Asset management objectives	Is there a review process for the asset management objectives? How is this managed, and how is the need for changes to the objectives identified and implemented?	Section 4.3.2 e) requires that the organization's asset management objectives remain relevant and consistent with the organization's asset management strategy and organizational objectives. They should therefore be subject to review at an appropriate frequency.
26	4.3.3	Asset management plan(s)	How does the organization establish and document its asset management plan(s) across the life cycle activities of its assets and asset systems?	The asset management strategy need to be translated into practical plan(s) so that all parties know how the objectives will be achieved. The development of plan(s) will need to identify the specific tasks and activities required to optimize costs, risks and performance of the assets and/or asset system(s), when they are to be carried out and the resources required.
27	4.3.3	Asset management plan(s)	How has the organization communicated its plan(s) to all relevant parties to a level of detail appropriate to the receiver's role in their delivery?	Plans will be ineffective unless they are communicated to all those, including contracted suppliers and those who undertake enabling function(s). The plan(s) need to be communicated in a way that is relevant to those who need to use them.
28	4.3.3	Asset management plan(s)	How do asset management plan(s) document tasks and activities?	For effective implementation tasks and activities need to be identified, documented and communicated through asset management plan(s) - the question explores how this is done. See also notes in PAS 55 Guidance Section 4.3.3.1 when considering whether the plan(s) are sufficient.
29	4.3.3	Asset management plan(s)	How are designated responsibilities for delivery of asset plan actions documented?	The implementation of asset management plan(s) relies on (1) actions being clearly identified, (2) an owner allocated and (3) that owner having sufficient delegated responsibility and authority to carry out the work required. It also requires alignment of actions across the organization. This question explores how well the plan(s) set out responsibility for delivery of asset plan actions.

Question No	Clause No	2008 Clause	Question	Why
30	4.3.3	Asset management plan(s)	How does the organization ensure that its asset management plan(s) are optimised and prioritised?	<p>A key feature of good asset management strategy and plan(s) is the optimization of costs, performance and risks over short and long timeframes, in the face of conflicting pressures. The process(es) of optimization are critical to the quality of the asset management plan(s). In checking compliance with this requirement, this question seeks to understand how an organization has optimised its plan(s) to suit the organization's needs. PAS 55 is not specific on how optimisation should happen or in what dimension and so it could be against an asset type or group or it could be against geographic area, functional activity, resource type, etc. or a combination of these and other considerations.</p> <p>PAS 55 Guidance 4.3.3.2 provides further guidance about suitable arrangements for optimizing asset plan(s).</p>
31	4.3.3	Asset management plan(s)	<p>What has the organization done to ensure that appropriate arrangements are made available for the efficient and cost effective implementation of the plan(s)?</p> <p>(Note this is about resources and enabling support)</p>	<p>It is essential that the plan(s) are realistic and can be implemented, which requires appropriate resources to be available and enabling mechanisms in place. This question explores how well this is achieved. The plan(s) not only need to consider the resources directly required and timescales, but also the enabling activities, including for example, training requirements, supply chain capability and procurement timescales.</p>
32	4.3.3	Asset management plan(s)	How does the organization ensure that its asset management plan(s) remain effective and consistent with its asset management strategy, objectives and targets?	<p>This question explores how an organization reviews and amends its plan(s) to reflect changes in asset management strategy, objectives to ensure that the plan(s) remain both effective and consistent. The requirement is contained in the final paragraph of Section 4.3.3.</p>
33	4.3.4	Contingency planning	What plan(s) and procedure(s) does the organization have for identifying and responding to incidents and emergency situations and ensuring continuity of critical asset management activities?	<p>PAS 55 requires that an organization has plan(s) to identify and respond to emergency situations. Emergency plan(s) should outline the actions to be taken to respond to specified emergency situations and ensure continuity of critical asset management activities including the communication to, and involvement of, external agencies. This question assesses if, and how well, these plan(s) triggered, implemented and resolved in the event of an incident. The plan(s) should be appropriate to the level of risk as determined by the organization's risk assessment methodology. It is also a requirement that relevant personnel are competent and trained.</p>
34	4.3.4	Contingency planning	How does the organization test its plan(s) and procedure(s) for identifying and responding to incidents and emergency situations, and maintaining the continuity of critical asset management activities?	<p>Emergency plan(s) and procedure(s) should be periodically tested to ensure that they will operate as intended and are effective. This question assesses if, and to what extent, an organization periodically tests the effectiveness of its emergency preparedness and response plan(s) and procedure(s), as required by the final paragraph of Section 4.3.4.</p>
35	4.3.4	Contingency planning	How does the organization review the effectiveness of its plan(s) and procedure(s) for identifying and responding to incidents and emergency situations, and maintaining the continuity of critical asset management activities?	<p>The results of emergencies and practice drills/exercises should be evaluated, and changes that are identified as being necessary should be implemented. Emergency plan(s) and procedure(s) should also be reviewed and changed as required to respond to changes in the organization's operations. This question assesses if, and to what extent, an organization periodically reviews the effectiveness of its emergency preparedness and response plan(s) and procedure(s) after the occurrence of incidents or emergency situations, as required by Section 4.3.4.</p>
36	4.4.1	Structure, authority and responsibilities	How does the organization's top management demonstrate ownership of the organization's asset management system?	<p>In order to ensure that the organization manages its asset management system, it is important that the top-level management demonstrates its commitment to this, as required by paragraph a) of Section 4.4.1. This question seeks to explore what the organization has done to comply with this requirement. This question, which relates to the asset management system process(es), is therefore distinct from the requirement contained in paragraph b) of Section 4.4.1.</p>
37	4.4.1	Structure, authority and responsibilities	What has the organization done to appoint member(s) of its management team to be responsible for ensuring that the organization's assets deliver the requirements of the asset management strategy, objectives and plan(s)?	<p>In order to ensure that the organization assets and asset systems deliver the requirements of the asset management policy, strategy and objectives responsibilities need to be allocated to appropriate people who have the necessary authority to fulfil their responsibilities. All as required by paragraph b) of Section 4.4.1. This question, which relates to the organization's assets, is therefore distinct from the requirement contained in paragraph a) of Section 4.4.1.</p>

Question No	Clause No	2008 Clause	Question	Why
38	4.4.1	Structure, authority and responsibilities	How does the organization's top management identify and monitor the requirements and expectations of its stakeholders?	It is important that an organization's top management determine what its stakeholders requirements and expectations are in relation to the management of its assets in order that these can be taken into consideration, as required by paragraph c) of Section 4.4.1.
39	4.4.1	Structure, authority and responsibilities	How does the organization's top management ensure that the asset management policy and strategy are consistent with the organizational strategic plan?	It is important that an organization's top management ensure that the organization's asset management policy and strategy are aligned with the organization's strategic plan, as required by paragraph d) of Section 4.4.1. There is a linkage to Section 4.2.
40	4.4.1	Structure, authority and responsibilities	What evidence can the organization's top management provide to demonstrate that sufficient resources are available for asset management?	Section 4.4.1 h) requires top management to ensure sufficient resources are available. In this context the term 'resources' includes manpower, materials, funding and service provider support.
41	4.4.1	Structure, authority and responsibilities	How does the organization's top management consider the adverse impacts that the asset management system might have on the other parts of the organization and vice versa?	Section 4.4.1 f) requires the organization to check that there is no conflict between the organization's asset management system and any related activities and/or needs from any other part of the organization.
42	4.4.1	Structure, authority and responsibilities	To what degree does the organization's top management communicate the importance of meeting its asset management requirements?	Section 4.4.1 g) requires an organization to communicate the importance of meeting its asset management requirements such that personnel fully understand, take ownership of, and are fully engaged in the delivery of the asset management requirements.
43	4.4.1	Structure, authority and responsibilities	How does the organization's top management ensure asset related risks are identified, assessed and controlled as part of the overall risk management framework?	It is important that an organization's asset related activities are commensurate with its assessment of the associated risks and form and integrated part of the organization's overall risk management framework. Section 4.4.1 g) requires an organization to have a process in place that ensures asset related risks are included in the overall risk management framework.
44	4.4.1	Structure, authority and responsibilities	How does the organization's top management ensure the viability of the asset management strategy, objectives, targets and plan(s)?	It is one thing to have the asset management, strategy, objectives, targets and plan(s) in place but they are worthless if they are not viable, i.e. if they are not practicable and not workable. Section 4.4.1 f) requires an organization to ensure viability. There are linkages to Section 4.3.1, 4.3.2, and 4.3.3.
45	4.4.2	Outsourcing of asset management activities	Where the organization has outsourced some of its asset management activities, how has it ensured that appropriate controls are in place to ensure the compliant delivery of its organizational strategic plan, and its asset management policy and strategy?	Where an organization chooses to outsource some of its asset management activities, the organization must ensure that these outsourced process(es) are under appropriate control to ensure that all the requirements of PAS 55 are in place, and the asset management policy, strategy objectives and plan(s) are delivered. This includes ensuring capabilities and resources across a time span aligned to life cycle management. The organization must put arrangements in place to control the outsourced activities, whether it be to external providers or to other in-house departments. This question explores what the organization does in this regard.
46	4.4.2	Outsourcing of asset management activities	Where the organization has outsourced some of its asset management activities, what has it done to document the controls in place?	Section 4.4.2 requires that the organization documents the scope and boundaries of the process(es) and activities to be outsourced and their interfaces with the organization's own process(es) and activities, the process(es) and scope for knowledge and information sharing with outsourced service providers and authorities and responsibilities within the organization for managing the outsourced process(es) and activities. This question seeks to understand how comprehensively these requirements have been documented.

Question No	Clause No	2008 Clause	Question	Why
47	4.4.2	Outsourcing of asset management activities	Where the organization has outsourced some of its asset management activities, what has it done to ensure that effective information and knowledge sharing activities are in place?	The effective performance of outsourced service providers and oversight by the client organization of their performance, is heavily dependent upon a clear flow of information and knowledge (both ways) between the outsourced service provider and the client organization. The client organization also needs to be in a position whereby it has sufficient knowledge of how its assets have been managed so as to be able to meet its own asset management obligations and so as to be able to change service provider either at contract end or if other circumstances dictate. This question seeks to test how well the organization has implemented the requirements of Paragraph 4.4.2 b) for sharing of information and knowledge.
48	4.4.3	Training, awareness and competence	How does the organization develop plan(s) for the human resources required to undertake asset management activities - including the development and delivery of asset management strategy, process(es), objectives and plan(s)?	There is a need for an organization to demonstrate that it has considered what resources are required to develop and implement its asset management system. There is also a need for the organization to demonstrate that it has assessed what development plan(s) are required to provide its human resources with the skills and competencies to develop and implement its asset management systems. The timescales over which the plan(s) are relevant should be commensurate with the planning horizons within the asset management strategy considers e.g. if the asset management strategy considers 5, 10 and 15 year time scales then the human resources development plan(s) should align with these. Resources include both 'in house' and external resources who undertake asset management activities.
49	4.4.3	Training, awareness and competence	How does the organization identify competency requirements and then plan, provide and record the training necessary to achieve the competencies?	There is a requirement for an organization to undertake a systematic identification of the asset management awareness and competencies required at each level and function within the organization. Once identified the training required to provide the necessary competencies should be planned for delivery in a timely and systematic way. Any training provided must be recorded and maintained in a suitable format. Where an organization has contracted service providers in place then it should have a means to demonstrate that this requirement is being met for their employees. PAS 55 refers to frameworks suitable for identifying competency requirements.
50	4.4.3	Training, awareness and competence	How does the organization ensure that persons under its direct control undertaking asset management related activities have an appropriate level of competence in terms of education, training or experience?	A critical success factor for the effective development and implementation of an asset management system is the competence of persons undertaking these activities. Organizations should have effective means in place for ensuring the competence of employees to carry out their designated asset management function(s). Where an organization has contracted service providers undertaking elements of its asset management system then the organization shall assure itself that the outsourced service provider also has suitable arrangements in place to manage the competencies of its employees. The organization should ensure that the individual and corporate competencies it requires are in place and actively monitor, develop and maintain an appropriate balance of these competencies.
51	4.4.3	Training, awareness and competence	How does the organization ensure that persons working under its control are aware of the asset management related risks associated with their work activities and the asset management benefits of personal performance?	The day to day activities of person(s) working under the control of an organization can expose the person and the organization to risks. Therefore, there is a need for the organization to ensure that person(s) working under its control are aware of the risks that the person is exposed to e.g. working in a confined space, working on an asset that contains a hazardous material such as asbestos or PCBs. Conversely, there is a need for person(s) working under an organization's control to be aware of the risks that they expose the organization to as a result of their actions or omissions. An example could be the failure to carry out maintenance to the correct standard, possibly resulting in asset failure which may have safety, financial or operational implications for the organization. There is also a requirement for organizations to have process(es) and/or procedure(s) in place to ensure that individual performance has direct links to asset management performance.
52	4.4.3	Training, awareness and competence	How does the organization ensure that persons working under its control are aware of their roles and responsibilities, the importance of complying with asset management policy, process(es) and procedure(s) and the potential consequences of departure from them?	An organization should provide employees (including employees of contracted service providers) with an understanding of the organization's asset management arrangements and the employee's specific roles and responsibilities in these arrangements. It is also necessary that employees understand the rationale for their roles and responsibilities and the importance of complying with them. This clause also requires the organization to demonstrate to the employee the potential consequences for the organization as a result of roles and responsibilities not being complied with e.g. a safety, operational, financial or reputational incident (or some combination of all of these) as a direct result of departing from specified asset management process(es) and/or procedure(s) such as task instructions. (4.4.3c refers.)

Question No	Clause No	2008 Clause	Question	Why
53	4.4.4	Communication, participation and consultation	How does the organization ensure that pertinent asset management information is effectively communicated to and from employees and other stakeholders, including contracted service providers?	PAS 55 requires that pertinent asset management information is effectively communicated to and from employees and other stakeholders including contracted service providers. Pertinent information refers to information required in order to effectively and efficiently comply with and deliver asset management strategy, plan(s) and objectives. This will include for example the communication of the asset management policy, asset performance information, and planning information as appropriate to contractors.
54	4.4.4	Communication, participation and consultation	How does the organization ensure appropriate consultation with respect to the development of the asset management strategy, objectives and plan(s)?	PAS 55 requires that the organization consults with stakeholders in the development of asset management strategy, objectives and plan(s). The requirement is for consultation to be relevant and appropriate. It is likely to include cross functional working teams and where appropriate external consultation.
55	4.4.4	Communication, participation and consultation	How does the organization ensure appropriate consultation with respect to the development of functional policies, engineering standards, process(es) and/or procedure(s)?	PAS 55 requires that the organization consults with stakeholders in the development of functional policies, engineering standards, process(es) and/or procedure(s). The requirement is for consultation to be relevant and appropriate. It is likely to include cross functional working teams and where appropriate external consultation.
56	4.4.4	Communication, participation and consultation	How does the organization ensure appropriate consultation with respect to risk assessments and determination of controls?	PAS 55 requires that the organization consults with stakeholders in the development of risk assessments and determination of controls. The requirement is for consultation to be relevant and appropriate. It is likely to include cross functional working teams and where appropriate external consultation.
57	4.4.4	Communication, participation and consultation	How does the organization ensure appropriate consultation with respect to incident investigation?	PAS 55 requires that the organization consults with stakeholders with respect to incident investigations. The requirement is for consultation to be relevant and appropriate. It is likely to include cross functional working teams and where appropriate external consultation.
58	4.4.4	Communication, participation and consultation	How does the organization ensure appropriate consultation with respect to the continual improvement of the asset management system?	PAS 55 requires that the organization consults with stakeholders with respect to continuous improvement of the asset management system. In practice this is likely to require cross functional working on the development of improvement plan(s) for the asset management system, and effective feedback mechanisms that include external stakeholders where appropriate.
59	4.4.5	Asset Management System documentation	What documentation has the organization established to describe the main elements of its asset management system and interactions between them?	The whole of section 4 of PAS 55 is a specification of asset management system requirements. Section 4.5 requires an organization maintain up to date documentation that ensures that its asset management systems (i.e. the system it in place to meet PAS 55 requirements) can be understood, communicated and operated.
60	4.4.5	Asset Management System documentation	What has the organization done to provide direction to the documentation which is related to the main elements of the asset management system?	The documentation that describes the asset management system only relates to the main elements, it will be support by detailed procedure(s) (or standards) for example the procedure (or standard) for asset management plan development and content. The asset management system documentation should give direction to these supporting documents.
61	4.4.5	Asset Management System documentation	How has the organization determined what documented procedure(s), operating criteria and records it requires to ensure it achieves its asset management policy, asset management strategy, asset management objectives and control identified asset management risks?	PAS 55 requires an organization to have in place documented procedure(s) and/or the operating criteria necessary to achieve its asset management policy, asset management strategy, asset management objectives and controls identified asset management risks.

Question No	Clause No	2008 Clause	Question	Why
62	4.4.6	Information management	What has the organization done to determine what its asset management information system(s) should contain in order to support its asset management system?	<p>Effective asset management requires appropriate information to be available. PAS 55 therefore requires the organization to identify the asset management information it requires in order to support its asset management system. Some of the information required may be held by suppliers.</p> <p>The maintenance and development of asset management information systems is a poorly understood specialist activity that is akin to IT management but different from IT management. This group of questions provides some indications as to whether the capability is available and applied. Note: To be effective, an asset information management system requires the mobilisation of technology, people and process(es) that create, secure, make available and destroy the information required to support the asset management system.</p>
63	4.4.6	Information management	How does the organization maintain its asset management information system(s) and ensure that the data held within it (them) is of the requisite quality and accuracy and is consistent?	<p>This question explores how the organization ensures the information meets the requirements of Sections 4.4.6 (a), (c) and (d).</p> <p>The response to the questions is progressive. A higher scale cannot be awarded without achieving the requirements of the lower scale.</p>
64	4.4.6	Information management	How has the organization's ensured its asset management information system is relevant to its needs?	PAS 55 is not prescriptive about the form of the asset management information system, it simply requires that it is appropriate to the organizations needs, can be effectively used and can supply information which is consistent and of the requisite quality and accuracy.
65	4.4.6	Information management	How does the organization ensure that the information acquired from the asset information management system is maintained, adequacy assured and, where appropriate, controlled?	Information held in a system will lose its value unless it is maintained consistently and where appropriate controlled.
66	4.4.6	Information management	How has the organization made appropriate asset management information available to relevant employees and stakeholders, including service providers?	Information is only any use if those who need to access it can do so. PAS 55 requires that an organization ensures this is the case. Where an organization outsources some of its asset management activities, it must also consider how service providers can access information systems.
67	4.4.6	Information management	What has the organization done to identify and archive the records to be retained for legal or knowledge preservation purposes?	<p>PAS 55 requires that records needed for legal (e.g. general Health and Safety Legislation or Regulatory purposes) or knowledge preservation purposes are identified and retained. Knowledge preservation is not defined in PAS 55 but should be taken to include any records needed for governance and/or audit purposes.</p> <p>Professional document management advice may be required to understand this requirement.</p>
68	4.4.6	Information management	What has the organization done to secure its asset management related information?	<p>This question explores all aspects relating to the security of information held within the asset information management system, including the avoidance of unintentional loss, unauthorised amendment, malicious access and theft of information. Information security relates to both information held in IT systems and other media (e.g. paper and microfilm).</p> <p>Audit or reviews to ISO 27001 may provide useful evidence.</p>
69	4.4.7.1	Risk management process(es)	How has the organization documented process(es) and/or procedure(s) for the identification and assessment of asset and asset management related risks throughout the asset life cycle?	Risk management is an important foundation for proactive asset management. Its overall purpose is to understand the cause, effect and likelihood of adverse events occurring, to optimally manage such risks to an acceptable level, and to provide an audit trail for the management of risks. PAS 55 requires the organization to have process(es) and/or procedure(s) in place that set out how the organization identifies and assesses asset and asset management related risks. The risks have to be considered across the four phases of the asset lifecycle (see 4.3.3).

Question No	Clause No	2008 Clause	Question	Why
70	4.4.7.1	Risk management process(es)	How has the organization documented process(es) and procedure(s) for the identification and implementation of risk control measures throughout the life cycle of the assets?	Risk management is an important foundation for proactive asset management. Its overall purpose is to understand the cause, effect and likelihood of adverse events occurring, to optimally manage such risks to an acceptable level, and to provide an audit trail for the management of risks. PAS 55 requires the organization to have process(es) and/or procedure(s) in place that set out how the organization identifies and implements necessary control methods for the management of asset related and asset management related risks. The risks have to be managed across the four phases of the asset lifecycle (see 4.3.3).
71	4.4.7.2	Risk management methodology	How has the organization ensured that its risk management methodology(s) is proportionate to the levels of risk under consideration, consistent with the organizations operating experience and within the capabilities of the control measures?	Risk management underpins proactive asset management and therefore in order to meet the requirements of PAS 55-1 an organization should develop a step by step, systematic approach to its risk management methodology. The methodology should be proportionate to the levels of risk under control such that a significant risk is analysed, monitored and controlled in more detail than a trivial risk. The methodology should take account of operational experience and the success, or otherwise, of existing risk control measures.
72	4.4.7.2	Risk management methodology	How has the organization ensured that the scope, nature and timing of its risk management methodology(s) are defined so as to provide for a proactive approach which, where relevant, considers how risks change or can change with time and/or usage?	PAS 55 requires that the risk management methodology used by an organization is defined with respect to scope, nature and timing to ensure it is pro-active rather than reactive and also to include the assessment of how risks change with time where this is appropriate
73	4.4.7.2	Risk management methodology	How has the organization ensured that their risk management methodology(s) provides for the classification of risks and the identification of those risks which are to be avoided, eliminated or controlled by asset management objectives and plans?	PAS 55 requires that risks are classified and that risks to be avoided, eliminated and controlled by asset management plan(s) and objectives are identified (see 4.3.2 and 4.3.3). More widely there is a requirement for optimization and prioritization throughout PAS 55, and the classification - management of risks should be consistent with this and any requirements set out in the organization's policies and strategies.
74	4.4.7.2	Risk management methodology	How does the organization's risk management methodology(s) provide for the monitoring of required actions to ensure both the effectiveness and timeliness of their implementation?	PAS 55 requires that both the effectiveness and the timeliness of actions identified for risk management are monitored. (See also 4.6.1)
75	4.4.7.3	Risk identification and assessment	How does the organization ensure that the credible probability or frequency of an event is taken into account when conducting risk assessments?	PAS 55 requires that probability of credible events is considered for a variety of different types of risk - both within and external to the organizations control - and across the life cycle phases of the assets (4.5). This question explores the organization's approach to assessing the probability - recognizing the wider requirement that the approach should be consistent and appropriate to the criticality of the risk. See page 33 of PAS 55:2, 2008 for further guidance.
76	4.4.7.3	Risk identification and assessment	How does the organization ensure that the credible consequences of an event are taken into account when conducting risk assessments?	PAS 55 requires that consequences of credible events is considered for a variety of different types of risk - both within and external to the organizations control - and across the life cycle phases of the assets (4.5). This question explores the organization's approach to assessing the consequences - recognizing the wider requirement that the approach should be consistent and appropriate to the criticality of the risk. See page 33 of PAS 55:2, 2008 for further guidance.

Question No	Clause No	2008 Clause	Question	Why
77	4.4.7.3	Risk identification and assessment	How does the organization ensure comprehensive coverage of the various types of risk within its risk assessments? (e.g. physical, operational, natural, external, stakeholder, life cycle)?	PAS 55 requires an organization to identify and assess the risks of credible events that it may be exposed to. There is a need to understand the probability of these credible events and their consequences. Clause 4.4.7.7 defines the minimum areas of risk to be considered but the organization must also consider other credible events that are pertinent to its sphere of operations and business activities that are not set out in this clause. Optimization and prioritization need to be handled in a consistent and proportionate way.
78	4.4.7.4	Use and maintenance of asset risk information	How does the organization ensure that the results of risk assessments provide input into the asset management strategy(s), objectives and plan(s)?	PAS 55 requires that the output from risk assessments are considered and included as appropriate into all aspects of the asset management system including asset management strategy objectives and plan(s). It is a further requirement that the effects of the control measures are considered, as there may be implications in another part of the asset management system as a result of the control actions.
79	4.4.7.4	Use and maintenance of asset risk information	How does the organization ensure that the results of risk assessments provide input into the identification of adequate resources and training and competency needs?	PAS 55 requires that the output from risk assessments are considered and that adequate resource (including staff) and training is identified to match the requirements. It is a further requirement that the effects of the control measures are considered, as there may be implications in resources and training required to achieve other objectives.
80	4.4.7.4	Use and maintenance of asset risk information	How does the organization ensure that the results of risk assessments provide input into the organization's overall risk management framework?	PAS 55 requires that the output from risk assessments and the effects of risk control measures are considered in developing and aligning the organizations overall risk management framework.
81	4.4.7.4	Use and maintenance of asset risk information	How does the organization ensure that the risk identification, assessments and determined controls are kept up to date and documented?	Risks may change during the life cycle stages of an asset and as a result risk identification, risk assessments and determined controls are required to be kept up to date. PAS 55 requires the organization to identify those risk identification, risk assessments and determined controls which need to be kept up to date and document where not doing so could affect the delivery of the asset management strategy and objectives.
82	4.4.8	Legal and other requirements	What procedure does the organization have to identify and provide access to its legal, regulatory, statutory and other asset management requirements, and how is requirements incorporated into the asset management system?	In order for an organization to comply with its legal, regulatory, statutory and other asset management requirements, the organization first needs to ensure that it knows what they are, as specified in Section 4.4.8. It is necessary to have systematic and auditable mechanisms in place to identify new and changing requirements. PAS 55 also requires that requirements are incorporated into the asset management system (e.g. procedure(s) and process(es))
83	4.4.8	Legal and other requirements	What does the organization do to communicate relevant information on legal and other requirements?	Having determined the legal, regulatory, statutory and other asset management requirements information applicable to the organization, it is important that it is communicated to those people who need to be aware of it, as required in Section 4.3.3. Communications need to be in an appropriate format, correctly targeted and accessible by all those that need access to the information - including those that are responsible for developing process(es), standards, procurement as well as those with direct operational responsibilities. Communication should also include relevant third parties including suppliers and contractors.
84	4.4.8	Legal and other requirements	What does the organization have in place to keep the information on legal and other requirements up to date?	It is essential that once the legal and other requirements are identified that they are kept up to date so the organization can demonstrate compliance with the organizations obligations

Question No	Clause No	2008 Clause	Question	Why
85	4.4.9	Management of Change	How does the organization ensure that risks to asset management activities associated with the changes to the asset management system (policy, strategy, objectives, plan(s), process(es)) are managed?	It is vital that any changes made to the asset management system are fully understood. The risks associated with these changes must be recognised and managed.
86	4.4.9	Management of Change	How does the organization ensure that risks to asset management activities associated with the management of change of organizational structures, roles or responsibility are managed?	It is vital that any changes made to the asset management organizational structures are fully understood. The risks associated with these changes must be recognised and managed.
87	4.4.9	Management of Change	How does the organization ensure that risks to asset management activities associated with the introduction of new assets, asset systems, technology, contractors or suppliers are managed?	It is vital that the risks on the asset management activities from the introduction of any new assets, asset systems, technology, contractors or suppliers are fully understood. These risks must be recognised and managed.
88	4.5.1	Life Cycle Activities	How does the organization establish implement and maintain process(es) for the implementation of its asset management plan(s) and control of activities across the creation, acquisition or enhancement of assets. This includes design, modification, procurement, construction and commissioning activities?	Life cycle activities are about the implementation of asset management plan(s) i.e. they are the "doing" phase. They need to be done effectively and well in order for asset management to have any practical meaning. As a consequence 4.5.1 requires organizations to have in place appropriate process(es) and procedure(s) for the implementation of asset management plan(s) and control of lifecycle activities. This question explores those aspects relevant to asset creation.
89	4.5.1	Life Cycle Activities	How does the organization ensure that process(es) and/or procedure(s) for the implementation of asset management plan(s) and control of activities during the creation, acquisition or enhancement of assets are sufficient to ensure activities are carried out under specified conditions, are consistent with asset management strategy and control cost, risk and performance?	Having documented process(es) which ensure the asset management plan(s) are implemented in accordance with any specified conditions, in a manner consistent with the asset management policy, strategy and objectives and in such a way that cost, risk and asset system performance are appropriately controlled is critical. They are an essential part of turning intention into action and are required by section 4.5.1.
90	4.5.1	Life Cycle Activities	How does the organization ensure that process(es) and/or procedure(s) for the implementation of asset management plan(s) and control of activities during utilization (operation) of assets are sufficient to ensure activities are carried out under specified conditions, are consistent with asset management strategy and control cost, risk and performance?	Having documented process(es) which ensure the asset management plan(s) are implemented in accordance with any specified conditions, in a manner consistent with the asset management policy, strategy and objectives and in such a way that cost, risk and asset system performance are appropriately controlled is critical. They are an essential part of turning intention into action and are required by section 4.5.1.
91	4.5.1	Life Cycle Activities	How does the organization ensure that process(es) and/or procedure(s) for the implementation of asset management plan(s) and control of activities during maintenance (and inspection) of assets are sufficient to ensure activities are carried out under specified conditions, are consistent with asset management strategy and control cost, risk and performance?	Having documented process(es) which ensure the asset management plan(s) are implemented in accordance with any specified conditions, in a manner consistent with the asset management policy, strategy and objectives and in such a way that cost, risk and asset system performance are appropriately controlled is critical. They are an essential part of turning intention into action and are required by section 4.5.1.
92	4.5.1	Life Cycle Activities	How does the organization ensure that process(es) and/or procedure(s) for the implementation of asset management plan(s) and control of activities during the decommissioning and/or disposal of assets are sufficient to ensure activities are carried out under specified conditions, are consistent with asset management strategy and control cost, risk and performance?	Having documented process(es) which ensure the asset management plan(s) are implemented in accordance with any specified conditions, in a manner consistent with the asset management policy, strategy and objectives and in such a way that cost, risk and asset system performance are appropriately controlled is critical. They are an essential part of turning intention into action and are required by section 4.5.1.

Question No	Clause No	2008 Clause	Question	Why
93	4.5.1	Life Cycle Activities	How does the organization ensure that functional policies, standards, process(es)/procedure(s), resources and enabling support throughout the organization are utilized for the efficient and cost effective delivery of the asset management plan(s)?	Good asset management requires effective cross process co-operation at all stages but particularly in the delivery of asset management plan(s). Section 4.5.1 requires an organization to ensure that its standards, functional policies, process(es), procedure(s) and resources are utilized for the effective implementation of asset management plan(s).
94	4.5.2	Tools, facilities and equipment	What has the organization done to ensure that facilities, equipment and tools are maintained and calibrated as required to implement the asset management plan, achieve required asset functions or effectively monitor performance or condition?	The organization needs to identify and control the maintenance and calibration needs of essential equipment and tools. To reliably understand the impact on the required function of its assets or asset systems the maintenance and/or calibration of equipment used for monitoring or measurement purposes must be effectively carried out.
95	4.6.1	Performance and condition monitoring	How does the organization measure the performance and condition of its assets?	PAS 55 requires that organizations establish implement and maintain procedure(s) to monitor and measure the performance and/or condition of assets and asset systems. It further sets out requirements in some detail for reactive and proactive monitoring, and leading/lagging performance indicators together with the monitoring or results to provide input to corrective actions and continual improvement. There is an expectation that performance and condition monitoring will provide input to improving asset management strategy, objectives and plan(s).
96	4.6.1	Performance and condition monitoring	How does the organization measure the performance of its asset management system?	PAS 55 requires that the organization monitors the performance of the asset management system, and sets out requirements for proactive and reactive measures, leading/lagging indicators monitoring of results and continuous improvement. These measures will usually be associated with the delivery of plan(s) and asset management objectives, and the effectiveness/efficiency of process(es). There is an expectation that this will provide input to improving the asset management system - and will be influential in wider improvements such as shaping the organization and accountabilities.
97	4.6.1	Performance and condition monitoring	How does the organization determine parameters for monitoring asset performance and condition, the extent of data to be recorded, and the frequency of collecting it?	It is important that an organization understands the value to the business of the information it collects to determine the performance or condition of assets. Collecting more information than is essential results in an organization incurring unnecessary costs. Collecting too little, or the incorrect information, could result in an inability to cost-effectively address detectable deterioration and potential failure of assets. PAS 55 sets out minimum requirements to be considered when determining what information to collect and how frequently to monitor.
98	4.6.1	Performance and condition monitoring	How does the organization control the process(es) to monitor and measure the performance or condition of its assets, and the performance of the asset management system?	It is important that an organization has confidence in the data it collects on asset performance or condition, and on the performance of the management system itself. The organization should consider whether it is necessary to document process(es) and roles and responsibilities, to ensure the data is collected in a consistent, timely manner.
99	4.6.2	Investigation of asset-related failures, incidents and nonconformities	How does the organization ensure responsibility and the authority for the handling, investigation and mitigation of asset-related failures, incidents and emergency situations and non conformances is clear, unambiguous, understood and communicated?	PAS 55 requires that the organization establishes implements and maintains process(es) for the handling and investigation of failures incidents and non-conformities for assets and sets down a number of expectations. Specifically this question examines the requirement to define clearly responsibilities and authorities for these activities, and communicate these unambiguously to relevant people including external stakeholders if appropriate.

Question No	Clause No	2008 Clause	Question	Why
100	4.6.2	Investigation of asset-related failures, incidents and nonconformities	How does the organization carry out the investigation phase in a timely manner of any incident, failure or non conformance. How has this been validated and continually reviewed for appropriateness?	PAS 55 requires that investigations are carried out within a timescale commensurate with actual or potential failure incident or nonconformity. In practice there are likely to be different timescales for different process(es), and an escalation procedure to deal with the more critical or higher impact incidents (or potential incident) - this questions seeks to explore that appropriate process(es) and escalation is in place.
101	4.6.2	Investigation of asset-related failures, incidents and nonconformities	How does the organization determine the need for appropriate preventative actions to avoid failures, incidents and non-conformities occurring?	In some instances, the failure, incident or non-conformance would be of minor significance to the organization. The organization is not expected to expend resources on things of minor consequence. This question asks how the organization determines the appropriateness of its corrective and preventive activity in compliance with this requirement of Section 4.6.2. In addressing this question an organization should consider that it is not always possible to predict what will happen in practice and an organization should be in a position to demonstrate that it reviews the results of actions taken.
102	4.6.2	Investigation of asset-related failures, incidents and nonconformities	How does the organization communicate the results of any investigations and corrective or preventive actions to relevant stakeholders?	Effective communication to the appropriate people of the outcome of investigations together with any changes in procedure(s) arising from corrective and preventive actions is essential for effective implementation and help drive improvement. This question explores the means by which an organization complies with this requirement of PAS 55.
103	4.6.3	Evaluation of compliance	What has the organization put in place to demonstrate compliance with their legal, regulatory or absolute requirements?	It is essential that the organization can demonstrate compliance with the organizations obligations for legal, regulatory or absolute requirements. PAS 55 4.4.8 requires that applicable legal and other external requirements are identified and incorporated into relevant elements of the asset management system (e.g. process(es) and procedure(s)). There is a further requirement in 4.6.3 to demonstrate evaluation and recording of compliance.
104	4.6.4	Audit	What has the organization taken into account in establishing its asset management audit programme?	In addressing the requirements of Section 4.6.4 an organization may wish to consider the following sequence: establish a procedure; determine the inputs to the procedure; determine the programme of audits and determine the outputs from them. This question explores what an organization has done to comply with the parts of Section 4.6.4 that provide the requirements to be taken into account when the organization is establishing its asset management audit programme. Organizations should be able to demonstrate that the basis of the audit criteria scope and method are commensurate with business significance and risks being managed.
105	4.6.4	Audit	What has the organization done to establish procedure(s) for the audit of its asset management system (process(es))?	This question seeks to explore what the organization has done to comply with the associated requirements of Section 4.6.4. Linkages exist to Section 4.7.
106	4.6.4	Audit	What has the organization done to ensure that its asset management audits effectively cover all elements of its asset management system?	In order to check that its asset management system is working as intended, an organization should ensure that its audit approach covers all elements. It is also important that the results of previous audits and actions arising out of non-conformances are reviewed. The question explores what the organization has done to comply with these requirements of Section 4.6.4.

Question No	Clause No	2008 Clause	Question	Why
107	4.6.4	Audit	What has the organization done to ensure that results from its asset management audits are communicated to management?	An important output from an audit is the communication of its results to the appropriate people within the organization so that any follow-up actions can be properly managed. This question seeks to explore how the organization complies with this requirement which forms paragraph c) of Section 4.6.4. Linkages exist to Section 4.7.
108	4.6.4	Audit	What has the organization done to ensure that appropriate individuals undertake the audits of its asset-related activities?	It is important to ensure that the people undertaking audits of asset-related activities are suitably competent to undertake those audits. The organization should also take account of the need for those people who conduct audits to be impartial to the activities being audited and therefore independent auditors should be used wherever possible. This can be achieved by selecting personnel with the requisite attributes or using people from other parts of its organization to conduct audits in any specific area of its activities. The use of external service providers is another means by which the organization can ensure impartiality. This question seeks to explore what the organization has done to comply with the associated requirements of Section 4.6.4.
109	4.6.5.1	Corrective & Preventative action	How does the organization instigate appropriate corrective and/or preventive actions to eliminate or prevent the causes of identified poor performance and non conformance?	Having investigated asset related failures, incidents and non-conformances, and taken action to mitigate their consequences, an organization is required to implement preventative and corrective actions to address root causes. Incident and failure investigations are only useful if appropriate actions are taken as a result to assess changes to a businesses risk profile and ensure that appropriate arrangements are in place should a recurrence of the incident happen. PAS 55 also requires that necessary changes arising from preventive or corrective action are made to the asset management system.
110	4.6.5.1	Corrective & Preventative action	How does the organization take account of risks in determining what corrective or preventive actions to take and appropriate timescales?	PAS 55 requires that the action considers and is commensurate with the risk it is addressing, and also that where appropriate the action itself is risk assessed. The timing of the action should also be appropriate to managing the risk - this may be a particular issue where risks are changing in time.
111	4.6.5.1	Corrective & Preventative action	How does the organization record details of corrective and preventive actions, and communicate them to relevant stakeholders?	The organization should ensure that records are maintained of corrective and/or preventive actions resulting from investigations, evaluations of compliance and audits. There is also a requirement to communicate these records to relevant internal and external stakeholders. It may also be appropriate to communicating corrective and preventive actions developed and implemented to address other non-conformities or poor performance with the asset management system.
112	4.6.5.1	Corrective & Preventative action	How does the organization ensure that any necessary changes arising from corrective and /or preventative actions are made to its asset management system?	In the interests of continuous improvement corrective and preventative action may require a change to the asset management system. This requirement is in the last paragraph of 4.6.5.1.
113	4.6.5.2	Continual Improvement	How does the organization achieve continual improvement in the optimal combination of costs, asset related risks and the performance and condition of assets and asset systems across the whole life cycle?	PAS 55 has requirements to establish, implement and maintain process(es)/procedure(s) for identifying, assessing, prioritizing and implementing actions to achieve continual improvement. Specifically there is a requirement to demonstrate continual improvement in optimization of cost risk and performance/condition of assets across the life cycle. This question explores an organization's capabilities in this area - looking for systematic improvement mechanisms rather than reviews and audit (which are separately examined).
114	4.6.5.2	Continual Improvement	How does the organization achieve continual improvement in the performance of its asset management system?	It is important that the overall asset management system is considered within the continuous improvement process. Possible improvement in the overall asset management system will come from many sources including audit, the investigation of incidents, non-conformances and near misses, and management review.

Question No	Clause No	2008 Clause	Question	Why
115	4.6.5.2	Continual Improvement	How does the organization seek and acquire knowledge about new asset management related technology and practices, and evaluate their potential benefit to the organization?	One important aspect of continual improvement is where an organization looks beyond its existing boundaries and knowledge base to look at what 'new things are on the market'. These new things can include equipment, process(es), tools, etc. An organization that complies with Section 4.6 will be able to demonstrate that it continually seeks to expand its knowledge of all things affecting its asset management approach and capabilities. The organization will be able to demonstrate that it identifies any such opportunities to improve, evaluates them for suitability to its own organization and implements them as appropriate. This question explores an organization's approach to this activity.
116	4.6.6	Records	How does the organization identify records that are necessary to demonstrate conformance to the requirements of its asset management system and then maintain them to ensure they are accurate, identifiable and traceable?	Records are required to provide documentary evidence that the asset management system is or is not performing as designed. Records should be quality managed to an appropriate level consistent with requirements set out in 4.4.6 (information management). However it should be noted that this section refers specifically to the records needed to demonstrate conformance with the requirements of the asset management system. This is separate to and distinct from asset records generally which are dealt with in 4.4.5 and 4.4.6.
117	4.7	Management review	Does the organization's management regularly review its asset management system (including asset management policy, strategy, objectives and plan(s)) to ensure its continuing suitability, adequacy and effectiveness?	Top management should review the operation of the asset management system on a regular basis. The review should assess whether the asset management system is being fully implemented and remains suitable for achieving the organizations stated aims (within the strategy, policy, objectives and plan(s)). The frequency of the reviews should be determined by the organization and should be risk based i.e. commensurate with the operations of the organization and the risks it is exposed to.
118	4.7	Management review	What inputs are factors that are considered at management reviews of the asset management system?	The management reviews should included: Compliance and audit reports, feedback from employees and other stakeholders including external parties; Asset management system performance and the extent to which objectives have been met; Management of incidents; Changing business or technical environment; Outsourced activities; Previous reviews.
119	4.7	Management review	How does the organization use the output from management reviews to continually improve its asset overall management system?	This element of clause 4.7 requires that output from management reviews includes decisions and actions that are to be taken for possible changes to the asset management system. These can result in changes to: asset management policy, strategy and objectives; Asset management performance requirements; Resources; Other asset management system elements such as process(es). This feedback loop from the management review into the asset management system should be part of the organization's continual improvement process.
120	4.7	Management review	How does the organization ensure that relevant output from management reviews is made available to top management for consideration during reviews of the organizations strategic plan?	PAS 55 requires that the outputs from management reviews of the asset management system provide input to the development of the organizational strategic plan. This ensures that feedback provides a 'reality check' in the development of the strategic plan, and that the asset management system capabilities match with the organizational expectations. There may be implications in terms of cost, risk and delivery that need to be taken into account in developing the organizational strategic plan. This requirement may be influential in determining the timing of management reviews.
121	4.7	Management review	How does the organization keep records of the management reviews and communicate relevant information to employees, contracted service providers or other stakeholders?	There is a requirement for the management reviews to be recorded and retained for a period that is appropriate to the organization's requirements. In order for the management reviews to be effective then relevant information should be made available to its employees, contracted service providers and/or other stakeholders. The effective communication of relevant information should help to ensure that there is clarity of purpose and understanding of all parties involved in the delivery of the asset management system.