

# Maintenance Management Standard

*for immovable assets*

NATIONAL  
IMMOVABLE ASSET  
MAINTENANCE  
MANAGEMENT



**public works**

Department:  
Public Works  
REPUBLIC OF SOUTH AFRICA



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# PART A: PURPOSE, DEFINITIONS AND SCOPE



# 1. PURPOSE OF THIS STANDARD

This National Immovable Asset Maintenance Management Standard establishes a system of principles or practice specifications for the management and care of immovable assets subsequent to initial construction or acquisition:

- a. to derive maximum value from these assets;
- b. to protect the investment made in public sector immovable assets and ensure business continuity through the ongoing availability of such assets at reasonable cost and within acceptable risk parameters;
- c. in support of economic development, social upliftment and environmental sustainability for the benefit of all people in South Africa;
- d. by specifying robust practice requirements implemented by competent asset management practitioners.

# 2. TERMS, DEFINITIONS AND ACRONYMNS

## 2.1 TERMS AND DEFINITIONS

Terms employed in this Standard have the meaning defined below (source documents indicated in brackets):

TERM	DEFINITION
<b>Asset</b>	A resource owned or controlled by an entity as a result of past events and from which future economic benefits or service potential are expected to flow to the entity.
<b>Asset hierarchy (IIMM)</b>	A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function, asset type, or a combination of the two.
<b>Asset life (ISO 55000)</b>	Period from asset creation to asset end-of-life.
<b>Asset management (LGIAMG)</b>	The process of decision-making, planning and control over the acquisition, use, safeguarding and disposal of assets to maximise their service delivery potential and benefits, and to minimise their related risks and costs over their entire life.
<b>Asset management information system (LGIAMG)</b>	A combination of processes, data and software applied to provide outputs required for effective asset management.
<b>Asset management plan</b>	A documented plan developed for the management of one or a portfolio of assets that combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service. The plan specifies approaches, programmes, projects, activities, resources, responsibilities and timeframes across the lifecycle of the asset(s) planned for, or over a timeframe appropriate for robust lifecycle planning.
<b>Asset management objectives (IIMM)</b>	Specific outcomes required from the implementation of the asset management system.
<b>Asset management practices (IIMM)</b>	The asset management processes and techniques that an entity undertakes, such as demand forecasting, developing and monitoring levels of service and risk management.
<b>Asset management strategy (IIMM)</b>	The high level long-term approach to asset management including asset management action plans and objectives for managing the assets.

TERM	DEFINITION
<b>Asset management system (ISO 55000)</b>	A management system whose function is to establish the asset management policy and objectives, as well as processes and organisational arrangements inclusive of structure, roles and responsibilities to achieve asset management objectives.
<b>Asset register (LGIAMG)</b>	A record of asset information considered worthy of separate identification for both asset accounting and strategic management purposes including inventory, historical, condition and construction, technical and financial information about each. <i>Note:</i> The unit of account in an asset register is a component (see definition of a component).
<b>Asset system (ISO 55000)</b>	Set of assets that interact or are interrelated.
<b>Asset type (ISO 55000)</b>	Grouping of assets having common characteristics that distinguish those assets as a group or class.
<b>Audit (ISO 55000)</b>	Systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled.
<b>Capacity (IIMM)</b>	Maximum output that can be produced or delivered using existing network or infrastructure.
<b>Capital (financial concept of)</b>	Net assets of an entity.
<b>Capital (physical concept thereof)</b>	The productive capacity of an entity as measured by the optimised depreciated replacement cost method.
<b>Capital expenditure</b>	Expenditure used to create new assets, increase the capacity of existing assets beyond their original design capacity or service potential, or to return the service potential of the asset or expected useful life of the asset to that which it had originally. CAPEX increases the value of capital asset stock.
<b>Capital upgrading</b>	Enhances the service potential of the asset or the economic benefits that can be obtained from use of the asset and may also increase the life of the asset beyond that initially expected.
<b>Component (IIMM)</b>	A component <sup>(Note 1)</sup> is a specific part of a complex item <sup>(Note 2)</sup> that has independent physical or functional identity and specific attributes such as different life expectancy, maintenance and renewal requirements and regimes, risk or criticality. <i>Note 1:</i> A component is separately recognised and measured (valued) in the organisation's asset register as a unique asset record, in accordance with the requirements of GRAP 17 to componentise assets. <i>Note 2:</i> A complex item is one that can be disaggregated into significant components. Infrastructure and buildings are considered complex items.
<b>Competence (ISO 55000)</b>	The ability to apply knowledge and skills to achieve intended results.
<b>Condition (IIMM)</b>	The physical state of the asset.
<b>Condition assessment or condition monitoring (IIMM)</b>	The inspection, assessment, measurement and interpretation of the resultant data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action.
<b>Conformity (ISO 55 000)</b>	Fulfilment of a requirement.
<b>Continual improvement (ISO 55 000)</b>	Recurring activity to enhance performance.

<b>TERM</b>	<b>DEFINITION</b>
<b>Corrective maintenance</b>	Maintenance carried out after a failure has occurred and intended to restore an item to a state in which it can perform its required function. Corrective maintenance can be planned or unplanned. Refer to Appendix A.
<b>Critical assets (IIMM)</b>	Those assets that are likely to result in a more significant financial, environmental and social cost in terms of impact on organisational objectives and service delivery.
<b>Current replacement cost (IIMM)</b>	The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business, or the minimum it would cost to replace the existing asset with a new modern equivalent asset with the same economic benefits allowing for any differences in the quantity and quality of output and in operating costs.
<b>Decommissioning (IIMM)</b>	Actions required to take an asset out of service.
<b>Deferred Maintenance</b>	The portion of planned maintenance work necessary to maintain the service potential of an asset that has not been undertaken in the period in which such work was scheduled to be undertaken.
<b>Depreciated replacement cost (IIMM)</b>	The replacement cost of an asset less accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired economic benefits of the asset.
<b>Depreciation (GRAP)</b>	Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life.
<b>Disposal (IIMM)</b>	Actions necessary to decommission and dispose of assets that are no longer required.
<b>Economic life (IIMM)</b>	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life, however obsolescence will often ensure that the economic life is less than the physical life.
<b>Facility (IIMM)</b>	A complex comprising many assets (e.g. a hospital, water treatment plant, recreation complex, etc.) which represents a single management unit for financial, operational, maintenance or other purposes.
<b>Failure Modes, Effects and Criticality Analysis (IIMM)</b>	A systematic, logical risk-based maintenance approach aimed at maximising the reliability of plant and equipment assets.
<b>Incident (ISO 55 000)</b>	Unplanned event or occurrence resulting in damage or other loss.
<b>Life (LGIAMG)</b>	A measure of the anticipated life of an asset or component, such as time, number of cycles, distance intervals etc.
<b>Impairment loss (GRAP)</b>	An impairment loss of a cash-generating asset or a non-cash-generating asset is the amount by which the carrying amount of an asset exceeds its recoverable amount.
<b>Infrastructure assets (LGIAMG)</b>	Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components.
<b>Incident (ISO 55000)</b>	Unplanned event or occurrence resulting in damage or other loss.

TERM	DEFINITION
<b>Inventories (GRAP)</b>	Inventories are assets: (a) in the form of materials or supplies to be consumed in the production process; (b) in the form of materials or supplies to be consumed or distributed in the rendering of services; (c) held for sale or distribution in the ordinary course of operations; or (d) in the process of production for sale or distribution.
<b>Level of service (IIMM)</b>	Levels of service statements describe the outputs or objectives an entity intends to deliver to customers.
<b>Life (of an asset)</b>	The period over which benefits are derived from the use or availability of an asset.
<b>Lifecycle (IIMM)</b>	The time interval that commences with the identification of the need for an asset and terminates with the decommissioning of the asset or any liabilities thereafter.
<b>Lifecycle asset management</b>	Encompasses all asset management strategies and practices associated with an asset or group of assets that results in the lowest lifecycle cost necessary to achieve stated service requirements within acceptable risk parameters.
<b>Lifecycle cost (IIMM)</b>	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, renewal and disposal costs.
<b>Maintenance</b>	All actions intended to ensure that an asset performs a required function to a specific performance standard(s) over its expected useful life by keeping it in as near as practicable to its original condition, including regular recurring activities to keep the asset operating, but specifically excluding renewal. Refer to Appendix A for a hierarchy of maintenance type, approach and actions.
<b>Maintenance of capital</b>	Expenditure to ensure that the productive or operating capacity of the asset base is maintained over time. The value vested in capital assets is maintained when the entity has at least as much capital at the end of the period as it had at the beginning thereof. <i>Note:</i> Maintenance also specifically excludes restoring the condition or performance of an asset following a recognised impairment event, which would be classified as either renewal or upgrading, depending on the circumstances.
<b>Maintenance expenditure</b>	Recurrent expenditure as required to ensure that the asset achieves its intended useful life. Maintenance is funded through the entity's operating budget, and such expenditure is expensed in the entity's Statement of Financial Performance.
<b>Maintenance plan</b>	Describes the planned and unplanned maintenance actions for an asset, facility or portfolio of assets, with intended delivery methods and schedules, budget requirements and responsible parties.
<b>Maintenance objectives (IIMM)</b>	Objectives for what maintenance has to achieve to ensure the assets are in the right condition to meet the needs of the entity. Maintenance performance measures and targets are the means of assessing whether the maintenance objectives are being met.
<b>Maintenance standards (LGIAMG)</b>	The standards set for the maintenance service, usually contained in preventive maintenance schedules, operation and maintenance manuals, codes of practice, estimating criteria, statutory regulations and mandatory requirements, in accordance with maintenance quality objectives.
<b>Maintenance strategy</b>	Interprets higher-order documents and formulates maintenance objectives and targets, establishes maintenance tactics, and defines maintenance roles and responsibilities.

TERM	DEFINITION
<b>Material (GRAP)</b>	Omissions or misstatements of items are material if they could, individually or collectively, influence the decisions or assessments of users made on the basis of the financial statements. Materiality depends on the nature or size of the omission or misstatement judged in the surrounding circumstances. The size of the information item, or a combination of both, could be the determining factor.
<b>Modern equivalent asset (IIMM)</b>	The most cost-efficient asset currently available that will provide equivalent functionality to the asset that will be replaced (or is currently being valued using the DRC methodology).
<b>Monitoring (ISO 55000)</b>	Determining the status of a system, a process or an activity.
<b>Objective (Adjusted from ISO 55000)</b>	Result to be achieved at strategic, tactical or operational level. Objectives can be set in a variety of domains or outcome areas (e.g. economic, social or environmental outcomes), or can relate to elements of the entity (e.g. corporate level or units in the entity), or can relate to processes, services, products, programmes and projects.
<b>Obsolescence (Optimised Decision-Making Guidelines)</b>	The asset can no longer be maintained, or suffers a loss in value due to a decrease in the usefulness of the asset, caused by technological change, or changes in people's behavioural patterns or tastes, or environmental changes.
<b>Optimised decision-making (IIMM)</b>	Two definitions are: (1) A formal process to identify and prioritise all potential solutions with consideration of financial viability, social and environmental responsibility and cultural outcomes and (2) an optimisation process for considering and prioritising all options to rectify existing or potential performance failure of assets. The process encompasses NPV analysis and risk assessment.
<b>Performance (ISO 55 000)</b>	Measurable result of either quantitative or qualitative nature that can relate to the management of activities, processes, products or services, systems or entities.
<b>Performance measure (IIMM)</b>	A qualitative or quantitative measure used to measure actual performance against a standard or other target. Performance measures are used to indicate how the entity is doing in relation to delivering levels of service.
<b>Performance monitoring (LGIAMG)</b>	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.
<b>Policy (Adjusted from ISO 55 000)</b>	Intentions and direction of an entity as formally expressed in a documented statement approved by top management and communicated throughout the entity.
<b>Predictive action (ISO 55 000)</b>	Action to monitor the condition of an asset and predict the need for preventative or corrective action. Also referred to condition monitoring or performance monitoring.
<b>Preventative action (ISO 55 000)</b>	Action to eliminate the cause of a potential nonconformity or other undesirable potential situation.
<b>Preventative maintenance</b>	Maintenance carried out at pre-determined intervals, or corresponding to prescribed criteria, and intended to reduce the probability of failure or the performance degradation of an item. Preventative maintenance is planned or carried out on opportunity.

TERM	DEFINITION
<b>Process (ISO 55 000)</b>	Set of interrelated or interacting activities which transforms inputs into outputs.
<b>Property, plant and equipment (PPE) (GRAP)</b>	Property, plant and equipment are tangible items that: (a) are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes; and (b) are expected to be used during more than one reporting period.
<b>Reliability-centred maintenance (IIMM)</b>	A process for optimising maintenance based on the reliability characteristics of the asset.
<b>Remaining useful life (IIMM)</b>	The time remaining until an asset ceases to provide the required service level or economic usefulness.
<b>Renewal</b>	Expenditure on an existing asset which returns the service potential of the asset or expected useful life of the asset to that which it had originally. <i>Note 1:</i> Renewal can include works to replace existing assets or facilities with assets or facilities of equivalent capacity or performance capability. <i>Note 2:</i> Expenditure on renewals is funded through the entity's capital budget, and such expenditure is recognised in the entity's Statement of Financial Position.
<b>Risk (IIMM)</b>	The effect of uncertainty on objectives. Risk events are events which may compromise the delivery of the entity's strategic objectives.
<b>Risk controls (IIMM)</b>	Measures to manage or mitigate identified risks.
<b>Risk exposure (IIMM)</b>	The level of risk to which an entity is exposed to. Risk exposure is a function of the probability of an occurrence times the impact of that occurrence.
<b>Risk management (IIMM)</b>	The application of a formal process that identifies the exposure of an entity to service performance risk and determines appropriate responses.
<b>Risk register (IIMM)</b>	A record of information that stipulates risks identified, the levels of risk exposure before and after implementation of risk controls, and details of appointed risk owners as a minimum.
<b>Routine maintenance (IIMM)</b>	Day to day operational activities to keep the asset operating (replacement of light bulbs, cleaning of drains, repairing leaks, etc.) and which form part of the annual operating budget, including preventative and periodic maintenance.
<b>Statement of Financial Performance</b>	The Statement of Financial Performance, also known as an income statement, shows the revenue and expenses of an entity over a period of time.
<b>Statement of Financial Position</b>	The Statement of Financial Position, also known as the Balance Sheet, presents the financial position of an entity at a given date. The statement comprises three main components, these being assets, liabilities and equity, and gives users of financial statements insight into the financial soundness of an entity in terms of liquidity risk, financial risk, credit risk and business risk.
<b>Unplanned maintenance (IIMM)</b>	Corrective work required in the short term to restore an asset to working condition so that it can continue to deliver the required service or to maintain its level of security and integrity.
<b>Useful life (GRAP)</b>	The useful life of an asset is the period over which an asset is expected to be available for use by an entity or the number of production or similar units expected to be obtained from the asset by an entity.

## 2.2 ACRONYMS

Acronyms relevant to this Standard include:

<b>AM</b>	Asset Management
<b>CIDB</b>	Construction Industry Development Board
<b>CRC</b>	Current Replacement Cost
<b>DRC</b>	Depreciated Replacement Cost
<b>FMECA</b>	Failure Modes, Effects and Criticality Analysis
<b>GFMAM</b>	Global Forum for Maintenance and Asset Management
<b>GRAP</b>	Generally Recognised Accounting Practice
<b>IAS</b>	International Accounting Standards
<b>IDMS</b>	Infrastructure Delivery Management System
<b>IIMM</b>	International Infrastructure Management Manual
<b>IPSAS</b>	International Public Sector Accounting Standards
<b>IPWEA</b>	Institute of Public Works Engineering Australia
<b>ISBN</b>	International Standard Book Number
<b>ISO</b>	International Standards Organisation
<b>LGIAMG</b>	Local Government Infrastructure Asset Management Guidelines
<b>NAMS</b>	New Zealand Asset Management Support
<b>NPV</b>	Net Present Value
<b>PAS</b>	Publicly Available Standard
<b>PPE</b>	Property, Plant and Equipment
<b>RCM</b>	Reliability-Centered Maintenance
<b>RUL</b>	Remaining Useful Life
<b>SANS</b>	South African National Standards

## 3. SCOPE

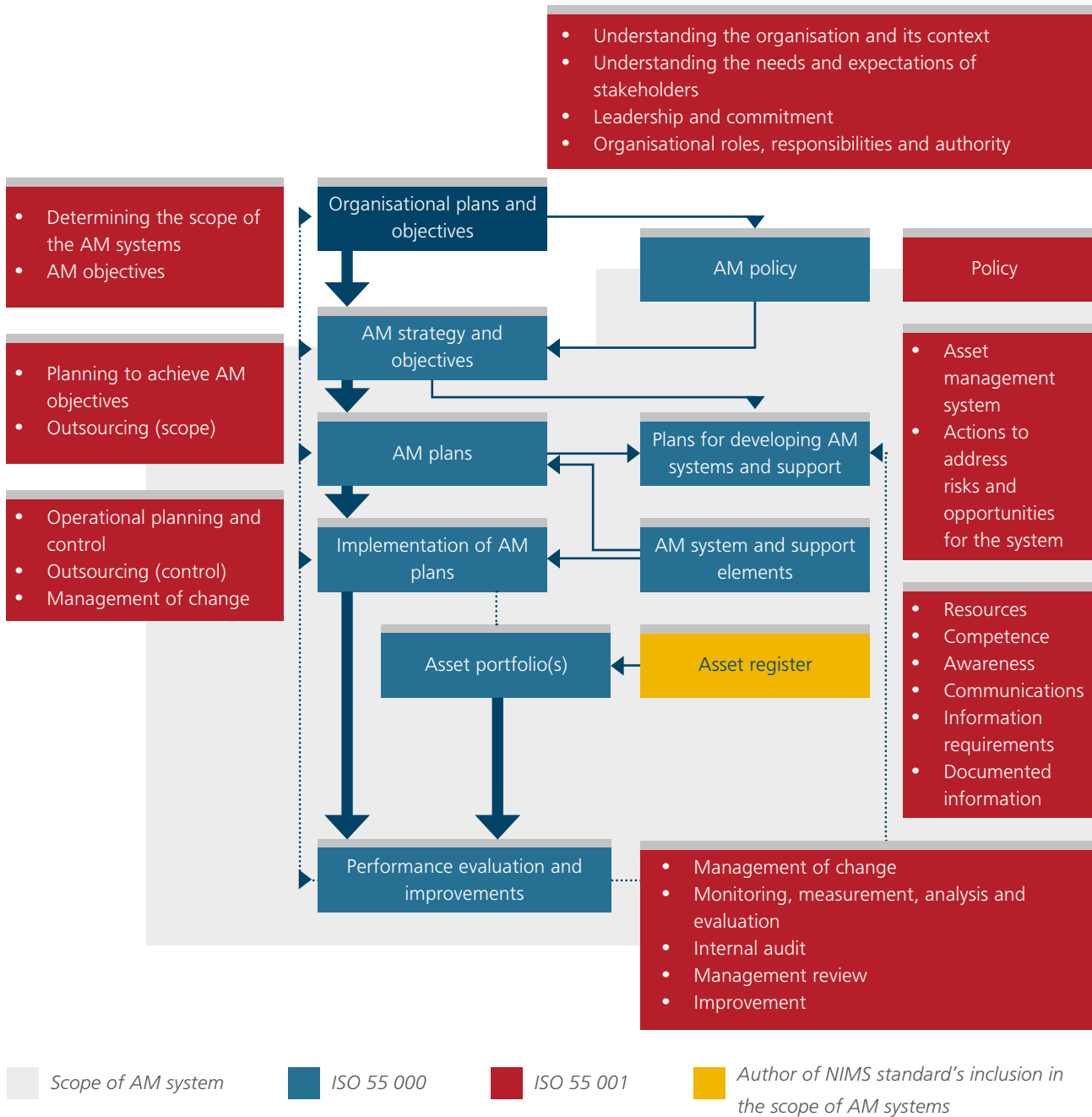
### 3.1 FUNCTIONAL SCOPE

The acquisition of immovable assets, inclusive of supply chain management, project management and construction management activities are regulated through various Treasury-specific supply chain management regulations. This National Immovable Asset Maintenance Management Standard complements the Infrastructure Delivery Management Standard by specifying asset care requirements for immovable assets through the lifecycle, and by establishing standards for organisational arrangements, competences and requirements for professionals involved with asset lifecycle activities. Lifecycle activities addressed in this Standard include the planning for and execution of maintenance, renewal or replacement, decommissioning and disposal. The following are specifically excluded from the scope of this Standard:

- a. Establishing primary principles for the accounting of immovable assets – these principles are articulated in the Generally Recognised Accounting Practice (GRAP) framework and specific standards of GRAP, and accordingly this Standard limits its scope to interpreting GRAP for practical application of accounting principles to the management of immovable assets.
- b. Non-asset specific operating activities, such as water quality testing, do not form part of the scope of this Standard and are instead regulated through various South African National Standards (SANS), sectoral legislation or sectoral standards and codes of practice.
- c. Asset-specific maintenance requirements that are regulated either through SANS standards or sectoral standards by various South African regulatory bodies.
- d. Health and safety matters relating to asset care activities – these are dealt with in the Occupational Health and Safety Act 1993 (No. 85 of 1993).

There is wide recognition in both local and international literature that asset care activities, these being maintenance and renewal, form part of the lifecycle management of assets, and that the lifecycle of assets should be managed holistically.

FIGURE 1: SCOPE OF AND REQUIREMENTS FOR AN ASSET MANAGEMENT SYSTEM\*



\* Modified and augmented from Figure B.1 presented in ISO 55000:2014(E)

As such, the management of maintenance and renewal form part of the broader ambit of asset management. The key elements of an asset management system, as defined in ISO 55 000 and the requirements for asset management – management systems as articulated in ISO 55 001 are demonstrated in Figure 1. This Standard recognises that asset care management activities are conducted within a broader asset management system, and identifies linkages between specific asset care practice requirements and the larger asset management system as appropriate.

### 3.2 APPLICATION OF THIS STANDARD

This Standard encompasses all forms of public sector immovable assets.

### 3.3 NORMATIVE REFERENCES

The following documents, in whole or in part, are normatively referenced in this Standard:

#### ***Accounting standards and asset management***

- Relevant standards of Generally Recognised Accounting Practice, with specific reference to GRAP 17: Property, Plant and Equipment.
- Relevant International Accounting Standards (IAS), with specific reference to IAS 16: Property, Plant and Equipment.
- National Treasury. Asset Management Framework. 2004.
- National Treasury. Standard for an Infrastructure Delivery Management System.
- International Standards Organisation. ISO 55000:2014. Asset management – Overview, principles and terminology. First edition, 2014-01-15. Geneva. Reference number: ISO55000:2014(E).
- International Standards Organisation. ISO 55001:2014. Asset management – Management systems – Requirements. First edition, 2014-01-15. Geneva. Reference number: ISO55001:2014(E).
- International Standards Organisation. ISO 55002:2014. Asset management – Management systems – Guidelines for the application of ISO 55001. First edition, 2014-01-15. Geneva. Reference number: ISO55002:2014(E).
- NAMS and IPWEA. International Infrastructure Management Manual (2011). Version 4. New Zealand: Association of Local Government Engineering NZ Inc (Ingenium) National Asset Management Steering (NAMS) Group, ISBN: 0 473-10685-X.
- CIDB. The National Infrastructure Maintenance Strategy. July 2007. ISBN: 978-0-621-37238-0.

#### ***Environmental sustainability***

- DEA. National Environmental Management Act (NEMA), November 1998. Department of Environmental Affairs.
- DME. Energy Efficiency Strategy of the Republic of South Africa. March 2005. Department of Minerals and Energy.
- DEA. National Climate Change Response White Paper. October 2011. Department of Environmental Affairs.
- DPW. Green Building Policy (Draft). July 2014. Department of Public Works.

#### ***Social and economic sustainability through labour intensive asset care practices***

- DPW et al (2004). Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme, 2nd Edition, July 2005.
- DTI (2009). Construction Codes of Good Practice: 2000-2800 for Broad Based Black Economic Empowerment, Issues in terms of Section 9 (1) of the BBBEE Act 53, 2003, Notice 862 of 2009, Government Gazette No. 32305, Department of Trade and Industry.
- CIDB (2013). CIDB Standard for Indirect Targeting for Enterprise Development. Board Notice 21 of 2013, Government Gazette 36190, 25 February 2013. Construction Industry Development Board.
- CIDB (2013). CIDB Standard for Developing Skills on Infrastructure Contracts. Board Notice 180 of 2013, Government Gazette 36760, 23 August 2013, Construction Industry Development Board.
- CIDB (2013). CIDB Practice Note 31; Balancing Delivery, Development and Empowerment (Draft). Construction Industry Development Board.

There are however varying interpretations, different nuances and, in some instances, inconsistencies in terminology between different standards relating to asset management. For purposes of this Standard, differences in terminology are resolved in the following manner:

- a. All terms employed in this Standard are consistent with accounting terminology and principles established in IPSAS, IAS and GRAP.
- b. All terms relating to the definition and key elements of an asset management system are consistent with the ISO 55 000: Asset Management series.
- c. ISO 55 000 however was prepared to apply not only to public infrastructure and other immovable assets, but to the very diverse asset portfolios found in both the public and private sectors, including immovable asset portfolios as well movable asset portfolios such as rolling rail stocks, fleets of ships and aircraft, and more.
- d. To ensure relevance to public infrastructure in South Africa in terms of alignment of accounting and engineering perspectives, lifecycle activities and techniques, terminology was selected that is consistent with the International Infrastructure Management Manual. This Manual was developed for the management of complex public immovable assets, is considered by the World Bank to be representative of best international practice, and South Africa is a signatory to this manual.
- e. Local specific and relevant terminology were employed to the extent that these are published. The Asset Management Framework published by the National Treasury and Guidelines for Infrastructure Asset Management in Local Government published by the Department of Cooperative Governance served as references.

### 3.4 KEY CHARACTERISTICS OF PUBLIC SECTOR IMMOVABLE ASSETS

The following are key characteristics of public sector immovable assets that provide the basis for the normative framework and asset care requirements described in this document:

- 3.4.1 The citizenry of South Africa has over successive generations invested in the creation of both large and diverse public sector immovable assets, comprising buildings, infrastructure and associated assets. These assets contribute to the fixed capital wealth of the country, underpin economic activity and enable the delivery of social goods.
- 3.4.2 Immovable assets, when managed properly, display the quality of longevity. Many of South Africa's public sector immovable assets have been in existence for generations. Considered in the aggregate, the demand for public infrastructure tends to increase over time.
- 3.4.3 Immovable assets held in the public sector at any given point in time represent high value capital investment of an order of magnitude unaffordable by any one given generation of the citizenry. Past generations in part created immovable assets financed through loans paid by successive generations. Successive generations enjoy the benefits of immovable assets created by previous generations and in turn create more immovable assets that are again partly financed by generations to come.
- 3.4.4 Each generation entrusts the Government of the Republic of South Africa with custodianship of the accumulated wealth vested in public immovable assets.
- 3.4.5 Government in turn has a moral obligation to maintain the value and productive capacity of public immovable assets. Government is also responsible for fiscal management.
- 3.4.6 Fiscal sustainability requires Government to manage financial benefits, costs and risks to avoid financial shocks in future periods without having to raise expenditure, taxes and administrative prices to such an extent that those adjustments become economically or socially destabilising.
- 3.4.7 To maintain fiscal sustainability in relation to immovable assets it is necessary to adopt full depreciation accounting that keeps track with real cost increases, and to properly plan, budget and spend over the lifecycle in such a manner that no deficit in renewals accrues, or that renewals expenditure becomes too lumpy at times that in turn requires excessive capital at particular points in time and that exceeds the entity's administrative capacity to implement renewal programmes and projects.

- 3.4.8 Immovable assets must be maintained to achieve their useful life expectations. Maintenance however only slows down the deterioration in the condition of assets, and ensures that assets are able to provide utility value over their estimated useful lives. To serve the requirements of indefinite period demand and to sustain the productive capacity of assets, capital renewal is required.
- 3.4.9 Asset care, comprising optimised maintenance and renewal planning, implementation and management, is a key objective of asset management. In recent years there has been growing recognition that asset management is a profession in its own right, requiring competent, multi-skilled management practitioners to function within a defined asset management system.
- 3.4.10 Asset management requires the balancing of risks and costs within acceptable parameters. Risk is ever-present and multi-faceted. A particular feature of public immovable assets is the often severe to catastrophic impacts when risk events materialise. Hence asset management follows a risk-based approach to the management of immovable assets.
- 3.4.11 The remainder of the lifecycle costs of an immovable asset following initial acquisition ranges from substantial in relation to the initial acquisition cost, to exceeding the initial costs by a significant margin. This requires that planning for a new immovable asset should take into consideration all lifecycle requirements, risks, actions and costs, inclusive of impacts on asset care. Furthermore new immovable assets should be planned, designed and constructed or otherwise acquired with the aim of optimised asset lifecycles that balance service requirements, risks and costs.
- 3.4.12 Public sector immovable assets collectively have the potential to consume vast quantities of water and energy, and to generate quantities of waste that place pressure on the available renewable supply of scarce ecological resources and the ability of the environment to accept wastes generated. New viable technologies and practices however enable the design, construction and operation of public sector immovable assets, buildings in particular, to achieve significantly improved efficiencies in water and energy consumption, and waste generation, in support of the objective of sustainable development. Asset care through renewals, especially in the case of buildings, provides significant scope for green retrofitting and the associated benefits of improved water and energy efficiencies, and reduction in waste generated.
- 3.4.13 Asset care commences in the planning and design phases prior to asset acquisition or construction. Design considerations include, as appropriate to the planned asset, ways in which an asset can fail, design to limit failures where cost effective and necessary to mitigate unreasonable risk exposure, and comply with legislative requirements, and design that facilitates efficient maintenance e.g. providing sufficient physical access to technicians to maintain assets. Maintenance and renewal activities are undertaken following asset commissioning. Hence asset care activities are considered and planned for from a whole asset lifecycle perspective.

**PART B:**  
**CORE REQUIREMENTS FOR ASSET CARE**



## 4. ASSET CARE OBJECTIVES, STRATEGIES AND PLANNING

The level of asset care is primarily determined by the entity's asset management objectives that in turn are derived from the strategic objectives of that entity. These asset management objectives take into consideration matters of value to the entity, where it wishes to be in the future, legislative and contractual commitments, the entity's financial, administrative and technical capacities, and risk appetite. Maintenance objectives and planning, typically revolving around asset availability, reliability and the costs associated with ensuring the required level of availability and reliability, are established in response to stated asset management objectives that may vary in asset-intense entities for different asset groups.

### 4.1 ESTABLISHMENT OF ASSET CARE OBJECTIVES, STRATEGIES AND PLANS

4.1.1 Each entity shall interpret its strategic plan and develop specific, measurable, achievable, realistic and time-bound asset management objectives focussing on the care of its immovable assets.

4.1.2 In developing asset management objectives, the entity shall consider:

- a. the importance of assets to their intended outcomes, objectives or service requirements, and shall also review risks, inclusive of the potential impacts from the failure of either assets, asset management activities or both;
- b. the nature, scope, complexity and scale or extent of asset portfolios under its control; and
- c. any statutory requirements related to the operation and maintenance of assets or of services rendered through the use of its immovable assets.

4.1.3 The entity shall, in support of its asset management objectives, develop supportive and responsive maintenance and renewal objectives and regimes, within the context of whole lifecycle management, as follows:

- a. expected asset useful lives shall be recorded in the asset management strategy, clearly stating the required lifecycle strategies necessary to achieve life expectations;
- b. determine the minimum acceptable asset failure mode status (performance, utilisation, condition and cost-of-operations) for its assets, with due consideration to the criticality rating attached to each asset and its function within the broader network or portfolio of assets, and document such in the asset management strategy;
- c. where the demand for assets or networks/portfolios are indefinite, or where assets have lives measured in decades or generations, a renewals plan shall be developed for such assets facilities, networks or portfolios and included in the lifecycle plan section of the asset management plan(s), taking into account minimum acceptable condition, performance and cost of operations, as well as the need to maintain business continuity and a favourable asset sustainability ratio; and
- d. a maintenance plan shall be developed and included in the lifecycle plan section of the asset management plan(s), indicating:
  - i. the maintenance type and approach within the larger lifecycle strategy to be adopted for each asset type and asset portfolio, and for critical assets specifically (e.g. preventative or corrective, interval-based etc.);
  - ii. the appropriate level of reliability chosen given performance expectations and the costs involved to achieve and/or maintain that level of reliability;
  - iii. the maintenance actions (e.g. monitoring, testing, serving, repairs) to be adopted per asset type, asset group and for business-critical assets; and
  - iv. appropriate resourcing methods.

## 4.2 ASSETS AND ASSET MANAGEMENT SYSTEM PERFORMANCE AND HEALTH MONITORING

In developing performance measures for assets and the asset management system, the entity shall:

- 4.2.1 Establish documented performance measures and reporting arrangements at all levels of the entity, and assign responsibilities to specific persons or positions to ensure that performance data is collected and reported as per the documented reporting arrangements, taking into account the following:
  - a. in deciding on reporting arrangements, the entity shall determine to whom performance should be reported to, and the level of detail of reporting to various recipients of this information; and
  - b. since the accounting officer has overall legal responsibility for the safeguarding, use and control over assets, an asset and asset management system performance report should be presented to the accounting officer at a level of detail and frequencies as considered appropriate for executive attention and decision-making.
- 4.2.2 Performance measures shall include relevant proactive, reactive, leading and lagging measures of both qualitative and quantitative nature.

## 4.3 REQUIREMENTS FOR ASSET DESIGN AND SUBSEQUENT ASSET CARE ACTIVITIES

In response to the determined functional requirements for assets, entities shall consider, plan and appropriately design asset creation and renewal programmes and projects for (1) resource efficiency (e.g. energy and water resource efficiency), (2) labour intensive practices creating employment opportunities, and (3) asset maintainability as appropriate given current technologies, costs and relevant legislation, standards and codes of practice. With respect to asset maintainability, the entity shall:

- 4.3.1 Require of its professional design staff or of the professional providers contracted by it (e.g. engineers or architects) to accommodate maintainability into the design of assets as appropriate.
- 4.3.2 In developing specifications for asset creation or acquisition, recommendations and maintenance functional requirements will be solicited from maintenance personnel, and incorporated into asset design specifications as appropriate.
- 4.3.3 Require of suppliers and contractors to provide maintenance manuals and training, where deemed necessary, on the maintenance of new immovable assets.

## 4.4 PREPARATION, MAINTENANCE AND UPDATING OF ASSET REGISTERS

Each entity shall establish, maintain and update asset registers supportive of asset care planning, in the following manner:

- 4.4.1 Segment and classify its immovable asset portfolio(s) to at least the level of maintenance-significant item in accordance with a predetermined asset hierarchy, and shall furthermore, for purposes of maintenance and renewals planning, determine and record the following information against each asset in its asset register:
  - a. asset identification number;
  - b. physical description;
  - c. physical parameters;
  - d. estimated useful life;
  - e. actual and minimum acceptable asset failure mode ratings (condition, performance, capacity and cost-of-operations);
  - f. remaining useful life;
  - g. current and depreciated replacement cost;
  - h. asset criticality rating;
  - i. any statutory obligations regarding the operation and maintenance of the asset; and
  - j. responsible person(s).

- 4.4.2 The entity shall, in maintaining and updating asset registers, update asset failure mode status and current replacement cost data for each asset on an annual basis.

## 5. MAINTENANCE OF THE VALUE VESTED IN IMMOVABLE ASSET PORTFOLIOS

Entities must sustain the required operating or productive capacity (ability to render services) through a combination of maintenance that ensures that assets reach their intended useful lives and capital renewal that entails expenditure on an existing asset to return the service potential, economic benefit or service life of the asset to that which it had originally. Renewals enable the entity to continue to provide asset-based services beyond the original useful lives of individual assets, and supports long term business continuity and a positive asset sustainability ratio.

### 5.1 BUDGETING FOR MAINTENANCE OF IMMOVABLE ASSET PORTFOLIOS

- 5.1.1 Each entity should make sufficient budget provision for the maintenance of its immovable assets as per its approved asset management plans throughout the life of assets, and shall furthermore undertake all reasonable effort to ensure full implementation of maintenance activities on an annual basis.
- 5.1.2 Further to 5.1.1 above, budgeting for asset maintenance shall be done on the basis of the demonstrated estimated current costs involved in achieving stated maintenance objectives. Budgeting shall not be based on historic budget provisions or some normative allocated percentage of the total operating budget.
- 5.1.3 In the event that insufficient budget is available for maintenance, or that such budget is not fully spent in a financial period, the entity shall record the amount of deferred maintenance in its annual financial statements, and shall furthermore:
- a. indicate the impact of insufficient spending on maintenance on the useful life expectations of assets; and
  - b. indicate whether the lack of spending on asset maintenance has affected business operations, commitments to customers and/or legislative requirements regarding the availability of asset-based services, and operating income projections.

### 5.2 INVESTMENT IN CAPITAL RENEWAL

- 5.2.1 Each entity should ensure that its investment in capital renewal over the cycle of its strategic plan as a minimum equals depreciation measured against current replacement cost over the same period, thus maintaining the value, service potential and/or economic benefit vested in its asset portfolio(s). To this end, the entity shall:
- a. establish asset consumption ratio and asset sustainability ratio targets for its immovable asset groups with due consideration to the relative age and renewal profile(s) of its immovable asset portfolio(s) as well as the financial capacity of the entity within the asset management strategy of the entity;
  - b. develop replacement/renewal profiles and plans for its immovable asset portfolio(s), include such in the asset management plan, strategic plan and long term financial plan of the entity;
  - c. make adequate provision for renewals in the medium term revenue and expenditure framework in line with the approved asset management plan(s); and
  - d. report performance against targets for asset sustainability and asset consumption in its annual financial statements.

- 5.2.2 Each entity shall, as part of the lifecycle plan of its asset management plan, develop a capital renewal plan for a rolling planning horizon reflective of the lifecycle of the asset portfolio(s), but not less than 10 years. This plan shall, at a minimum:
- a. document the extent, current replacement costs, depreciated replacement cost, accumulated depreciation, current condition and minimum acceptable condition of assets by asset type and of the asset portfolio in its totality;
  - b. present a renewals profile for assets based on current age or condition, as appropriate, and remaining useful life estimates;
  - c. project the future condition of assets based on current actual and planned levels of investment in asset renewal; develop a renewals plan by asset type, for similar components, or a combination of these approaches taking into account:
    - i. committed renewal projects;
    - ii. the balancing of entity's financial and implementation capacity, fiscal stability and asset requirements through period-smoothed renewals programmes; and
    - iii. opportunities for joint planning of renewal or upgrading of assets in other sectors (e.g. upgrading of water and sewer pipes during planned road renewal projects, thus avoiding unnecessary repeated breaking of road pavements); and
  - e. define and cost renewal programmes and projects over the planning period.

## 6. MAINTENANCE DELIVERY

Maintenance delivery involves the organisation and mobilisation of people, processes and other resources (e.g. vehicles, tools, spare parts and consumables) to ensure that maintenance regimes and plans are implemented in such a manner that assets remain safe for use and meet performance requirements in the most cost effective and efficient manner. To this end:

### 6.1 DESIGN, IMPLEMENTATION AND OPERATION OF A MAINTENANCE MANAGEMENT SYSTEM

6.1.1 Each entity shall design, implement and operate a maintenance management system suitable to the scale, complexity and criticality of the asset portfolio(s) under its control, which system shall comply with the requirements of the Standard for an Infrastructure Delivery Management System.

6.1.2 The maintenance management system shall enable:

- a. allocation of roles and responsibilities, inclusive of a system of delegation;
- b. development of standard work packages, inclusive of labour, material and equipment requirements for planned maintenance work;
- c. scheduling and tracking of maintenance activities, personnel and logistical support;
- d. management of inventories (capital loan-, rotating and replacement assets such as transformers, generators and pumps; and consumables);
- e. tracking of expenditure against budget, and costing of maintenance activities and outputs;
- f. management of supplier contracts, warranties and supplier activities related to maintenance work;
- g. safekeeping of asset schemata (e.g. building plans and as built drawings), operating and maintenance manuals, and other documents;
- h. maintenance staff to have access to documents described in (g) above to assist in planning for maintenance, and in undertaking maintenance activities; and
- i. measurement against stated asset care objectives and targets.

## 6.2 MANAGEMENT OF FACILITY OR SYSTEM SHUTDOWN EVENTS

- 6.2.1 Where maintenance involves facility or system shutdown events, either scheduled or unplanned, the entity shall develop documented procedures to manage such events in accordance with regulatory dictates, contractual obligations, customer accords and sector or industry best practices, taking into account the need to minimise service delivery impacts, impacts on assets as well as potential revenue losses.
- 6.2.2 The entity shall identify both internal and external parties affected by shutdown events, and shall develop suitable documented communication protocols aimed at demonstrating competence and instilling confidence in the sound management of such events, limiting adverse impacts on affected parties, managing the reputation of the entity and maintaining robust relationships with those parties affected.

## 7. INCIDENT RESPONSES

Responding to incidents requires the entity to both predict and appropriately respond to asset failures and non-asset incidents in an appropriate and systematic manner. "Appropriate and systematic" in this context includes incident prediction, detection and identification, development of appropriate documented standard responses inclusive of temporary and permanent repair procedures, insurance arrangements, access to and competence of response teams, communicating with affected parties, alternative supply arrangements whilst dealing with asset failures, site access and handback, reporting and updating of the asset management information system, post-response evaluation of such events and the handling thereof, and improvements to existing standard responses or development of new standard responses based on the findings of the post-response evaluation. To this end the entity shall:

### 7.1 DESIGN AND DOCUMENTATION OF INCIDENT RESPONSES

- 7.1.1 Design its incident responses to ensure service recovery and mitigation of adverse impacts within the time allowed in terms of legislation, or as per the entity's customer service charter or contractual obligations, whichever is the shortest period allowed.
- 7.1.2 The entity's approach to incident management shall be documented in its asset management strategy and responses to different types of incidents should be articulated in the asset management plan(s).
- 7.1.3 The approach to incident response shall be sensitive towards the criticality of different assets, facilities and systems, and the potential impact of different incidents on services and the strategic objectives of the entity.
- 7.1.4 Documented incident responses shall be communicated with all stakeholders, internal and external, involved in responding to incidents.
- 7.1.5 The entity shall take appropriate steps to ensure that specific incident management roles and responsibilities are allocated, that those responsible to respond to incidents have the necessary authority (such as to authorise emergency purchases or overtime pay) and access to resources, and are properly trained and qualified to deal with incidents.

### 7.2 POST INCIDENT EVALUATION

- 7.2.1 The entity shall, following every major incident, conduct an evaluation of the causes of the event, the effectiveness of the documented approach in dealing with the event, whether the documented approach has been followed, and of the effectiveness of the incident response itself. A "major" incident is any incident in breach of legal requirements, or one that exceeds the entity's materiality limit, or that exceeds the risk appetite of the entity to deal with through standard operating procedures.
- 7.2.2 Where deemed appropriate, the entity shall improve and update its response and standard procedures in dealing with responses of the nature investigated.

## 8. RISK MANAGEMENT

Assets and asset management is continually exposed to a wide range of asset and non-asset risks, several of which can be catastrophic for the entity and the community it serves should they realise and are not managed properly. This requires entities to understand the risks involved in the management and use of assets, the way in which assets can fail, the consequences should assets fail or other risks materialise, and to develop and implement appropriate risk treatment options in line with the severity of risk impacts, the entity's risk appetite, legal requirements, financial capacity and community expectations. To this end the entity shall:

- 8.1 Develop a framework for the management of risks related to immovable assets that is tailored to the extent, complexity, expected performance and criticality of assets, the range of non-asset risks involved in the care of immovable assets, the entity's materiality limit and risk appetite, and its corporate risk management framework.
- 8.2 Articulate the approach to risk management in the entity's asset management strategy.
- 8.3 Develop and implement standardised decision-making tools and processes for the identification, assessment and treatment of risks.
- 8.4 Assess asset criticality using a standardised impact rating scale and record criticality ratings against assets in the entity's asset register.
- 8.5 Monitor the status of failure modes in line with a documented updating plan, and record in the entity's asset register.
- 8.6 Develop appropriate risk treatment options in the entity's asset management plan(s), and update and maintain the risk register with details on risks, affected assets, risk controls, risk owner, costs involved, and reporting and review dates.

## 9. ASSET RATIONALISATION AND PORTFOLIO-LEVEL OPTIMISATION

Assets should meaningfully contribute towards service delivery, revenue generation or should serve some defined strategic objective of the entity (e.g. to strengthen the investment portfolio of the entity, bolster strategic redundancy or serve a culturally significant purpose) in a manner that is cost effective, safe to both operators of assets and the environment, and that is energy and water efficient. Where this is not the case, assets consume scarce and valuable financial, administrative and technical resources and capacity that could otherwise have been applied to improve the care and management of assets that best support the objectives of the entity. For this reason the entity shall continually strive to rationalise and optimise its immovable asset portfolio(s). To this end the entity shall:

- 9.1.1 Periodically, but at intervals not exceeding three (3) years, assess its immovable asset portfolio(s) and seek opportunities for optimisation of its asset portfolio(s). The asset rationalisation scan shall identify, amongst other, the following triggers as appropriate to various assets and asset groups:
  - a. changes to either levels of service, standards of service or both, causing assets to be unsuitable for requirements;
  - b. changes in the demand for asset-based services, in terms of the volume of demand, location of demand or demand substitution;
  - c. as regards engineering networks, outcomes of engineering master planning exercises recommending network reconfiguration to improve efficiencies (e.g. water reticulation network optimisation that results in improved energy efficiency causing some pump stations to be redundant);
  - d. as regards buildings, outcomes of urban precinct planning, space planning or building accessibility analysis indicating the need for relocation, centralisation or decentralisation, space reconfiguration, space rationalisation, expansion or optimisation, or a combination of these;
  - e. outcomes of environmental impact assessments indicating that assets do not meet environmental safety standards;

- f. opportunities offered by new technology or product availability;
- g. indications that it would be cost effective to undertake green retrofitting as a result of the energy and/or water savings to be realised;
- h. alternative demand or use for the asset(s) e.g. rental or sale to the private sector, where the asset(s) are not essential for service delivery;
- i. technological obsolescence;
- j. assets nearing the end of their economic life, beyond which they would be uneconomical to maintain and/or repair; and
- k. changes to legislation resulting in the asset(s) being unsuitable for use.

9.1.2 In assessing the scope for asset rationalisation and planning for asset portfolio-level optimisation, the entity shall:

- a. ensure that essential service delivery capacity is maintained;
- b. give due consideration to the need to maintain strategic redundancy;
- c. plan for the manner of rationalisation, whether through decommissioning or disposal; and
- d. shall document its proposed asset decommissioning and disposal activities in the lifecycle plan of the asset management plan(s) and budget accordingly in the medium term revenue and expenditure framework where there are projected financial impacts (either revenue to be earned or expenditure to be incurred).

## 10. MANAGEMENT REVIEW, AUDIT AND ASSURANCE

Audits provide assurance that this Standard as well as internal processes developed to give effect to this Standard are adhered to, whilst structured management reviews provide the opportunity to assess asset management objectives, actual performance, processes and systems for continued relevance and opportunities in refining and improving on these. To this end the entity shall:

10.1 Include the scope of this Standard and adherence to it in the scope of its internal audit.

10.2 Conduct regular management reviews to assess asset management objectives, actual performance, processes, planning and control mechanisms and asset management system to identify continued relevance and opportunities for improvement considering changes to the entity's strategy, the external environment, legislation, developments in best practice, and asset technologies. The approach to management reviews shall be documented in the asset management strategy and be aligned to the National Immovable Asset Maintenance Management Protocol:

- a. management reviews shall be properly planned and shall cover the full scope of this Standard;
- b. management reviews shall be undertaken by a competent asset management practitioner with appropriate resources and with full support from the accounting officer;
- c. in undertaking management reviews, the management review team shall have unencumbered access to all pertinent documents (e.g. asset management strategy, asset management plan(s), asset register, risk register, relevant policies and procedure documents, contract documentation with both clients and suppliers, incident reports, asset structural and safety reports, audit reports etc.) and may also interview all staff, suppliers and clients as necessary to enable a comprehensive and balanced management review;
- d. the management review shall identify any shortcomings or opportunities for improvement as measured against both this Standard and the entity's asset management strategy and policy, and shall where this is not the case propose an asset management practices improvement plan;
- e. the asset management practices improvement plan shall stipulate detailed work plans for individual improvement projects, inclusive of resources required, estimated costs and suitable timeframes, as well as expected benefits of implementing the proposed improvements;
- f. the management review team leader shall present the asset management practices improvement plan to the accounting officer for approval; and
- g. management reviews shall be conducted at regular intervals of no longer than three (3) years, or more often instructed by the accounting officer or when one of the triggers identified above manifests itself (e.g. changes in entity strategy, the external environment or legislation).

**PART C:**  
**ENABLING REQUIREMENTS**



## 11. ASSET DATA AND KNOWLEDGE

Asset data and knowledge are key enablers in predicting future asset performance, condition, capacity and cost of operation, and in planning for appropriate asset management responses. As such asset data and knowledge also constitute organisational assets that should be improved upon, expanded and mined for sound and informed decision-making. To this end the entity shall:

### 11.1 DETERMINE ASSET DATA AND KNOWLEDGE NEEDS AND DEVELOP DATA CONVENTIONS

11.1.1 Analyse asset care objectives, legal requirements, and the nature and characteristics of the asset portfolio(s) under the control of the entity (e.g. the requirement to establish, maintain and update immovable asset registers that are componentised to a level necessary for the management of assets) and determine asset data and knowledge needs.

11.1.2 Establish suitable documented data conventions to ensure consistent collation, processing, analysis and presentation of asset data across asset groups and asset types, inclusive of at least:

- a. an asset data model that contains an asset hierarchy with associated units of measurement, asset coding conventions, expected useful life expectations and current replacement cost recorded at the asset component level;
- b. generic entity-level models for asset failure modes, further applied to asset types;
- c. asset criticality grading conventions; and
- d. structure of the asset register.

11.1.3 Each entity shall design specific long range initiatives aimed at furthering knowledge about long term asset failure mode behaviour, and document such with the intention of improving understanding of risk and failure, and to improve lifecycle efforts.

11.1.4 The entity shall furthermore design processes and mechanisms for ensuring that asset data and knowledge are institutionalised, disseminated, applied in decision-making, budgeting and improved over time.

### 11.2 ASSESSMENT OF ASSET DATA AND KNOWLEDGE

11.2.1 Upon implementation of this Standard, and periodically thereafter at intervals not exceeding three (3) years, each entity shall take stock of its asset data and knowledge and shall:

- a. assess such data for relevance, currency, clarity, completeness, accuracy, consistency and integrity; and
- b. determine whether asset data and knowledge is sufficient to support robust strategic asset management decision-making and operating activities.

11.2.2 In the event that the asset rationalisation and management review do not coincide, the assessment of asset data and knowledge review shall be undertaken following the outcomes after each rationalisation review and management review.

11.2.3 In the event that data is found to be lacking (e.g. incomplete, outdated or unstructured), the entity shall develop a data improvement plan and assign a responsible person, resources and suitable timeframe for data improvement.

## 12. ROLES AND RESPONSIBILITIES

Many entities are asset-rich organisations that depend heavily on immovable assets for service delivery and to generate revenues, and so do the economy and citizens of South Africa (and in some cases neighbouring countries).

These assets, when properly managed, confer vast benefits upon entities and the ultimate recipients of services enabled by these assets. Most people in these entities are in some way engaged with those assets, whether to plan for, acquire, operate, maintain,

upgrade, renew or replace, or to decommission or dispose of assets. This can be through direct interaction with assets, or through supporting functions such as accounting for assets. Additionally, the lion's share of capital budgets are allocated towards immovable asset creation, upgrading, expansion or renewal, and likewise the largest chunk of operating budgets are allocated to staff involved in asset operation and maintenance, and towards those activities.

Asset management, which encompasses not only maintenance and renewal, is therefore not just about whole cost or whole lifecycle management of assets – it's a way of thinking and of doing business for asset-reliant entities. And whilst it's about assets and the services they perform, the process starts and ends with people, what they need from assets, and how they plan for, utilise and treat assets. Entities that are effective in asset management realise this, view themselves as asset management entities, allocate asset management roles and responsibilities from executive/senior management levels to front line staff as well as across functional disciplines (e.g. engineering, financial and accounting, management and other disciplines) in the entity, and aim to establish an enabling asset management culture that permeates the whole entity.

Such entities also clearly identify not only roles and responsibilities within the entity, but also specifically determine the functions that will be performed by the entity itself and those functions that are to be outsourced – and then implement suitable outsourcing strategies. To this end, the entity shall:

12.1.1 Clearly determine which maintenance and renewal activities should be outsourced, and which activities should be performed internally, and then establish and maintain sound supply chain management arrangements that support the asset management objectives of the entity and in compliance with relevant supply chain management legislation. The following shall be considered in making and implementing outsourcing decisions:

- a. the importance of asset management activities in relation to stated asset management objectives, extent of work involved, the in-house availability of competent staff and/or the ability of the entity to readily develop or recruit competent staff, management system and maintenance tooling requirements, and management overheads;
- b. establishing measurable objectives for suppliers;
- c. specifying and developing procurement requirements, effective contracts and service level agreements that correspond with maintenance objectives and targets for specific assets according to the dictates of asset management strategy and plans, committed service agreements between the entity and its customers, legislative requirements on the availability of assets, and the criticality of assets – specific attention should also be given to the structure and bundling or unbundling of contracts in a manner that supports the strategic objectives of the entity without over-burdening its administrative systems (e.g. geographic bundling to achieve economies of scale, functional bundling to develop high levels of competence and quality, e.g. bundling of mechanical works, and other factors, such as creating employment opportunities); and
- d. developing relevant performance indicators and in-house monitoring capacity to assess supplier performance and manage supplier contracts to ensure achievement of maintenance objectives and targets, and to minimise the transfer of risk from suppliers to the entity.

In the context of this standard, "supplier" refers to any external entity or party that performs an asset management function on behalf of the entity, whether an organ of state, a private sector concern, a non-governmental entity, or a natural person that is not an employee of the entity.

12.1.2 Define appropriate organisational arrangements to give asset management practitioners sufficient authority and scope of control to effectively implement the maintenance management system, and assign and communicate such roles, functions, accountability and responsibility to specific approved positions and the incumbents of those positions. This includes:

- a. the establishment of an entity structure, job descriptions and skills profiles at all levels and functional disciplines in the entity, and the inclusion of asset management, inclusive of asset care, performance targets in job descriptions and employee contracts as appropriate;
- b. recruitment of competent staff and/or development of competencies of existing staff, and ongoing staff development; and

- c. allocation of accountability to specific positions and persons, coupled with delegation of authority as appropriate to enable responsible positions and persons to meaningfully fulfil their assigned functions.

12.1.3 Develop a culture of asset management learning and foster a spirit of continuous improvement in asset management practices, including:

- a. establish systems and processes to continuously monitor and assess developments in legislation and best practices relating to asset management in general and maintenance management in specific, and establish systems and processes to assess the entity's structure, competence requirements, business processes and asset management planning, implementation and control instruments for continued relevance and opportunities for improvement, and plan for and implement accordingly;
- b. establish systems and processes to support and incentivise effective asset management work performance, behaviour and contributions to the development and enhancement of best practice; and
- c. establish asset management career paths.

## 13. COMPETENT ASSET CARE STAFF

The country's wealth vested in immovable assets is measured in trillions of Rand. These assets underpin and enable the functioning of society and of the economy, and improvements in livelihood and standards of living. The extent to which value is derived from these assets, and the risks and costs associated with immovable assets are mitigated or minimised, is a function of the competence of asset care professionals. To this end, [*subject to the development and implementation of the National Immovable Asset Maintenance Management Competency Standard*] each entity shall:

- 13.1 Appoint persons in asset care positions that are competent, as measured against the National Immovable Asset Management Maintenance Competency Standard.
- 13.2 Retrain and/or educate, and take reasonable actions to enable staff appointed, prior to commencement of the National Immovable Asset Management Maintenance Competency Standard, to be competent asset care professionals.
- 13.3 When requesting tenders and quotations involving asset care services or activities, require proof of competence of professionals against the National Immovable Asset Management Maintenance Competency Standard.

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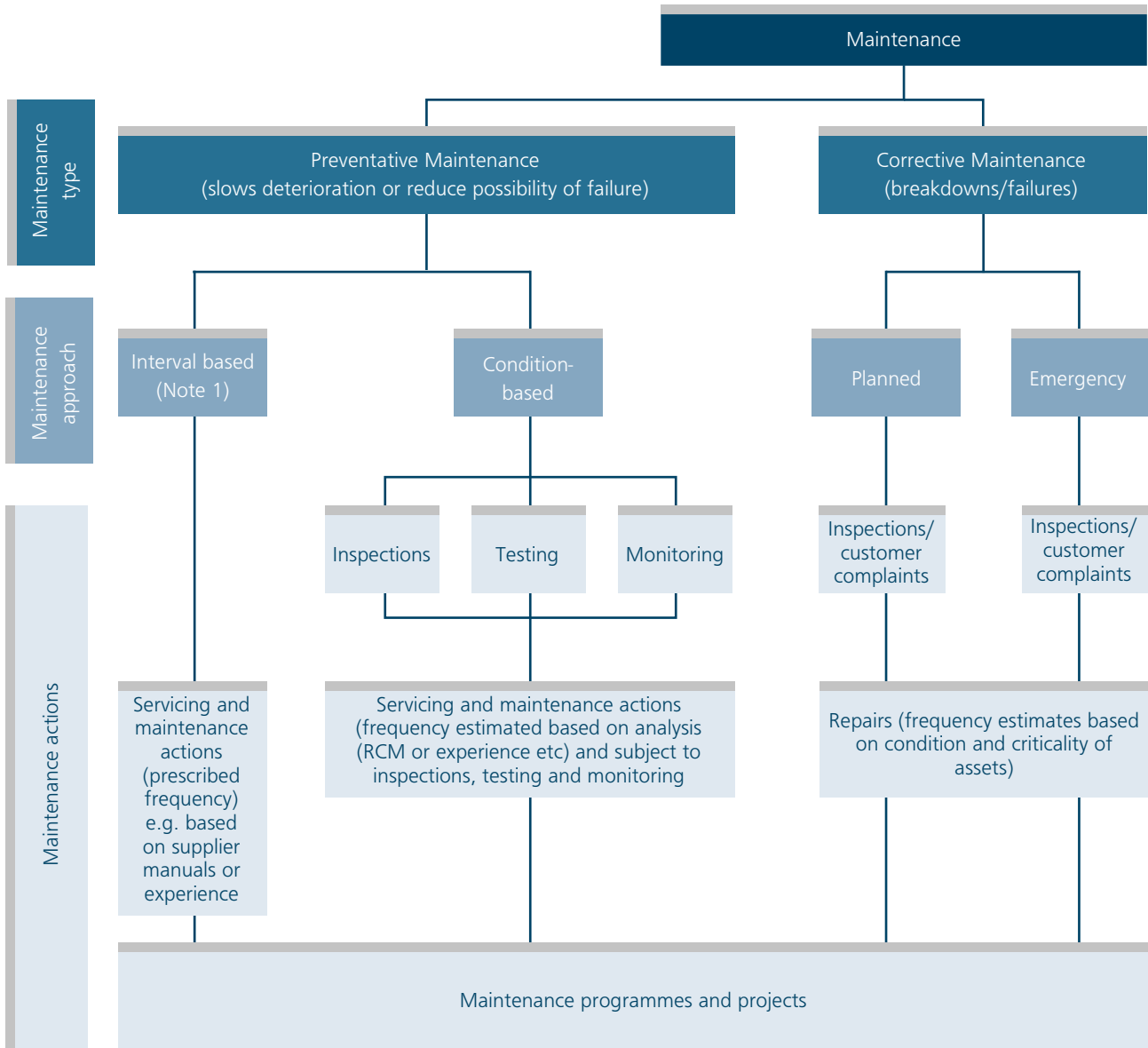
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# ANNEXURES

## ANNEXURE A: MAINTENANCE HIERARCHY



Note 1 (interval-based preventative maintenance):

Normally referred to as “time-based” preventative maintenance, but could also be based on number of machine hours, number of outages, machine start-and-stop events etc. indicating that maintenance is required to prevent corrective maintenance and keep the asset in working condition.







A construction worker in a blue uniform and safety harness is seen from behind, working on a complex wooden scaffolding structure. The scene is bathed in a warm, orange light, suggesting a sunset or sunrise. The scaffolding is made of numerous vertical and horizontal wooden poles, creating a dense grid. In the background, the faint outlines of a building under construction are visible. The overall composition is dynamic, with strong geometric lines from the scaffolding.

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