



ISLE OF HOUGHTON (IOH)

MAINTENANCE PLAN 2024



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Project: **Isle of Houghton (IOH) visual condition assessment and 10-year maintenance plan for the Wits Health Consortium (WHC)**

Document name: **Maintenance plan for IOH Office Park, Parktown**

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ACRONYMS

AM	Asset management
AMS	Asset management system
CFO	Chief financial officer
CIDB	Construction Industry Development Board
CoC	Certificate of Compliance
CRC	Current replacement cost
CRM	Customer relations management system
DRC	Depreciated replacement cost
EUL	Expected useful life
FAR	Financial asset register
GRAP	Generally Recognised Accounting Practice
ISO	International Standards Organisation
Kl	Kilolitres
m ²	Square metres
m ³	Cubic metres
MKPA	Maintenance key performance areas
MTREF	Medium Term Revenue Expenditure Framework
NERSA	The National Energy Regulator
NFPA	National Fire Protection Association
NIAMM	National immovable asset maintenance management
No.	Number
NRS	National regulator standard
OHS	Occupational health and safety
%	Percent
PFMA	Public Finance Management Act
POC	Permission to Occupy Certificate
PPE	Property plant and equipment
R	Rand
R&M	Repairs and maintenance
RUL	Remaining useful life
RV	Residual value
SANS	South African National Standard

CIDB GRADINGS

CE	Civil engineering
EB	Electrical engineering works - Building
EP	Electrical engineering works - Infrastructure
GB	General building works
ME	Mechanical engineering works
SB	Asphalt (extension, installation, repair, maintenance or renewal, or removal)
SC	Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)
SD	Corrosion protection systems (cathodic, anodic, and electrolytic) (development, extension, installation, repair, renewal, removal or alteration)
SE	Demolition of buildings and engineering infrastructure and blasting
SF	Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)
SG	Glazing, curtain walls and shop fronts (development, extension, installation, renewal, removal, renovation, alteration or dismantling)
SH	Landscaping, irrigation and horticulture works (development, extension, installation, maintenance, renewal, removal, renovation, alteration or dismantling)
SI	Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)
SJ	Piles and other specialized foundations for buildings and structures (development, installation, removal or dismantling)
SK	Road markings and signage (installation, renewal, removal, alteration or dismantling)
SL	Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)
SM	Timber buildings and structures
SN	Waterproofing of basements, roofs and walls using specialist systems (extension, installation, repair, maintenance, renewal, removal, renovation or alteration)
SO	Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)
SQ	Steel and precast concrete palisade fencing, wire netting fences supported on metal droppers and standards or metal posts and stays or steel sheet fences and precast concrete walls (development of fences)

KEY TERMS

The following definitions used in this document are key terms normally encountered within the workplace:

Asset

A resource owned or controlled by an entity because of past events and from which future economic benefits or service potential is expected to flow to the entity.

Asset hierarchy

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.

Asset life

Period from asset creation to asset end of life.

Asset management

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.

Asset management practices

The asset management processes and techniques that an entity undertakes, such as demand forecasting, developing and monitoring levels of service and risk management.

Asset management strategy

The high-level, long-term approach to asset management including asset management action plans and objectives for managing the assets.

Asset register

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.

Note: The unit of account in an asset register is a component (see definition of a component).

Asset type

Grouping of assets having common characteristics that distinguish those assets as a group or class.

Attribute data

Data in tabular format (rows and columns).

Capital expenditure (CAPEX)

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.

Capital upgrading

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.

Cash flow

The stream of costs and / or benefits over time resulting from a project investment or ownership of an asset.

Component

A component ^(Note 1) is a specific part of a complex item ^(Note 2) that has independent physical or functional identity and specific attributes such as different life expectancy, maintenance and renewal requirements and regimes, risk or criticality.

Note 1: 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.

Note 2: A complex item is one that can be disaggregated into significant components. Infrastructure and buildings are considered complex items.

Condition

The physical state of the asset.

Condition assessment or condition monitoring

The inspection, assessment, measurement and interpretation of the resultant data, to indicate the

condition of a specific component to determine the need for some preventive or remedial action.

Corrective maintenance

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.

Critical assets

Those assets that are likely to result in a more significant financial, environmental and social cost in terms of their impact on organisational objectives and service delivery.

Current replacement cost

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.

Decommissioning

Actions required to take an asset out of service.

Defect

Non-conformity of a part or component of the works to a requirement specified in terms of a contract.

Deferred maintenance

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.

Derecognition

To remove a previously recognised financial asset or liability from an entity's balance sheet, especially when it reaches end of life or when it is sold to a third party.

Disposal

Actions necessary to decommission and dispose of assets that are no longer required.

Economic life

The period from acquiring 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.

Facility

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.

Failure modes

Ways in which an asset can fail in relation to required levels and standards of service that trigger asset management planning and potentially investment decision making:

- Capacity;
- Condition;
- Cost of operation; and
- Performance.

Failure modes, effects and criticality analysis

A systematic, logical risk-based maintenance approach aimed at maximising the reliability of plant and equipment assets.

Impact

Impacts are effects that either positively contribute to an outcome or strategic objective, such as increased revenue, or that reduce risks such as environmental disasters, workplace injuries, loss of property, or damage to the reputation or image of the organisation.

Impairment

The loss of future economic benefits or service potential of an asset over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation.

Impairment loss

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.

Incident

Unplanned event or occurrence resulting in damage or other loss.

Indicators (in multi-criteria analysis)

The criteria used to measure a broad range (e.g. financial, economic, social and environmental) outcomes of a project in a multi-criteria analysis.

Infrastructure assets

Stationary systems forming a network and serving whole communities, where the system is intended to be maintained indefinitely at a level of service potential by the continuing replacement and refurbishment of its components.

Infrastructure delivery

The combination of all planning, technical, administrative and managerial actions associated with the construction, supply, refurbishment, rehabilitation, alteration, maintenance, operation or disposal of infrastructure.

Infrastructure procurement

The procurement of goods or services including any combination thereof associated with the acquisition, refurbishment, rehabilitation, alteration, maintenance, operation or disposal of infrastructure

Investment costs

The initial capital investment plus any intermittent capital expenditure required to achieve the project outcomes.

Key performance indicator

Set of quantifiable measures that an industry uses to gauge or compare performance in terms of meeting strategic and operational goals.

Level of service

Levels of service statements describe the outputs or objectives an entity intends to deliver to customers.

Life

A measure of the anticipated life of an asset or component, such as time, number of cycles, distance

intervals etc. over which benefits are derived from the use or availability of an asset.

Life cycle

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.

Life cycle asset management

Encompasses all asset management strategies and practices associated with an asset or group of assets that result in the lowest life cycle cost necessary to achieve stated service requirements within acceptable risk parameters.

Life cycle cost

The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, renewal and disposal costs.

Maintenance

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.

Note: 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.

Maintenance of capital

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.

Maintenance expenditure

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.

Maintenance plan

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.

Maintenance objectives

Objectives for what maintenance must 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.

Maintenance standards

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.

Maintenance strategy

Interprets higher-order documents and formulates maintenance objectives and targets, establishes maintenance tactics, and defines maintenance roles and responsibilities.

Modern equivalent asset

The most cost-efficient asset currently available, which will provide equivalent functionality to the asset that will be replaced (or is currently being valued using the DRC methodology).

Objective

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.

Obsolescence

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.

Operating expenditure

OPEX is recurrent expenditure to provide services. Examples of OPEX include staff costs, administration costs, consumables, maintenance and repairs and feasibility studies.

Operation

Combination of all technical, administrative and managerial actions, other than maintenance actions, that results in the item being in use.

Opportunity cost

The cost of cash flows that could have been earned in the best alternative investment opportunity.

Optimised decision making

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.
- (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.

Outline specifications

Preliminary set of specifications (generated during the early phases of a design process) on which detailed specifications are based.

Package

Work which is grouped together for delivery under a single contract or an order.

Performance

Measurable result of either a quantitative or qualitative nature that can relate to the management of activities, processes, products or services, systems or entities.

Performance measure

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.

Performance monitoring

Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.

Portfolio

To be read in context, as follows:

- (1) Asset portfolio: A grouping of assets to deliver a range of services association with a function. Examples of asset portfolios include water and sanitation, roads and storm water, electricity distribution, solid waste, information and communications technology, social amenities and investment properties.
- (2) In relation to infrastructure procurement and delivery management: a collection of projects or programs and other work that are grouped together to facilitate effective management of that work to meet a strategic objective.

Predictive action

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.

Preventative action

Action to eliminate the cause of a potential nonconformity or other undesirable potential situation.

Preventative maintenance

Maintenance carried out at predetermined 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.

Process

Set of interrelated or interacting activities, which transforms inputs into outputs.

Program

The grouping of a set of related projects to deliver outcomes and benefits related to strategic objectives

which would not have been achieved had the projects been managed independently.

Project

A project can be defined as:

- (1) a unique set of coordinated and controlled processes and activities;
- (2) undertaken to achieve a specific objective(s) according to specifications;
- (3) within a defined timeframe (start and end dates);
- (4) that consume resources (e.g. funds, labour, materials and equipment); and
- (5) is confined by a control budget.

Quality

Totality of features and characteristics of a product or service that bears on the ability of the product or service to satisfy stated or implied needs.

Reliability-centred maintenance

A process for optimising maintenance based on the reliability characteristics of the asset.

Remaining useful life

The time remaining until an asset ceases to provide the required service level or economic usefulness.

Renewal

Expenditure on an existing asset that returns the service potential of the asset or expected useful life of the asset to that which it had originally.

Note 1: Renewal can include works to replace existing assets or facilities with assets or facilities of equivalent capacity or performance capability.

Note 2: Expenditure on renewals is funded through the entity's capital budget, and such expenditure is recognised in the entity's Statement of Financial Position.

Repair

Physical action taken to restore the required function of a faulty item.

Risk

The effect of uncertainty on objectives. Risk events are events that may compromise the delivery of the entity's strategic objectives.

Risk controls

Measures to manage or mitigate identified risks.

Risk exposure

The level of risk to which an entity is exposed. Risk exposure is a function of the probability of an occurrence times the impact of that occurrence.

Risk management

The application of a formal process that identifies the exposure of an entity to service performance risk and determines appropriate responses.

Risk register

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.

Routine maintenance

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.

Stage

A collection of logically related activities in the infrastructure delivery cycle that culminates in the completion of a major deliverable.

Statutory permission

Any relevant approval, consent or permission in terms of any legislation required to plan and deliver the infrastructure.

Unplanned maintenance

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.

Upgrading

The replacement of an asset or addition / replacement of an asset component, which materially improves the original service potential of the asset.

Useful life

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.

Valuation

Estimated asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels or market value for life cycle costing.

1. PURPOSE AND SCOPE OF THE DOCUMENT

1.1. Purpose

The Wits Health Consortium (WHC) recently registered the remainder of erf 2477 of Houghton Estate in Parktown, Johannesburg (known as the Isle of Houghton (IOH) Office Park), in their name whilst the WHC itself, is a private company established by the WITS University as a Pty Ltd through the provisions of the Public Finance Management Act (Act 1 of 1999), also known as the PFMA and its schedules. The WHC commissioned this project during Jan 2024 to undertake the condition assessment for maintenance work requirements to the infrastructure assets at IOH, to scope the results of this assessment into the required trade services' work packages of maintenance needs and to undertake maintenance related work planning to scope and estimate the cost for the implementation of the maintenance work on infrastructure assets existing on the IOH Office Park facility.

Maintenance includes 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. Asset renewal should be dealt with in the WHC User Asset Management Plan (uAMP) once developed.

Overall, the Asset Management Policy, once developed and adopted, should provide the direction with asset management of WHC assets and specifically for investment property, the service performance standards and service commitments, must be set out in the WHC rental agreements with tenants whilst space planning norms and standards for office accommodation used by organs of state requirements, are provided for in the Department of Public Works' norms for public office buildings regulations as well as the South African National Standard dealing with the community protection against fire standard (SANS 10090:2003, Edition 3). Collectively, these documents provide the framework for the establishment of investment property buildings asset maintenance objectives. It is also informed by the best practice maintenance and asset management requirements established in terms of:

- the SANS 550001: Asset Management: Requirements for an Asset Management System; and
- the National Immovable Asset Maintenance Management (NIAMM) standard and framework of the Department of Public Works and the Construction Industry Development Board (cidb).

The relationship of this maintenance plan with other key documents in WHC, is described in **Section 1.5** below.

1.2. Introduction and objective

The WHC intends to take significant action to improve the management of infrastructure assets as part of its investment property portfolio, in this case with the Isle of Houghton (IOH) Office Park as from 1 April 2024. The initiative includes compiling an asset register for insurance purposes from site assessment forms completed by recording and measuring the extent of asset components, then by extracting quantities for all trades involved as the scope of maintenance backlog work also known as the condition or technical backlog, pricing a bill of materials (BOM) priced per trade service (linked to the cidb Contractor Grading System) for the technical backlog to be addressed and estimating an annual maintenance budget requirement.

This maintenance plan then focuses on the reactive and preventative annual maintenance strategies, tactics and actions of the investment property asset portfolio, on the Isle of Houghton (IOH) Office Park facility of the Wits Health Consortium (WHC) as derived from a componentised asset register.

The plan has been prepared to support the achievement of the strategic goals of the WHC and to facilitate prudent technical and financial decision-making. As part of the process, a fully componentised asset register has been prepared that supports the WHC's insurance value of infrastructure. The plan also demonstrates to funding agents and other stakeholders, WHC's ability to effectively manage its infrastructure. The maintenance plan will be updated, extended and improved upon in future versions as part of the WHC's commitment to a service driven culture and the pursuit of continuous improvement in service delivery.

1.3. Overview of WHC within the context of the Isle of Houghton (IOH) Office Park

In general, WHC's should be geared to build and maintain a property portfolio that can:

- Generate income;
- Help to achieve organisational sustainability; and
- Facilitate employment creation.

To this end, WHC need to expertly assist in developing or purchasing land or property, upgrading property, leasing, maintaining and turnkey management solutions. As secondary objective, WHC should strive to prove that property development and management can yield sustainable good and significant growth. Ultimately, WHC should attempt to create an environment within which rentals are fair, landlords are welcoming and teams can be respected.

1.4. Scope of this plan

The scope of this maintenance plan includes the following:

- The profiling of the investment property asset portfolio in terms of extent, replacement value, value consumed, remaining useful life and maintenance needs;
- Identification of key investment property service legislative requirements and customer commitments;
- The establishment of maintenance objectives based on legislative and customer services requirements, inclusive of a supporting maintenance metrics and performance measures;
- Asset risk profiling;
- Maintenance needs assessment of infrastructure assets at investment properties, including the production of reactive maintenance requirements (or backlog maintenance requirements); and
- Capturing the outputs of the above in the Isle of Houghton maintenance plan and presentation of results to the WHC.

Note that the above excludes the following:

- Property and facilities privately owned or owned by parties other than WHC; and
- Any improvements and additional infrastructure or fixed equipment installed by tenants at their own cost on or in WHC - owned facilities, specifically mechanical and petro-chemical plant.

1.5. Relationship with other policy, planning and control instruments and documents

As noted, this document should be aligned with WHC's user asset management plan (uAMP) and the Asset Management Policy once developed and adopted. In turn, it should inform WHC's Medium-Term Revenue and Expenditure Framework (MTREF).

The Asset Management Policy, in general, should state as follows under the heading of repair and maintenance of assets for example:

- All plant and equipment should be maintained in good working order by care and servicing as recommended in manufacturer's manuals or original equipment manufacturers (OEM's). The most efficient repair and maintenance strategy needs to be established and adopted;
- An operation and maintenance plan establishing responsibility and standards for the level of use, condition, servicing and performance, should be developed for bulk infrastructure;
- All staff of the WHC must handle the assets with care to prevent unnecessary damages. Any official who fails to prevent damage to assets by exercising reasonable care, when he or she should have done so, may be held responsible for the damage to that asset;
- All staff of WHC are responsible for reporting damages to assets to the WHC Head: Property, Facilities & Fleet Management immediately;
- All maintenance and repairs to assets must be assessed and where such maintenance or repairs increase the efficiency or lifespan of the assets, the cost must be capitalised as envisaged in the asset accounting policy;
- The Property, Facilities & Fleet Management division or department must ensure that the buildings of WHC are well maintained and in accordance with the Supply Chain Management (SCM) Policy; and
- The WHC Information Technology (IT) division or department must ensure that the telecommunications systems of the IOH Office Park facility, are well maintained in line with the SCM Policy and with the State Information Technology Agency (SITA); and
- Any asset that is found and certified to be irreparable must be referred to the WHC Head: Property, Facilities & Fleet Management for proper derecognition from the asset register as foreseen by the asset accounting policy and then disposed through a formal disposal procedure enacted by a Disposal Committee.

Additionally, this maintenance plan should be aligned with WHC's:

- Rental agreements with tenants with respect to investment property buildings service commitments;
- The corporate risk management framework with respect to the assessment of probability and consequence in calculating risk exposure, adjusted as proposed in the National Immovable Asset Maintenance Management (NIAMM) planning guidelines for the longer lives and extreme consequences often associated with immovable assets; and
- Current MTREF allocations for maintenance.

In turn, this maintenance plan provides:

- Detailed budget allocations for dealing with the maintenance backlog requirements of investment property buildings infrastructure to improve budgeting in the medium term;
- An indication of annual maintenance requirements of property plant and equipment infrastructure to improve budgeting in the longer-term estimates; and
- The start of a detailed maintenance metrics and performance standards for inclusion in WHC's performance management system.

1.6. Relationship between maintenance and asset management

Maintenance and renewal are asset care activities within the asset lifecycle, amongst other activities such as asset planning, creation, operation, upgrading and disposal. Asset management is the practice concerned with whole-of-lifecycle management of assets to meet stated asset management objectives. Maintenance objectives and priorities originate from an entity's asset management strategy and plan(s). If the entity has only one asset portfolio (e.g. investment property infrastructure), then the asset management strategy and plan will typically be contained in the entity's strategic asset management plan (SAMP).

2. ASSET INTELLIGENCE FOR IMPROVED MAINTENANCE

2.1. Key maintenance objectives relating to asset knowledge

To maintain assets, it is necessary to have intelligence on the nature, scope, extent and location of assets, their key attributes, statutory requirements related to asset care and current condition. Key maintenance objectives related to asset knowledge include the following:

- Establishing a fully componentised asset register to the level of maintenance significant item and valuing assets using the depreciated replacement cost method;
- Establishing the condition of assets; and
- Assigning a criticality rating to each asset.

These concepts are described in **Sections 2.2 to 2.4** below, where after the asset facility overview is provided.

2.2. Locality and layout

The WHC IOH Office Park is bordered by Carse O’Gowrie Road on its northern boundary, Boundary Road on its western boundary and Houghton Drive on its southern as well as its eastern boundaries within Parktown, Johannesburg situated in the Gauteng Province. The WHC investment property asset portfolio within the IOH Office Park comprises three distinct building complexes known as the Harrow Court buildings complex consisting of Block 1, 2 and 3, the Old Trafford buildings complex consisting of Block A, B, C and D, the Wilds View buildings complex consisting of Block A and B with the parking garage building, the heritage house building, the security gate house building and common assets, completing the IOH Office Park facility with a perimeter of approximately 1 100 metre.

According to the GIS of the City of Johannesburg (CoJ), the IOH Office Park, is situated within Region F of the City on remainder of erf 2477 of Houghton Estate, Parktown and an erf size of 37 010 m² with a zoning classification of “Business 4”. The CoJ also lists the property as in number 14 Boundary Road whilst the WHC, in general, uses number 36 Boundary Road as the physical address which is not a conflict since geographical systems shows number 14 Boundary Road as a historical entrance within Boundary Road closer to Carse O’Gowrie Road at the bottom of the property with number 36 Boundary Road showing as the entrance to the property at the top end within Boundary Road where the access to the College (or school) is situated within Block A of Wilds View.

The IOH Office Park consists of the following buildings, with an approximate total footprint area of 28 563m² and covering about 54 932m² of floor area. Whilst the naming of “blocks” and “buildings” or “1 to 4” and “A, B, C and D” are used interchangeably, the sections below will move closer to the terminology commonly used on-site or between WHC staff after it was brought more in-line with the drawings and plans:

- Harrow Court buildings 1 to 3;
- Old Trafford buildings 1 to 4;
- Wilds View buildings 1 and 2; and
- parking garage building, a heritage house and a gate house.

The WHC requested invited companies to provide a quotation to undertake a detailed condition assessment and to prepare a maintenance plan for the services and facilities on the IOH Office Park now that the facility was procured and they are the owners responsible for the maintenance and management. The detailed condition assessment and ten years maintenance plan are required for insurance values, maintenance and replacement planning and budgeting

with the intention to guide and enable the facilities management team to manage the immovable infrastructure assets and to keep the life expectancy of the buildings intact.

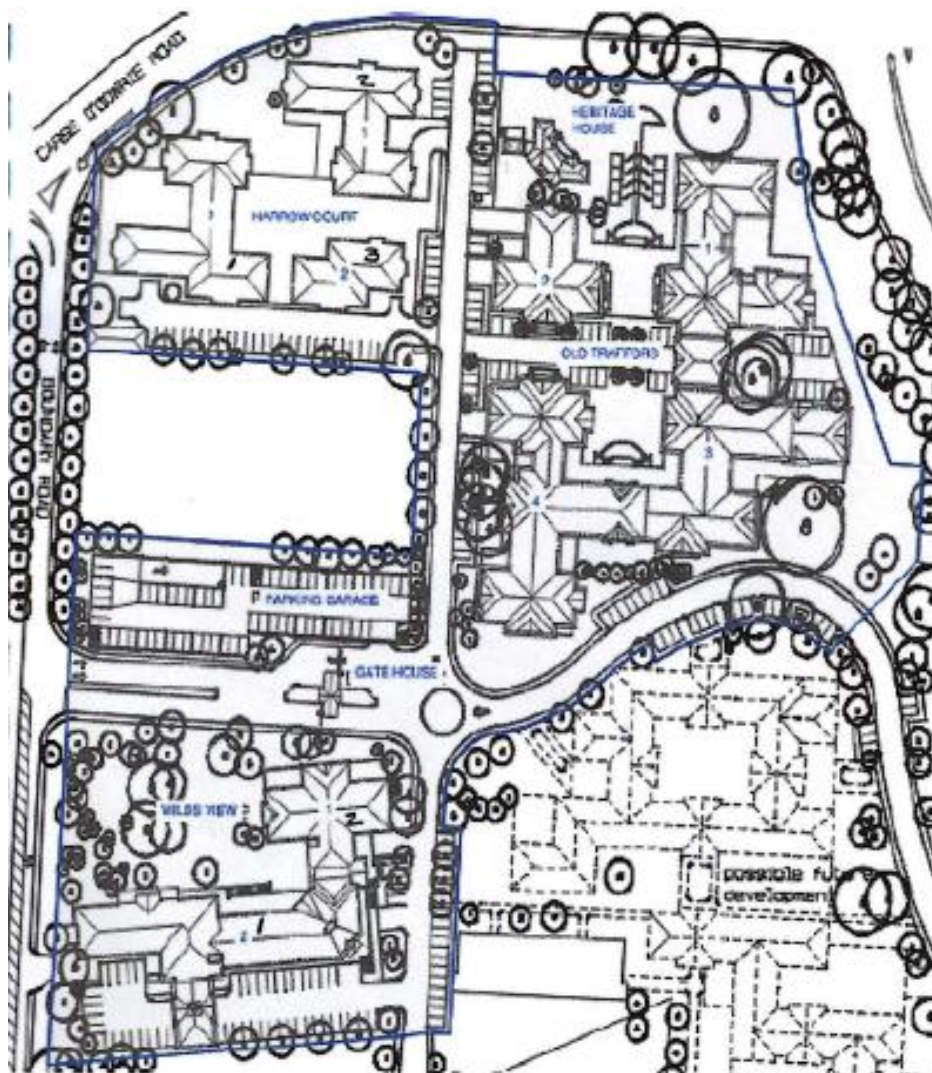
The objectives of the investigation was to firstly determine the real detail condition of all building components, building services, terrain, perimeter fences, security equipment, CCTV and access control, and other fixed equipment of all the main services and structures. This did not include the typical tenant installation of the different tenants as these will be repaired and replaced with each new tenant installation. Secondly to develop a 10 year maintenance plan for all the above components with the necessary budget estimations.

The figure below indicates the complete IOH Office Park facility layout with the three building complexes and the loose standing buildings together with the common assets.

Figure 1: Layout of WHC's Isle of Houghton Office Park



Originally, the WHC made available the below original building layout on the facility together with drawings showing the available lettable space within buildings. The original building layout on the facility was then aligned / corrected during the assessments and as supported by Architect drawings obtained at the end of the assignment.

Figure 2: Original layout of buildings on the IOH Office Park issued by the WHC and then corrected

The IOH Office Park consists of the following buildings after alignment with information on site and Architect drawings:

- Harrow Court Building 1 which was corrected to actually Building 2;
- Harrow Court Building 2 which was corrected to actually Building 3;
- Harrow Court Building 3 which was corrected to actually Building 1;
- Old Trafford Building 1 which was corrected to actually Building A and including the connection between Building A and Building C;
- Old Trafford Building 2 which was corrected to actually Building B;
- Old Trafford Building 3 which was corrected to actually Building C;
- Old Trafford Building 4 which was corrected to actually Building D and including the connection between Building D and Building C;
- Wilds View Building 1 which was corrected to actually Building B;
- Wilds View Building 2 which was corrected to actually Building A;
- Parking Garage Building;
- Heritage House Building; and
- Security Gate House Building.

The figure below indicates the layout of the Old Trafford buildings complex together with the heritage house building in close proximity.

Figure 3: Layout of Old Trafford and Heritage House buildings at IOH



The figure below indicates the layout of the Wilds View buildings complex as well as the Parking Garage and the Security Gate.

Figure 4: Layout of Wilds View buildings, main entrance and parking garage building at IOH



The figure below indicates the layout of the Harrow Court buildings complex.

Figure 5: Layout of Harrow Court buildings at IOH

According to the new fully componentised and unbundled asset register prepared as part of this assignment, the current replacement cost (CRC) of the IOH Office Park was found to be R604,4 million excluding land.

Ultimately there is a need to direct limited resources to address the most critical needs, to achieve a balance between maintaining and renewing existing infrastructure whilst also addressing backlogs in maintenance requirement and facing on-going changes in demand.

2.3. Asset componentisation

Immovable assets, in the form of facilities and systems tend to be complex assets, comprised of multiple components, each of which has independent physical or functional identity and specific attributes such as different life expectancy, maintenance and renewal requirements and regimes, risk or criticality.

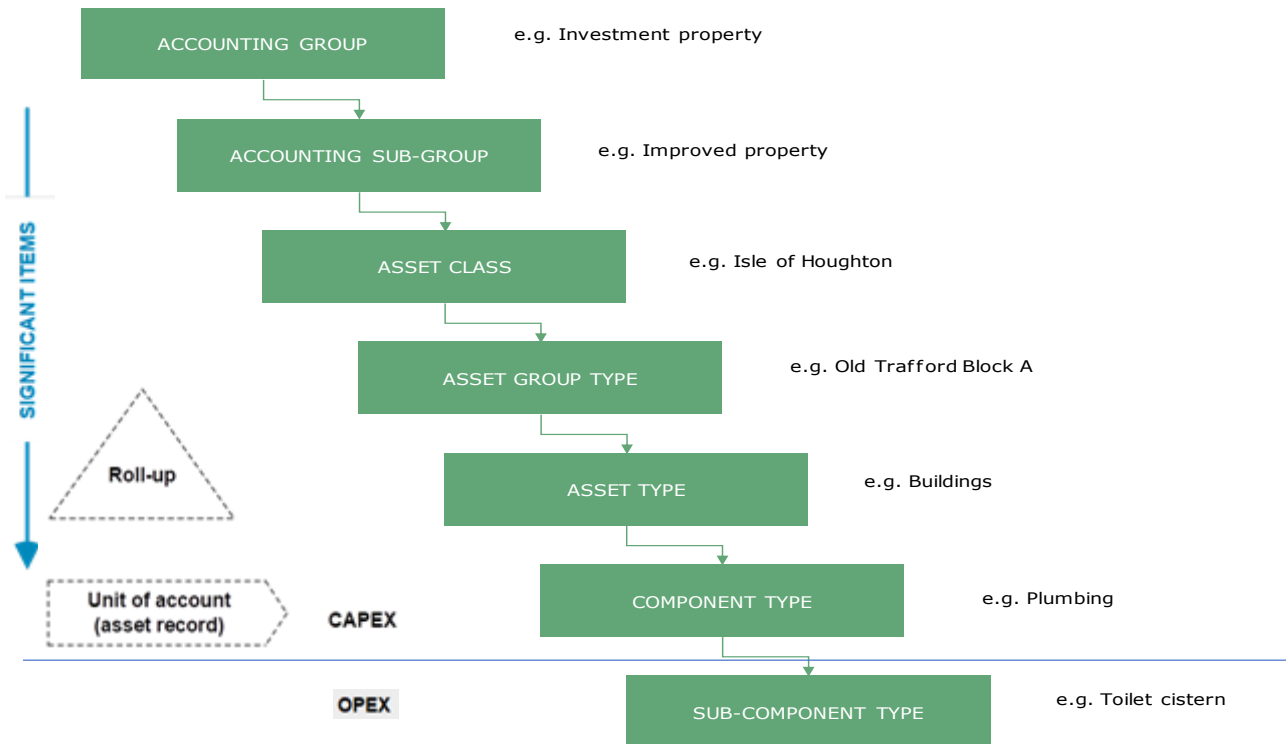
Each component assumes asset status, meaning that the component is recognised and included in the entity's asset register as a unique asset. Maintenance planning is done at the level of asset component where after needs and plans are then aggregated to the asset type level, and further up to the service or asset portfolio being planned for. These facilities need to be further componentised to enable asset lifecycle management, inclusive of maintenance. This has been done for the investment property assets in IOH Office Park by applying the asset hierarchy demonstrated in the figure below, as a framework to consistently disaggregate complex assets into their component assets.

A component ^(Note 1) is a specific part of a complex item ^(Note 2) that has independent physical or functional identity and specific attributes such as different life expectancy, maintenance and renewal requirements and regimes, risk or criticality.

Note 1: 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.

Note 2: A complex item is one that can be disaggregated into significant components. Infrastructure and buildings are considered complex items.

Figure 6: Asset hierarchy (example plumbing at buildings)



The key maintenance objective here is to ensure that all assets are componentised to the level of maintenance significant item, using the following metric:

$$\frac{\text{\% of assets componentised to maintenance significant item}}{\text{Number of assets in the asset portfolio}} \times 100$$

"Assets" in this metric are defined as asset group type such as investment property and property plant and equipment (PPE) accounting groups with different facility types (see asset hierarchy in the figure above).

2.4. Asset condition

Asset condition refers to the physical state of an asset.

All immovable asset components in the IOH Office Park, inclusive of investment property and PPE assets, but excluding land and servitudes (including road reserves), are given a condition grade in accordance with the condition grading scale depicted in **Table 1**.

Table 1: Condition grading scale

Grade	Description	Detailed description	Indicative RUL
1	Very good	Sound structure that is well maintained. Only normal maintenance required.	71-100% EUL
2	Good	Serves needs but minor deterioration (<5%). Minor maintenance required.	46-70% RUL
3	Fair	Marginal but clearly evident deterioration (10-20%). Significant maintenance required.	26-45% RUL
4	Poor	Significant deterioration of structure and/or appearance. Significant impairment of functionality (20-40%). Significant renewal / upgrade required.	11-25% RUL
5	Very poor	Unsound, failed structure. Needs reconstruction / replacement (>50% needs replacement).	0-10% RUL

The condition grade accorded to an asset component:

- informs the calculations on remaining useful life (RUL), depreciated replacement cost (current value) and asset value consumed (accumulated depreciation); and
- lifecycle action required (e.g. normal maintenance or renewal).

2.5. Asset criticality

The asset criticality grading scale as contained in ISO 55001, Clause 6.2.1.2b requires organisations to “review the importance of assets related to their intended outcomes, objectives and product or service requirements”. ISO 55002, Clause 6.2.2.1 advises that a “risk ranking process can determine which assets have a significant potential to impact on the achievement of AM objectives”.

Critical assets are those assets that have a high consequence of failure (e.g. are likely to result in a more significant financial, environmental and social cost in terms of their impact on organisational objectives and service delivery) - note that this definition speaks to consequence, not likelihood. Therefore, redundancy, which reduces the probability of failure, is generally not considered in assigning criticality grades. Consequently, the more critical an asset is rated, the greater management attention it receives, and generally, the higher priority it receives in terms of budget prioritisation. The criticality rating scale adopted for immovable assets in WHC is shown in **Table 2** below.

Table 2: Asset criticality

Criticality grade	Criticality description	Consequence of failure	Qualitative description
1	Cursory	Insignificant	Is readily absorbed under normal operating conditions
2	Non-critical	Minor	Can be managed under normal operating conditions
3	Important	Moderate	Can be managed but requires additional resources and management effort
4	Critical	Major	Will have a prolonged impact and extensive consequences
5	Most critical	Catastrophic	Irreversible and extensive impacts, or significantly undermining key business objectives

The risk impact rating scale used together with other risk assessment tools (such as the probability grading scale), is presented in **Annexure A** – it is used to assess the likely consequences or impacts should risks materialise. The risk impact rating scale allows for determination across several impact categories (e.g. service delivery, health and safety,

and environmental protection), and for deciding on the level of impact (ranging from 1: insignificant to 5: catastrophic). The probability rating scale on the other hand is used to assess the likelihood of a risk materialising. Note that probability has been calibrated to the typical average lifespan of a consolidated asset portfolio.

The “extent of asset criticality assessment” metric is the ratio of the number of assets in asset portfolios for which criticality analysis has been done, divided by the total number of assets in the asset portfolios, expressed as a percentage. In this context, the number of assets is calculated at the level of asset component or asset register line items, as follows:

$$\frac{\text{Number of assets assigned a criticality rating}}{\text{Number of assets in the asset portfolio}} \times 100$$

The aim is to identify those assets with the most serious consequences should they fail, and to focus management attention and prioritise resource allocation to these assets. The objective is to ensure that 100% of assets are accorded an asset criticality grading.

2.6. IOH Office Park asset overview

The following table indicates the current replacement cost (CRC) and the depreciated replacement cost (DRC) of the infrastructure assets at the IOH Office Park facility as at 31 March 2024 and excluding VAT. It also gives an indication of the asset facility health grade.

Table 3: Infrastructure assets current replacement cost and depreciated replacement cost

Asset class	Asset group type	CRC (R million)	DRC (R million)	DRC/CRC (%)	Health grade*
Investment property	Isle of Houghton	R604,4	R331,9	55%	Good

*Expanded health grade explanation included in Section 4.2.1b, figures exclude land and residual values

An infrastructure asset register has been compiled with information that is considered to be 95% accurate for visible infrastructure and to a lesser degree for underground assets or HV / MV bulk electrical infrastructure found on the site. The asset register notes the location, type, size, condition and criticality of each asset component.

Based on unit rates and expected useful lives of asset components considered appropriate to the localised environment (and agreed to by WHC), the infrastructure for IOH Office Park has been assessed to have an aggregate current replacement cost (CRC) value of R604,4 million. In total R272,5 million of the value of the asset facility has been consumed and the current value (on a depreciated replacement cost (DRC) basis), considering wear and tear, to be R331,9 million. For the purposes of planning maintenance work however, land is excluded from the calculation. On this basis, the on-going depreciation (representing the annual compensation of asset value by users) is estimated at R27,9 million per year whilst the facility has a combined average lifespan of 11,9 years remaining.

Facility health is an indication of the value remaining in assets measured against CRC, after considering accumulated wear and tear. At a facility level, a rating of 50% - 55% would be considered normal and any rating below 50% would signal asset sustainability concerns. Overall, the IOH Office Park facility has a health grade rating of ‘good’ at 55%, indicating in that in certain instances, sustainability concerns and the need for a structured programme of asset renewal to maintain the service delivery capacity thereof.

Table 4: Extent and value (excluding VAT) of infrastructure assets – IOH Office Park

Asset type	Component type	Extent	Extent unit	CRC	DRC	RV	Health	Annual consumption
Buildings	Air conditioning	21,352	m² aircon area	R59,193,581	R12,290,278	R0	21%	R11,838,716
	Electrical installation (building)	45,369	m² floor area	R62,204,641	R36,078,692	R0	58%	R2,073,488
	Finishes, fixtures & fittings	9,355	m² elevation area	R1,141,286	R627,166	R0	55%	R76,086
		45,299	m² floor area	R29,754,682	R15,988,185	R0	54%	R1,983,645
	Fire protection	44,562	m² floor area	R10,863,489	R6,300,823	R0	58%	R543,174
		114	No	R14,576,966	R8,454,640	R0	58%	R728,848
	Floor	54,932	m² floor area	R153,734,858	R89,166,218	R0	58%	R3,074,697
	Generator	3	No	R1,480,993	R858,976	R0	58%	R74,050
	Lift	45	Lift-floors	R2,539,627	R901,568	R0	36%	R84,654
	Plumbing	1,823	linear m	R558,744	R324,072	R0	58%	R27,937
		1,292	m² wet floor area	R5,250,321	R3,045,186	R0	58%	R262,516
	RC structure	54	m³	R220,255	R127,748	R0	58%	R2,753
	Roof	13,381	m² roof area	R21,085,923	R10,500,317	R0	50%	R527,148
	Security device	55	No	R2,231,805	R1,294,447	R0	58%	R257,222
	Security system	6,717	m² floor area	R4,245,079	R2,462,146	R0	58%	R849,016
	Sign - general	45	No	R99,766	R57,865	R0	58%	R6,651
	Sign - regulatory	136	No	R289,735	R168,047	R0	58%	R41,391
	Tank	2	No	R6,337	R3,675	R0	58%	R422
	Walls	64,472	m² elevation area	R103,929,909	R60,279,347	R0	58%	R1,732,165
	Water meter	1	No	R15,710	R9,112	R0	58%	R1,571
Civil structures	Anchored wall	4,035	m² elevation area	R22,341,791	R19,102,231	R0	86%	R446,836
	Earth structure	30,500	m³	R13,635,679	R11,658,506	R0	86%	R272,714
	RC structure	1,499	m³	R5,650,988	R3,277,573	R0	58%	R79,872
	Retaining wall	1,448	m² elevation area	R5,138,581	R2,980,377	R0	58%	R85,643
DC systems	Batteries	24	No	R138,517	R80,340	R0	58%	R9,234
	Battery charger	1	No	R210,696	R122,204	R0	58%	R21,070
Drainage	Channel	174	m²	R157,881	R90,965	R0	58%	R5,712
	Grid inlet	19	No	R468,447	R271,699	R0	58%	R15,615
	Kerb	1,408	linear m	R929,568	R393,277	R0	42%	R18,591
	Kerb inlet	7	No	R221,143	R128,263	R0	58%	R11,057
Earthworks	Earthworks	9,260	m²	R4,889,768	R2,176,066	R0	45%	R97,795
Electrical equipment	Control panel	78	No	R29,866,122	R17,322,350	R0	58%	R597,322
	Extraction blower	145	No	R254,560	R70,925	R0	18%	R25,456
	Motor	17	No	R1,324,534	R768,229	R0	58%	R88,302
	Pump - water	1	No	R35,228	R20,432	R0	58%	R2,349
External facilities	Carport	86	No	R822,472	R477,034	R0	58%	R71,234
	External furniture	22	No	R243,169	R126,369	R0	52%	R12,158
	External lighting	132	No	R894,073	R485,624	R0	54%	R23,192
	Irrigation	7,063	m²	R1,272,064	R63,603	R0	5%	R127,206
	Landscaping	8,651	m²	R899,984	R769,486	R0	86%	R24,295
	Paving	13,781	m²	R5,003,919	R2,902,273	R0	58%	R250,196
	Perimeter protection	3,541	linear m	R11,677,029	R5,936,829	R0	51%	R719,962
		162	m² elevation area	R263,598	R152,887	R0	58%	R4,393
		10	No	R365,072	R211,742	R0	58%	R18,254
	Roof	7	m²	R10,827	R6,280	R0	58%	R271

IOH Maintenance plan for WHC

Asset type	Component type	Extent	Extent unit	CRC	DRC	RV	Health	Annual consumption
	Security device	4	No	R45,350	R26,303	R0	58%	R9,070
	Sign - general	5	No	R11,085	R6,429	R0	58%	R739
	Sign - regulatory	2	No	R4,261	R2,471	R0	58%	R609
	Walls	134	m² elevation area	R218,038	R126,462	R0	58%	R3,634
	Water meter	1	No	R15,710	R9,112	R0	58%	R1,571
HV switching station equipment	HV circuit breaker	3	No	R1,796,260	R1,041,831	R0	58%	R35,925
	HV isolator	2	No	R104,542	R60,634	R0	58%	R2,091
Mechanical equipment	Air blower	1	No	R38,000	R13,490	R0	36%	R3,800
	Gearbox	10	No	R718,904	R416,965	R0	58%	R47,927
Metal work	Fabricated steel	54,172	No	R11,246,945	R5,844,495	R0	52%	R375,715
		1	No	R145	R51	R0	36%	R7
MV Conductors	MV Cable	600	No	R1,619,332	R939,213	R0	58%	R32,387
MV Mini-substations	Mini-Sub	3	No	R3,083,069	R1,788,180	R0	58%	R68,513
MV switching station equipment	MV Switchgear - Isolators	5	No	R50,232	R29,134	R0	58%	R1,674
MV Transformers	MV Power Transformer	4	kW	R1,034,983	R600,290	R0	58%	R23,000
Pavements	Road structural layer	769	linear m	R154,892	R80,048	R0	52%	R1,936
	Road surface	769	linear m	R324,862	R167,889	R0	52%	R46,409
Pipe work	Hydrant	11	No	R106,222	R61,609	R0	58%	R5,311
	Pipe - fire water	1,016	linear m	R613,209	R355,661	R0	58%	R15,330
	Pipe - sewer	1,322	linear m	R1,703,881	R988,251	R0	58%	R21,172
	Pipe - storm water	1,283	linear m	R1,083,072	R628,182	R0	58%	R17,205
	Pipe - water	538	linear m	R246,776	R143,130	R0	58%	R6,169
Road furniture	Street rubbish bin	7	No	R12,642	R6,610	R0	52%	R1,264
Service connections on site	Pipe - water	30	linear m	R15,016	R8,709	R0	58%	R375
Grand Total				R604,386,848	R331,879,223	R0	55%	R27,936,713

* Note that the above excludes land

Within individual component types depicted in the table above, some extra renewal expenditure will be needed to ensure assets are performing to their required standard, such as in the case of air conditioning, lifts, extraction blowers, irrigation, air blower, fabricated steel, kerbing, earth works, finishes fixtures & fittings, roof, external furniture, external lighting, perimeter protection, road structural layer, road surface and street rubbish bin - these should also be prioritised for maintenance expenditure as they make up such a significant portion of the facility.

The lower than 55% health grade, shows further that most of the asset value has been consumed and indicates that a rather large portion of the facility is reaching the end of its expected useful life, with the implied increase in losses (e.g. office space not suitable for human occupation) and the need for increased maintenance - ultimately a widespread renewals programme(s) which is yet to be addressed in more detail in the uAMP.

Additionally, the more critical components such as lifts, extraction blowers, fabricated building steel, kerbing, earth works, roof, perimeter protection, road structural layer and road surface should be held to a higher continuous health grade because of the criticality of these components to deliver service. As such, lifts, extraction blowers, fabricated building steel, kerbing, earth works, roof, perimeter protection, road structural layer and road surface will also require short term spending to improve them to a more acceptable grade.

The lowest health grade is for air conditioning, lifts, extraction blowers, irrigation, air blower and fabricated steel asset components recorded at the lower end of 'very poor', which indicates that many of these asset components have less

than one third of their useful life remaining. Furthermore, kerbing and earthworks as asset components recorded at the lower end of 'poor', which indicates that these asset components have less than one half of their useful life remaining. Of more concern are the lifts, extraction blowers, fabricated building steel, kerbing, earth works, roof, perimeter protection, road structural layer and road surface health grades due to their much larger impact on OHS and safety considerations.

The single biggest "health" concern however on an asset component at the IOH Office Park, and although it does not show up in the table of the facility asset component health grades specifically, is the roof of the Parking Garage building, especially the roof trusses as a sub-component because of the potential safety hazard it poses to humans and vehicles alike – see the pictures below showing the damage observed during the visual condition assessment at the IOH Office Park facility.

Figure 7: Damage to roof trusses of the Parking Garage building at IOH Office Park



The IOH Office Park infrastructure asset components depreciated replacement cost (DRC) and accumulated depreciation are indicated in **Figure 8**, where the two values make up the current replacement cost (CRC) for each asset component.

The total bar levels on the graph show the asset component CRC value while the accumulated depreciation shows how much of the asset value has already been consumed with a current annual consumption rate (could generally be referred to as depreciation) of about R27,9 million per year.

Most of the asset components have had less or just more than half of their asset value consumed and are in need of increased maintenance expenditure and renewals except where anchored wall (86%), earthworks (86%) and landscaping (86%) show a very good health grade whilst the remaining other components, show a good health grade. These include amongst others fire protection (58%) although no automated sprinkler system was found on site during the visual condition assessment, generator (58%), plumbing (58%), RC structure (58%), tank (58%), water meter (58%), retaining wall (58%), carports (58%), hydrant (58%) and pipe work (58%). Walls (58%), floor (58%) and electrical installation (building) (58%) account for the largest proportion of CRC for the facility.

Another rather significant "health" concern on an asset component at the IOH Office Park, and although it does not show up in the table of the facility asset component health grades specifically, is the colouring of the pipe work in the various buildings because of the potential safety hazard it poses to humans as observed during the visual condition

assessment at the IOH Office Park facility. Pipe work are not consistently showing the following colouring scheme across the various buildings:

- red as fire fighting water pipes;
- blue as potable water pipes;
- green as storm water pipes; and
- black as waste water (or sewer) pipes.

This figure also clearly illustrates that most of the facility asset components, by CRC, have larger proportions of their overall value remaining compared to the value that have been consumed (DRC).

Figure 8: IOH Office Park DRC and accumulated depreciation

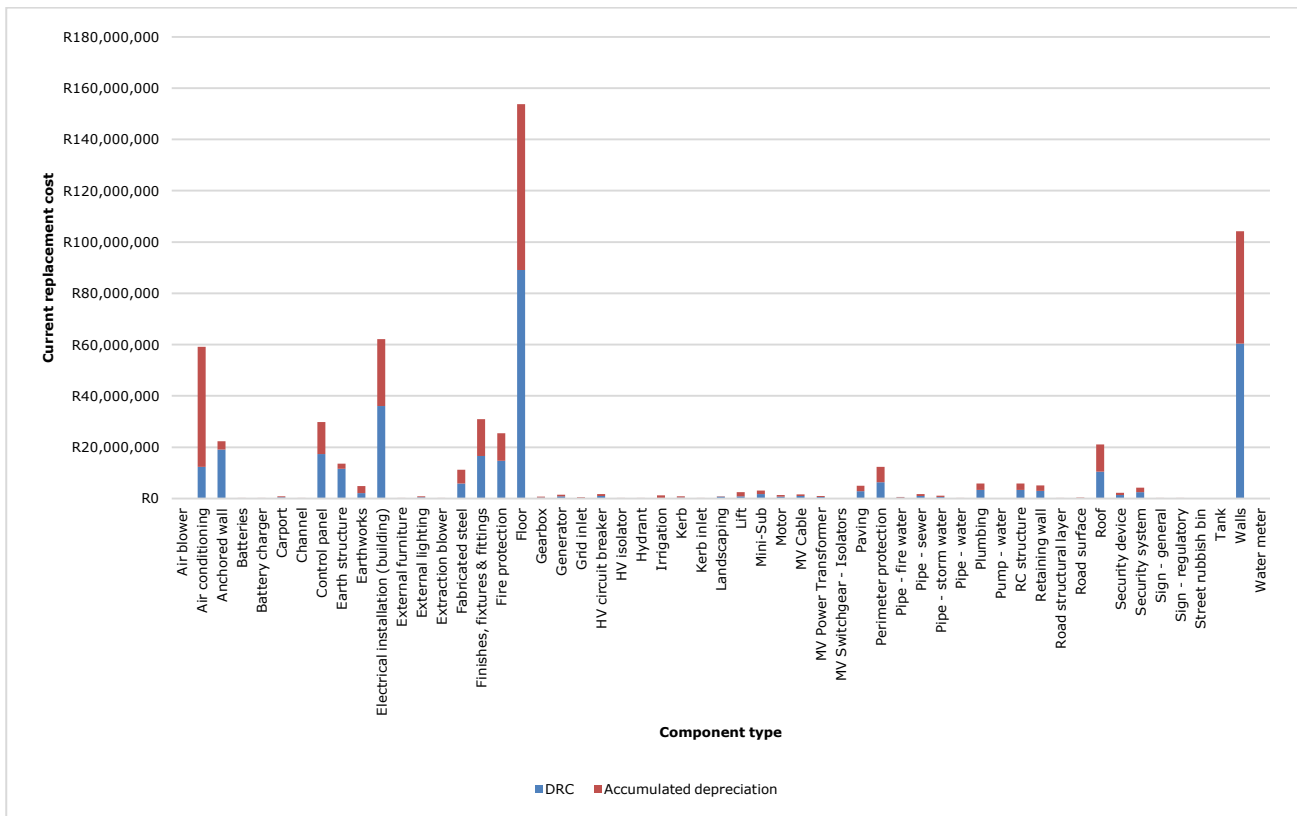
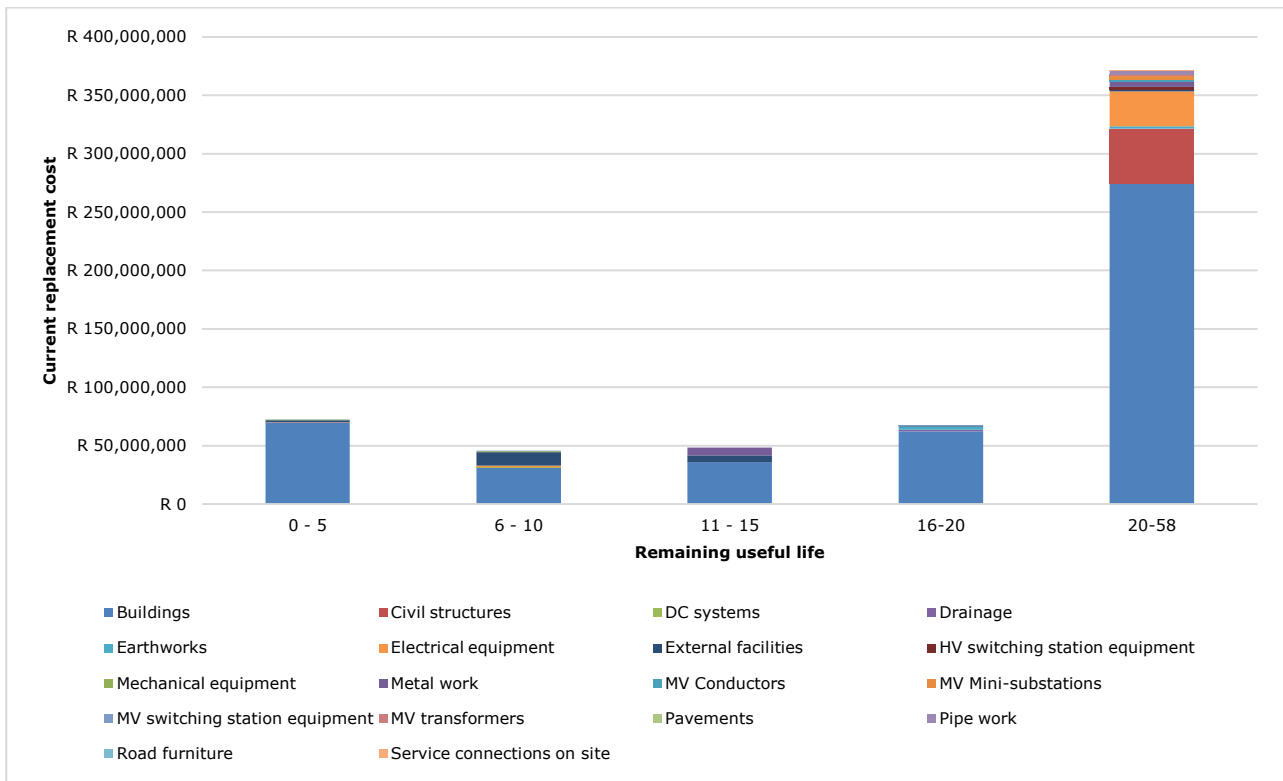


Figure 9 shows the remaining useful life of the IOH Office Park facility in brackets of 5 years indicating that there is a renewals' requirement within the 1 to 5-year bracket of R72,3 million together with the renewals' requirement in the 6 to 10-year bracket of R45,4 million with the renewals' requirement within the 11 to 15-year bracket of R48,3 million with a renewals' requirement within the 16 to 20-year bracket of just more than R67,1 million with the last renewals' requirement in the 20 to 58-year bracket of nearly R371,3 million.

Renewals should be addressed in the uAMP in more detail - it is only mentioned here to provide context to the infrastructure asset facility overview.

Figure 9: IOH Office Park infrastructure RUL and associated CRC per asset type

2.7. Summary

The IOH Office Park facility now has a fully componentised asset register, each component or asset in the asset register has a current replacement cost, a depreciated replacement cost, an estimated and remaining useful life, accumulated depreciation, a residual value, a condition grade, a criticality grade, asset attribute data (e.g. materials type, power output) and location (see the asset register submitted for insurance purposes).

Performance against key maintenance objectives relating to asset intelligence for maintenance are inclusive of the data contained in **Table 5**.

Table 5: Maintenance objectives for asset intelligence

Metric	Facility	Target performance	Actual performance	% under / over performance
% of assets componentised to maintenance significant item level	IOH Office Park	100%	100%	0%
Extent of asset criticality assessment	IOH Office Park	100%	100%	0%

3. CUSTOMER SERVICE COMMITMENTS AND MAINTENANCE OBJECTIVES

3.1. Customer service commitments

WHC has rental agreements with tenants that communicate service commitments to customers and other stakeholders. These service commitments can generally relate to either operations (quality of the commodity delivered, e.g. office space) or maintenance (the ability to keep assets operating and ensure continuity of supply following interruptions such as building evacuations). To understand the difference, consider the following performance requirements examples relating to solid waste collection points and swimming pool water.

Table 6: Difference between operations and maintenance performance requirements illustrated

Performance requirement	This measure focuses on	Lifecycle activity
Leaving a solid waste collection point clean and rodent free following weekly collection of solid waste accumulated Or The solid waste disposal site must be operated in accordance with the permit conditions	The quality of collection point / kerbside visibility Or Operation and control	Operations
Bacterial – Not more than 15% of the water samples collected from a public swimming pool shall contain the following: - Not more than 200 bacteria per millilitre as determined by the standard (35 degree) agar plate count; and - Show a confirmed positive test for coli form organisms in any five (5) to ten (10) millilitre portions of sample or more than one (1) coli form organism per 50 millilitres when the membrane filter test is used.	The quality of swimming pool water as a commodity	Operations (water chemical treatment process)
Repair a water pipe burst of circulating swimming pool water within 2 days	The availability of the asset used for conveyance of swimming pool water, in this instance a water circulation pipe	Maintenance (corrective maintenance) to ensure continued asset availability (in this case to continue to convey swimming pool water)

Typical customer service commitments examples that agreements should include some of are indicated in **Table 7**.

Table 7: Relevant service commitments (as a draft)

Service provision	Turn-around times or hours available
Grass cutting	
Grass cutting	Every week
Grass cutting of open spaces on perimeter	Once every thirty (30) days
Common area landscaping	
Maintenance	Within 120 hours
Remove tree stumps	Within 120 hours
Common outside areas	
Water features	Repaired within fourteen (14) days
Requests	Between five (5) and fourteen (14) days
Weeding	Once a month
Fire fighting equipment and installation servicing and inspections	
Fire fighting hydrants	Annually
Fire fighting hoses	Annually
Fire fighting containers / canisters	Six months
Fire fighting sprinkler systems	Annually

Service provision	Turn-around times or hours available
General facilities management	
Conduct assessments for maintenance	Annually
Undertake maintenance	Preventative maintenance as per WHC's preventative maintenance plan. Reactive maintenance as and when required.
Property management	
Respond to general complaints	48 hours
Office space	
Accommodation used must be fully compliant with the OH&S Act and all current building regulations	All WHC owned buildings
With parts of office buildings open to the public, care must be taken to ensure that appropriate environmental and service standards are maintained	All WHC owned buildings
Mechanical	
Lifts	Twice a year
Escalators	Twice a year
HVAC inspections / servicing	
HVAC inspections and servicing	Once a year
Occupational health and safety	
Ensure that safety signage is in place and visible	Weekly inspections
Rodent control	
Response to complaints about rodents on WHC premises	Within 24 hours
Elimination of bees at WHC premises	
Response to complaints about bees on WHC premises	Within 24 hours
ICT	
Connectivity to WHC owned and WHC manned offices for own staff	Continuous
Connectivity to other WHC owned buildings	Continuous

3.2. Statutory requirements

3.2.1 General statutory requirements

Infrastructure services are, depending upon the circumstances, the subject of regulations laid down by the national government or a statutory body and are required to monitor compliance. In the event of non-compliance, the regulator could choose to enforce compliance by whatever means, to penalise for non-compliance (as an inducement to comply), to assist the institution to become compliant, or to intervene directly and to some or other extent to take over from the institution.

WHC is required to adhere to all the statutory requirements of the Occupational Health & Safety Act (Act 85 of 1993) as amended and the Environmental Conservation Act (Act 73 of 1989), all subsequent amendments and regulations except where exemption has been obtained from the Chief Inspector who is appointed under section 27 of public interest law that aims to protect, promote and advance human rights. Any conflict with the OHS Act or the Environmental Conservation Act, where no exemption has been obtained, is a criminal offence and any official found guilty of such an act can be jailed. These Act requirements shall take precedence over all statutory arrangement as discussed in the next section.

The National Heritage Resources Act (Act 25 of 1999) places an obligation on the asset custodian, through regulations published by the South African Heritage Resources Agency (SAHRA), that the looking after of national heritage sites are prioritised – the understanding is that the intent was with every budget cycle that WHC goes through.

3.2.2 Investment property requirements

Investment properties need to be maintained according to the National Building Regulations and Building Standards Act (Act 103 of 1977) as amended. The act specifies that the owner of the building shall ensure that any mechanical equipment, facility or any service installation provided in connection with the building shall be maintained in a safe and functional condition.

Furthermore, the regulation specifies that it is the responsibility of the owner or any person appointed by the owner in control of the building, to ensure that equipment, facilities or installations are designed to be kept operating during the times of normal occupancy of the building and are kept operating in a manner specified in the standard of performance prescribed in the regulation or in any by-laws for such equipment of installation.

About fire fighting equipment, SANS 1475-2 sets out guidelines for maintenance. It requires that the following should be conducted annually:

- All equipment should be subject to replacement and procurement policies and testing, examination, checking and maintenance procedures;
- Occupational safety and recommendations of the manufacturer shall be included in all examination, testing and maintenance programs;
- Authorities should conduct fire safety inspections in response to complaints or request, or both, to assist owners, occupiers and developers, and to satisfy local requirement for scheduled routine inspection of all occupancies other than dwellings as given in by-laws or other applicable legislation; and
- Any fire-fighting equipment, installations and fire protection systems in any building shall always be so installed and maintained as to be ready for their purpose.

For chemical control of vegetation and eradication of undesirable vegetation, herbicides may only be applied by duly registered, competent contractors in possession of an AVCASA certificate from the Association of Veterinary and Crop Associations of South Africa.

Regarding components within buildings, SANS 10400A sets out references to numerous sub parts of SANS 10400 to do with maintenance and operations of buildings as part of the application of the building regulations. Components like roofs, floors and walls are all required to be kept in such a condition as to prevent moisture seepage but no timeline for how often these types of checks should be conducted, is specified. For more information consult SANS 10400-A, B, H, J, K, and L.

"Code for the wiring of premises" contained within SANS 10142, the Electricity Act (Act 41 of 1984) as amended and the Post Office Act (Act 44 of 1958) as amended normally applies when a certificate of compliance (CoC) is needed as part of the permission to occupy certificate (POC) or when ownership changes hands whilst the SANS 204 deals with energy efficiency on a more regular basis in buildings.

Roof coverings - The latest edition, including all amendments up to date, of the following specifications, publications and codes of practice shall be read:

- SANS 1200 H:1990 (2002-07-30) - Cladding and sheeting;
- SANS 1783-1&4:1997 (SABS 1783-1) - Softwood brandering and battens;
- SANS 121:2011 / ISO 1461:2009 - Hot-dip galvanised coatings on fabricated iron and steel articles; and
- SANS 1273:2011 - Fasteners for sheet roof and wall coverings.

Carpentry and joinery for roofs and ceilings - The latest edition, including all amendments up to date, of the following specifications, publications and codes of practice shall be read:

- SANS 10243:2004 - The design, manufacture and erection of timber trusses;
- SANS 266:2003 - Gypsum plasterboard;
- SANS 1783-2:1997 - Stress-graded softwood: general structural timber;
- SANS 1783-1&4:1997 (SABS 1783-1) - Softwood bracing and battens;
- SANS 803:2005 - Fibre-cement boards;
- SANS 1783-2:1997 (SABS 1783-2) - Stress-graded softwood Contract Managing timber;
- Bolt connections shall be in accordance with the requirements of SANS 10163-1:2003; and
- All new timberwork shall comply with SANS 10163-1:2003.

Walls - The latest edition, including all amendments up to date, of the following specifications, publications and codes of practice shall be read:

- SANS 10220:2010 - Glazed ceramic wall tiles and fittings;
- SANS 227:2007 - Burnt clay masonry units;
- SANS 545:2009 - Wooden doors;
- SANS 622:2005 - Gypsum cove cornice;
- SANS 680:2006 - Glazing putty for wood and steel sashes;
- SANS 727:2003 (2009-05-29) - Windows and doors made from rolled mill steel sections;
- SANS 10107:1996 - The fixing of glazed wall tiles;
- SANS 1236:2005 - Silvered glass mirrors for general use;
- SANS 1263-1:2006 - Safety and security glazing materials for buildings; and
- new partitioning shall be non-combustible, provide acoustical privacy and comply with SANS 10400:1990.

Wall tiling - The latest edition, including all amendments up to date, of the following specifications, publications and codes of practice shall be read:

- Tiling shall comply with the requirements of SANS 22:2005; and
- The code of practice for the fixing of glazed wall tiles, SANS 10107:1996 and the recommendations of the South African Ceramic Tile Manufacturers Association (SACTMA) must be adhered to.

Glazing

- The glazing and fixing of glass in buildings shall be carried out strictly in accordance with SANS 10137:2002; and
- new putty shall comply with the requirements of the SANS 680:2006.

Doors

- All steel doors shall comply with the requirements of SANS 727:2003 (2009-05-29); and
- All wooden stock doors shall comply with the requirements of SABS Standard Specification 545.

Ironmongery

- All mortice locks, mortice latches and night latches, rim and cylinder rim night latches, and escutcheon for locks shall comply with the requirements of the SANS.

Floors

- SANS 581:2007 - Semi-flexible vinyl floor tiles;
- SANS 786:2007 - Flexible vinyl flooring;
- SANS 10070:2007 - The laying of thermoplastic and similar types of flooring;
- SANS 10043:2009 - The laying of wood floors;
- SANS 10186:2010 - The laying of textile floor coverings; and
- SANS 1449:2008 - Ceramic wall and floor tiles.

Concrete screeds

- Only ordinary Portland cement, CEM 1 42, 5 in accordance with SABS ENV 197-1, shall be used.

Laying of material (ceramic excluded)

- The laying of vinyl and similar flooring material in tile and sheet form, and the fixing of plastic skirtings, nosings, etc, shall be carried out in accordance with SANS 10043:2009;
- The laying of wood block and wood mosaic flooring shall be carried out in accordance with SANS 10043:2009; and
- The laying of textile floor coverings shall be done in accordance with SANS 10186:2010.

Vinyl floor finishes

- Where vinyl tiles need to be replaced, such tiles shall comply with the requirements of SANS 786:2007;
- All the preparation and work in connection with the laying and fixing of the specified flooring and vinyl skirting/s shall be done in accordance with SANS 10070:2007; and
- The newly laid tiles shall, after four days, be scrubbed with a diluted neutral detergent/stripper complying with SANS 825:1993 (1998-12-15) and rinsed thoroughly.

Wood block floors

- The blocks shall, unless otherwise specified, be laid to a basket pattern with an approved hot or cold adhesive and shall be sanded on completion all in accordance with the SANS Code of Practice, SANS 10043:2009; and
- Existing timber floors must be mechanically belt-sanded to remove all traces of existing sealer in strict compliance with SANS 10043:2009.

Ceramic and quarry floor tiles

- The Code of Practice for the fixing of tiles in accordance with SANS 1449:2008 and the recommendations of the South African Ceramic Tile Manufacturers Association (SACTMA) shall be followed.

Paving

- New paving blocks shall comply with SANS 1058:2010 Class 30 compressive strength; and
- Precast concrete curbs and channels shall comply with SANS 927:2007.

Structural concrete (repairs)

- SANS 1200 G:1982 (2002-07-30) - Concrete (Structural);
- SANS 1200 GA:1982 (2002-07-30) - Concrete (Small works);
- SANS 1200 GB:1984 (2002-07-30) - Concrete (Ordinary buildings);
- SANS 1200 GE:1984 (2002-07-30) - Precast Concrete (Structural);
- SANS 1200 GF:1984 (2002-07-30) - Prestressed concrete;
- SANS 10100-1:2000 - Structural use of concrete;
- SANS 110:2011 - Sealing compounds for the building industry, two component Polysulphide base;
- SANS 1077:2009 (2009-08-14) - Sealing compound for the building and construction industry, two-component, polyurethane base; and
- SANS 1305:2009 - Sealing compounds for the building industry, one component siliconed-rubber-base.

Fittings

- SANS 929:2008 - Plywood and composite board;
- SANS 1099:2008 - Hardwood furniture timber;
- SANS 1783-1:1997 (SABS 1783-1) - Softwood timber for industrial use; and

- SANS 1385:2010 - Kitchen cupboards of steel, composite board and timber.

Signage

- Safety signs shall comply with the requirements of SANS 1186-1:2008.

Paintwork

- SANS 515:2003 (2008-03-20) - Decorative paint with a non-aqueous solvent base for interior use;
- SANS 630:2009 - Decorative high gloss enamel for interior and exterior;
- SANS 1586:1995 - Emulsion paints for interior decorative purposes;
- SANS 1586:1995 - Emulsion paints for exterior use;
- SANS 678:2005 (2011-03-31) - Primers for wood for interior and exterior use;
- SANS 681:2007 - Undercoats for paints;
- SASS 723 - Wash primer (metal etch primer);
- SANS 801 - Epoxy-tar paints;
- SANS 1227:2005 (2010-06-17) - Textured wall coatings, emulsion base, for interior and exterior use;
- SANS 1319:2009 - Zinc phosphate primers for steel; and
- SANS 10064:2011 - Preparation of steel surfaces for coating.

3.2.3 Community protection against fire

The Fire Brigade Services Act (Act 99 of 1987) as amended and SANS 0139 - The prevention, automatic detection and extinguishing of fire in buildings are applicable. The following standards contain relevant provisions which, through reference in the SANS 10090:2003 for community protection against fire, constitute provisions of the standard:

- NFPA 291, Fire flow testing and marking of hydrants;
- NFPA 1201, Developing fire protection services for the public;
- NFPA 1561, Fire department incident management system; and
- SANS 10400 (SABS 0400), The application of the National Building Regulations.

3.3. Performance measures for service delivery reliability through maintenance

In most instances the tenant service commitments related to maintenance express a commitment to tenants to resolve maintenance issues within a certain time period to ensure that services continue to be delivered in the event where assets have failed, and services have been disrupted. Performance for these measures therefore focus on turnaround times in meeting tenant commitments. There are however also some measures that focus on annual inspections of main facilities - the aim here is to proactively identify any maintenance issues and to resolve them before assets fail (preventative maintenance). The latter set of service commitments are measured through inspection frequency.

Whether turnaround times for tenant commitments or inspection frequency, the maintenance objectives for investment property service reliability can be measured over several different categories, i.e. per spatial priority area, per facility or per operational cluster.

3.3.1 Meeting tenant commitments

$$\frac{\text{Nr of events resolved within committed response times}}{\text{Total number of events for financial period}} \times 100$$

In general, the target objective for meeting tenant commitments should be >95% and as stated, should be evaluated either per priority area or operational cluster to isolate and resolve future maintenance problems that arise. Where tenant commitments are less critical in terms of service delivery quality and quantity the objective can be decreased to >80%.

3.3.2 Service reliability efficiency

$$\frac{\text{Total time taken to resolve all job cards issued}}{\text{Allowed turnaround time per event} \times \text{nr of events per period}} \times 100$$

In general, the target should be ≤100%.

3.3.3 Inspection frequency

The target objective for inspection frequency is measured as % of planned or statutory required inspections conducted and should be ≥100%. Areas of enhanced concern due to declining infrastructure condition or high impact of failure, will be inspected at a higher frequency than the current stated tenant service commitments. Highly critical components or asset types will be continuously monitored through condition monitoring to either confirm the expected deterioration pattern or detect any deterioration above the norm and apply a maintenance regime accordingly. Details on asset or asset type specific inspections, preventative maintenance and condition monitoring is also discussed in the following sections.

3.4. Maintenance objectives and targets for service reliability

Maintenance objectives are the goals to be achieved by the maintenance function to ensure that assets are in suitable condition to meet the requirements of the entity, in a manner acceptable to regulators and other stakeholders. Maintenance objectives are expressed as maintenance performance measures. The current and targeted status of performance against the above objectives for WHC are proposed to be as in **Table 8**.

Table 8: Investment property maintenance performance measures and objectives

Performance measure	Service provision	Objective	Statutory requirement	Current performance
Fire prevention & detection	Fire fighting hydrants	Annually		Not known
	Fire fighting hoses	Annually		Not known
	Fire fighting containers / canisters	6 months		Not known
	Fire fighting sprinkler systems	Annually		Not known
Parks	Water features	Repaired within fourteen (14) days		Not known
Office space	Space must provide good levels of occupant comfort and health.	Annually		Not known
	Accommodation used must be fully compliant with the OH&S Act and all current building regulations	Annually		Not known

IOH Maintenance plan for WHC

Performance measure	Service provision	Objective	Statutory requirement	Current performance
Office space	With parts of office buildings open to the public, care must be taken to ensure that appropriate environmental and service standards are maintained	Annually	OHS Act (Act 6 of 1983) and Environmental Conservation Act (Act 73 of 1989), all subsequent amendments and regulations except where exemption has been obtained from the Chief Inspector who is appointed under section 27 of public interest law that aims to protect, promote and advance human rights	Not known
Mechanical	Lifts	Twice a year	Guidelines for Lift, Escalator and Passenger Conveyor Regulations, 2009 Department of Labour Occupational Health and Safety Act, Act 85 of 1993	Not known
	Escalators	Twice a year	Guidelines for Lift, Escalator and Passenger Conveyor Regulations, 2009 Department of Labour Occupational Health and Safety Act, Act 85 of 1993	Not known
Air conditioning	HVAC inspections and servicing	Once a year		Not known
Occupational health and safety	Ensure that safety signage is in place and visible	Weekly inspections	Occupational Health and Safety Act, Act 85 of 1993	Not known
	Emergency evacuation drills	Monthly	Occupational Health and Safety Act, Act 85 of 1993	Not known
	Provide appropriate disabled access at all WHC owned properties	Annually	Occupational Health and Safety Act, Act 85 of 1993	Not known
ICT	Connectivity to WHC owned and WHC manned offices for own staff	Continuous		Not known
	Connectivity to other WHC owned buildings	Continuous		Not known
Electrical	Fittings - Diffusers / bowls / shades, working	Weekly inspections		Not known
	Switches - Working, cover plates	Weekly inspections		Not known
	Distribution - Tidiness, cover plates	Weekly inspections		Not known
	Outlets - Fixture to wall / power skirting, cover plates	Weekly inspections		Not known
Air conditioning	Chillers - Leaks, vibration, noise	Weekly inspections		Not known
	Fan motors - Vibration, noise	Weekly inspections		Not known
	Filters - Cleanness	Weekly inspections		Not known
	Window / wall, consoles, splits - Noise, vibration, filter condition	Weekly inspections		Not known
	Fans - Noise, vibration	Weekly inspections		Not known
Fire prevention & detection	Fire hydrants and hose reels - Leaking, seals, water pressure	Weekly inspections		Not known
	Sprinklers - Leaking, water pressure	Weekly inspections		Not known

Performance measure	Service provision	Objective	Statutory requirement	Current performance
	Fire extinguishers - In place / missing, tested	Weekly inspections		Not known
	Control panel and detectors - Operation, alarm conditions	Weekly inspections		Not known

Table 9: Illustrative standards of service and maintenance intervention levels for office accommodation at all government owned buildings

Typical dimensions of standards of service	E.g.	Acceptable range or intervention level	Minimum acceptable performance / intervention level	Dominant asset failure mode
Overall quality	Grade B office standard	Condition range between "Very good" and "Good"	Minimum acceptable condition for fittings a grade "Good"	Condition
Availability / reliability / responsiveness	Building required for operations 8am-5pm, 5 days a week	Response times for mechanical, electrical and plumbing failures	Within 2 hours of incident being reported	Performance
Comfort	Temperature	18 – 23°C	<= than 17°C and >= than 24°C	Performance
	Lighting	Lux level of 250	Less than 250	Performance
Health and safety	Fire protection	All fire protection systems inspected every three months	Every three months	Condition / performance (depending on nature of fire safety system)
	Structural integrity	Minimum accepted condition grade of "fair" for all building structural elements	"Poor" condition or worse ("very poor")	Condition
Affordability or value for money	Cost efficiency	Maintenance costs not to exceed Rx / m ²	Maintenance costs exceeding Rx / m ²	Cost-of-operations

Table 10: Maintenance service reliability objectives

Standard of service aspects	Standards of service sub-aspects	Maintenance performance measure	Maintenance objective	Current performance	Target performance for financial period
Overall quality	Structure and fittings in acceptable condition	% of assets in acceptable condition band compared to total asset portfolio, measured in current replacement cost	Meeting customer commitments	Not known	>95%
			Service reliability efficiency	Not known	≤100%
Availability / reliability / responsiveness	Availability	% Asset availability	Meeting customer commitments	Not known	>95%
			Service reliability efficiency	Not known	≤100%
	Continuous service delivery	Asset uptime	Meeting customer commitments	Not known	>80%
			Service reliability efficiency	Not known	≤100%
	Responsiveness	% of incidents responded to within committed response time limits	Meeting customer commitments	Not known	>95%
			Service reliability efficiency	Not known	≤100%

Standard of service aspects	Standards of service sub-aspects	Maintenance performance measure	Maintenance objective	Current performance	Target performance for financial period
Health and safety	Structural integrity	% of assets in "Poor" and "Very poor" condition	Meeting customer commitments	Not known	<50%
			Service reliability efficiency	Not known	≤100%
	Employee and customer safety	Nr of health and safety incidents / annum responded to	Meeting customer commitments	Not known	>95%
			Service reliability efficiency	Not known	≤100%
		Nr of days since last reported health and safety incident	Meeting customer commitments	Not known	>30 days
			Service reliability efficiency	Not known	
		Nr of days lost due to accidents	Meeting customer commitments	Not known	<10 days
			Service reliability efficiency	Not known	
	Property damage because of asset failure	Rand value of property damage because of asset failure / annum as a percentage of the current replacement cost value of the asset portfolio	Meeting customer commitments	Not known	<1%
			Service reliability efficiency	Not known	
Affordability or value for money	Overall value for money	Total maintenance cost per annum as a percentage of the current replacement cost value of the asset portfolio	Meeting customer commitments	Not known	>2%
			Service reliability efficiency	Not known	≤100%
	Cost efficiencies	Maintenance unit cost	Meeting customer commitments	Not known	2%
			Service reliability efficiency	Not known	
	Productivity / efficiency	Mean time to repair	Meeting customer commitments	Not known	<14 days
			Service reliability efficiency	Not known	
		Inventory turnaround time	Meeting customer commitments	Not known	
			Service reliability efficiency	Not known	
		Stock-outs	Meeting customer commitments	Not known	<10%
			Service reliability efficiency	Not known	
		Work order aging	Meeting customer commitments	Not known	<14 days
			Service reliability efficiency	Not known	≤100%
		Work order cycle time	Meeting customer commitments	Not known	<60 days
			Service reliability efficiency	Not known	
		Rework	Meeting customer commitments	Not known	<10%
			Service reliability efficiency	Not known	≤100%

Table 11: Examples of condition parameters to observe when conducting building assessments

Asset type	Component type		Condition parameters to observe and record on site
Electrical	Electrical reticulation	Transformers and switchgear	Oil leaks, silicone gel condition, visible overheating of cables
		Distribution boards	Cleanness, paintwork, cover plates
		Power outlets	Fixture to wall / power skirting, cover plates
	Lighting	Fittings	Diffusers / bowls / shades, working
		Switches	Working, cover plates
	Telephone and IT	Distribution	Tidiness, cover plates
		Outlets	Fixture to wall / power skirting, cover plates
Air conditioning	Earthing / lightning protection	Copper / aluminium	Tied to brackets, connected to down conductors, earthing installed
	Central plants	Chillers	Leaks, vibration, noise
		Fan motors	Vibration, noise
		Filters	Cleanness
	Small units	Window / wall, consoles, splits	Noise, vibration, filter condition
Fire	Ventilation systems	Fans	Noise, vibration
	Fire prevention	Fire hydrants and hose reels	Leaking, seals, water pressure
		Sprinklers	Leaking, water pressure
		Fire extinguishers	In place / missing, tested
	Fire detection	Control panel and detectors	Operation, alarm conditions

3.5. Means of measurement

This maintenance management is one work package the WHC should undertake for completion in the 2024/25 financial period. A tenant services system should lodge the date and time when a tenant lodged a complaint or issue and should record the date and time when the issue is marked as resolved. It will therefore be able to provide reports on maintenance objectives relating to (a) meeting tenant service commitments and (b) service delivery reliability, per event, type of event, area and asset portfolio, over any defined period of time reported on.

4. BUSINESS SUSTAINABILITY: MAINTAINING THE PRODUCTIVE CAPACITY OF ASSETS AND ENSURING SUSTAINABLE SERVICE DELIVERY

4.1. Introduction

Infrastructure assets such as investment property buildings require a large capital investment to construct and are generally designed to function for several decades, meaning that ultimately, they have finite life spans. Through the lifespan of an infrastructure asset, it will be subject to wear and tear, causing the asset's condition to deteriorate over time. Proper maintenance can ensure that the asset achieves its intended design life, is able to support service delivery, contribute to revenue where appropriate, and is safe to operate.

Maintenance requires proper funding, for maintenance personnel and / or contractors, for the vehicles and equipment they use, for spare parts and consumables, and related items such as personal protective equipment. Maintenance is considered operating expenditure (OPEX) and is funded from the operating budget.

At some point though, regardless of the quality of maintenance, assets will deteriorate to the point where they become functionally impaired, too costly to maintain and potentially unsafe as well. This is when assets must be renewed or replaced, which is capital expenditure (CAPEX), funded from the capital budget. In financial terms, asset renewal is often referred to as asset recapitalisation and in economic terms, renewal is referred to as capital maintenance. Whether referred to as renewal (the term used in this document), asset recapitalisation or capital maintenance, the purpose is to ensure that the asset life and / or service delivery benefits (or economic potential) of assets are extended, for as long as there is a need for the service. Asset renewal therefore ensures that the productive capacity of infrastructure is maintained over the long term, thus ensuring sustainable service delivery.

This section establishes maintenance objectives and targets aimed at ensuring that the WHC provides adequate maintenance funding, and that it spends adequately on maintenance, so that assets reach their intended design lives economically, with minimal service interruptions resulting from asset failure. It also establishes maintenance objectives and targets to ensure that sufficient investment is made in asset renewal to maintain the productive capacity vested in infrastructure over the medium and long term.

4.2. Capital maintenance through renewals

4.2.1 Capital maintenance metrics

This set of objectives are focussed on ensuring that the WHC remains a sustainable, going concern by maintaining the productive capacity of assets through an ongoing programme of investment in capital renewal. To this end, the following four measures are used, as follows:

a. Asset consumption ratio

Measures the extent of consumption (accumulated wear and tear) of an asset, which is indicative of the overall health and ability of the asset to continue to provide service delivery and / or economic benefits, and the extent of asset renewal required. Put another way, the asset consumption ratio measures the average proportion of "as new condition" left in assets. The asset consumption ratio is calculated as follows:

$$\frac{DRC - RV}{CRC - RV} \times 100$$

where:

DRC: depreciated replacement cost

RV: residual value

CRC: current replacement cost

In general, a ratio of $\geq 50\%$ would be considered acceptable.

b. Asset health grade

This metric also measures asset consumption but expresses the result qualitatively in terms of a condition or health grade, as opposed to a percentage. The asset portfolio health grade is calculated using the formula provided for the asset consumption ratio, and then selecting a health grade from the options below, within which range the percentage asset consumption falls.

Table 12: Asset portfolio health grade

Grade	Description	(DRC-RV)/(CRC-RV)
1	Very good	65% or more
2	Good	52.3% to 65%
3	Fair	46.7% to 52.3%
4	Poor	40% to 46.7%
5	Very poor	40% or less

c. Asset sustainability ratio

Measures the extent to which an entity replaces the asset value consumed during a period of review to maintain service delivery capabilities. It is a measure of the extent to which the entity maintains the value of its capital stock or productive capacity. The asset sustainability ratio is calculated as follows:

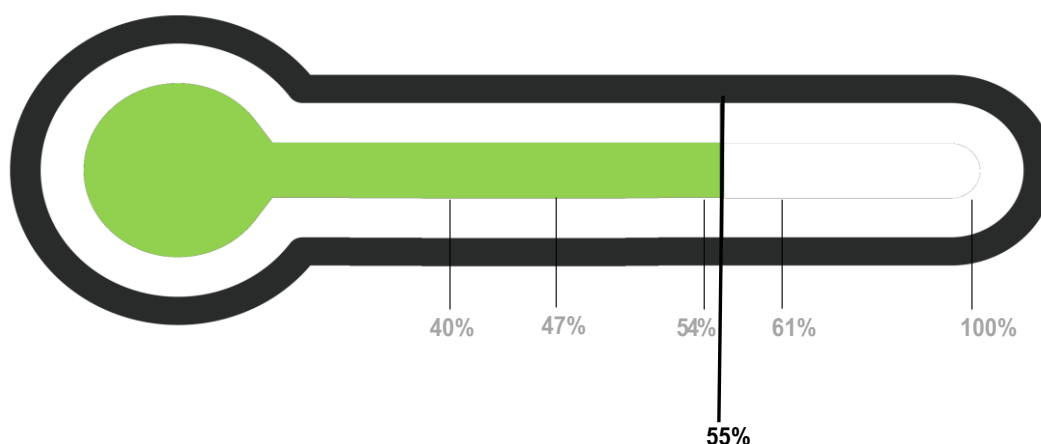
$$\frac{\text{Capital renewal and replacement expenditure}}{\text{Depreciation expense}} \times 100$$

The target norm should be 100% in an entity such as WHC.

4.2.2 Current status

The health grade of the IOH Office Park is shown in the following figure. It indicates that with 55% of the facility's expected useful life remaining, the asset is in a good health status but individual asset component scenarios of poor and very poor, present the case of an aging and neglected asset portfolio. Renewals are underfunded and there is little asset creation activity – urgent attention is required to avoid large scale asset and service failure.

Another scenario applicable to some areas, commonly occurs at the end of life of first-generation assets constructed at scale over a relatively short period of time coupled with a recent and sustained programme of new asset creation. The scenario is indicative of the inability to care for large and expanding asset portfolios. Urgent, multi-year structured renewal programmes are required to avoid systemic asset and service failures, but a structured renewals programme alone is not enough – an optimised asset lifecycle plan is required that also considers portfolio optimisation (addressing over-design, redundancy, etc.). This is to prevent a scenario where ultimately the asset portfolios are beyond the point where they are functionally fit for service and service delivery collapse is imminent.

Figure 10: IOH Office Park health grade

4.2.3 Capital maintenance objectives and targets

The capital maintenance objectives and targets, based on the metrics and status described in the preceding sub-sections, are expressed in **Table 13** below. These targets and objectives should be included in the WHC's uAMP and should inform the capital investment framework and medium to long term financial planning of the WHC.

Table 13: Capital maintenance objectives and targets

Key performance indicator	Current status (March 2024)		Benchmark / target	MTREF		
				Year 1	Year 2	Year 3
				2024/25	2025/26	2026/27
Capital maintenance: maintaining the productive capacity in assets for business sustainability						
Asset consumption ratio	Investment property	55%	50%>	55%	56%	57%
Asset portfolio health grade	Investment property	Good	Good	Good	Good	Good
Asset sustainability	Investment property	TBC %	≥ 95% for each period	95%	95%	95%

The priority is to improve the health of investment property buildings assets from "good" to "good" over the MTREF period ending 2026/27 by moving within the band of "good" health. In the medium to long term, the aim is to sustainably invest in infrastructure renewal (both existing and future infrastructure to be created) to avoid the formation of a new, future renewals backlog. Sustainably increasing continuous investment in renewal requires a considered and phased ramp-up, for the following reasons:

- Committed projects and funds in the short to medium term;
- The need to accommodate not only investment in renewal, but also in the eradication of service access backlogs and to investment in infrastructure for economic growth;
- The need to avoid fiscal shocks in the WHC's finances through short term large-scale increases and / or repackaging in the WHC's overall investment package;
- Limited scope in the national fiscus to accommodate large, additional grant requests and / or the time required to package and secure bankable projects through market funding mechanisms or PPPs; and
- Even where funding is secured, the length of the project cycle from needs identification, to feasibility assessment, to securing funding, design, appointment of contractors, execution of works through to asset commissioning and handover. This project cycle, for construction initiatives, can take several years.

Table 13 therefore provides progressively higher targets for investment in infrastructure renewal, considering the above needs and other factors.

4.3. Operational maintenance

This is the maintenance that ensures that assets reach their intended useful lives while performing at required standards, funded from the operating budget.

4.3.1 Operating maintenance metrics

The following metrics apply.

a. Repairs and maintenance as a % of CRC

This ratio has two applications. Applied to budgeting, it gives an indication of the adequacy of budgeted expenditure for repairs and maintenance of assets. Applied to actual expenditure, it tests whether the entity spent adequately on repairs and maintenance. This metric is calculated as follows:

$$\frac{\text{Repairs and maintenance}}{\text{CRC of immovable assets}} \times 100$$

A reasonable norm range for repairs and maintenance for an investment property building is between 1.8% - 2.2% per annum for civil infrastructure and up to 4,5% per annum for electrical infrastructure, depending on local conditions such as facility composition and geographic area of coverage.

b. Deferred maintenance

This metric quantifies the portion of planned maintenance not undertaken in the period that such work was planned and budgeted for. Deferred maintenance is calculated as follows:

$$\frac{\text{Value of planned maintenance for the financial period} - \text{Actual expenditure on maintenance}}{\text{Value of planned maintenance for the financial period}}$$

The norm is 8% or less, which equates to one (1) month of delayed expenditure on repairs and maintenance, assuming an equal spread of maintenance expenditure across the year. Spending below this level is indicative of inefficiencies in the planning regime, funding constraints or delivery capacity. Sustained levels of deferred maintenance may lead to asset impairment.

4.3.2 Objectives and targets for maintenance business management performance

The current and targeted status of performance against the above objectives for the WHC are shown below.

Table 14: Operating maintenance objectives and targets

Key performance indicator	Current status (March 2024)		Benchmark / target	MTREF		
				Year 1	Year 2	Year 3
				2024/25	2025/26	2026/27
Maintenance to ensure that assets reach their intended useful lives while performing at required standards						
Maintenance spending as a % of CRC	Investment property	TBC %	1.8% - 2.2%	1,66%	2%	2,2%
Deferred maintenance	Investment property	Not known	8%	8%	8%	8%

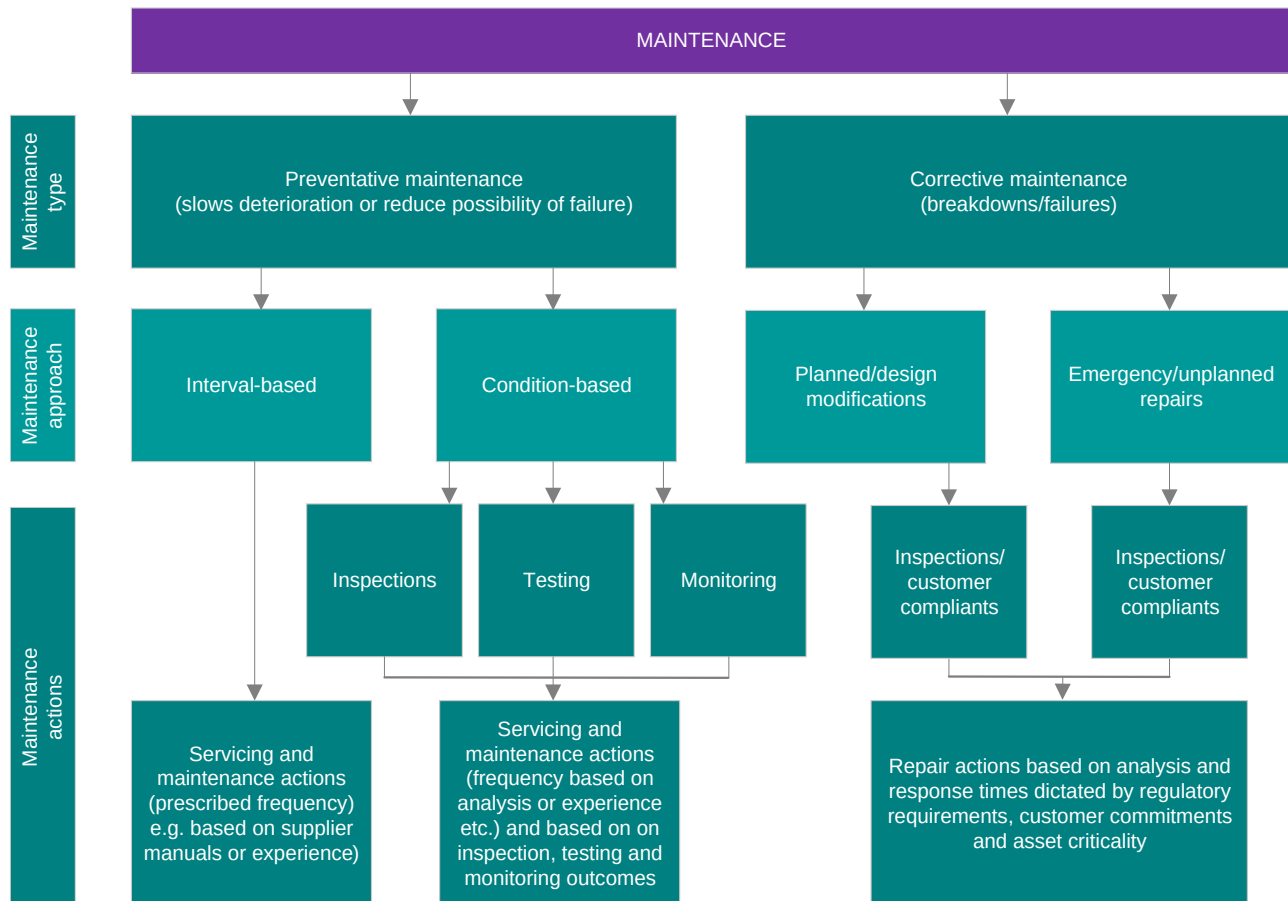
5. MAINTENANCE NEEDS AND FUNDING REQUIREMENTS

5.1. Introduction

5.1.1 Types of maintenance

The figure below indicates that there are two main types of maintenance, these being preventative maintenance and corrective maintenance.

Figure 11: Maintenance hierarchy



Note (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. Indication that maintenance is required to prevent corrective maintenance and keep the assets in working condition.

Corrective maintenance is carried out after fault recognition and is intended to put an item back into a state in which it can perform a required function. This type of maintenance can be an emergency repair, unscheduled or planned repair based on inspection or customer complaints. This method of maintenance forms part of many organisation’s maintenance operations. It is also the most expensive as downtime, high overtime on resources cost and high requirements on spare parts inventory is required to respond effectively and restore the systems to operation. It is estimated that corrective maintenance costs three times more than the same repairs done under a preventive maintenance regime. For this reason, incorporating proper scheduling, managing and data collection to enable effective preventative maintenance is a key part of the proposed strategy.

Preventative maintenance comprises the replacement of components or overhauling assets at a fixed interval to prevent premature equipment damage or failure that would result in unscheduled downtime that would lead to a repair or corrective activity. This approach in maintenance management is predominantly recurring or time-driven tasks performed to maintain a level of availability and reliability. Preventative maintenance can be divided into two categories, namely interval based and condition based. Interval based maintenance is carried out in accordance with an established time schedule or an established number of units of use. This type of maintenance can be guided by supplier's manuals or experience. An example of this would be to service a car after a set amount of km driven, where the kilometre is the established unit of use. Condition based preventative maintenance involves inspection of assets, testing and parameter monitoring to determine if any maintenance is needed and then carrying out any requirements identified. The performance and parameter monitoring may be scheduled on request or continuously. An example of this would be inspecting a building's roof and patching the areas where water damage has been identified.

5.1.2 Purpose of this section

This section determines the maintenance funding needs of IOH Office Park assets considering the extent and current replacement cost of these asset facilities. Supporting this maintenance strategy is a preventative maintenance plan for the IOH Office Park. The objective is to progressively move WHC out of reactive maintenance mode into a predominantly preventative maintenance regime. This latter plan therefore established preventative maintenance work packages for asset components as relevant, also considering whether preventative maintenance actions are required to achieve statutory requirements. For each work package, there is an estimated cost and a frequency. Since the number of components are also known, it is possible to generate a total estimated preventative maintenance budget.

The previous two sections also noted that the portfolio health of the IOH Office Park as acceptable but there are already certain asset components, some are even critical assets, that are below accepted norms. This results not only in a known renewals backlog, but also in a likely maintenance backlog, resulting in the need for corrective maintenance. This section therefore also scopes a programme to come to grips with corrective maintenance needs through assessment of IOH Office Park assets, identification of corrective maintenance needs and development of corrective maintenance work packages.

5.2. Analysis of current maintenance costs and budget provisions

5.2.1 Maintenance expenditure

Total maintenance expenditure for investment property in the 2023/24 financial period could not be obtained from the Chief Financial Officer (CFO) as the WHC did not have ownership of the IOH Office Park whereas the 2023/24 financial years' R&M by the previous owner, is not known. The total maintenance for the 2024/25 period of R10,02 million on the investment property asset portfolio equates to 1,66% of CRC, which is on the low side – it should be closer to 2% (or R12,09 million) or 2,2% (or R13,3 million) of CRC, which is very close to ideal but should not include renewals which is to be from CAPEX - it should be from OPEX alone.

5.2.2 Budgeted maintenance spending over the MTREF period (2024/25 to 2026/27)

Table 15: Maintenance budget forecast (2024/25 – 2026/27)

Asset portfolio	2024 - AFS	2025 - MTREF	2026 - MTREF	2027 - MTREF
Investment properties	R10,021,081	R10,993,126	R12,087,492	R13,296,241
Annual increase in maintenance expenditure	At 1,66%	9,7%	9,955%	10%

The current MTREF should make provision for annual increases in the maintenance budget of between 9,7% and 10% and should separate out the renewals and upgrades from the maintenance.

5.3. Total maintenance needs

This maintenance plan estimates total funding needs for the maintenance of IOH Office Park assets.

5.3.1 Maintenance cost estimation approach and form of presentation

Maintenance costs have been estimated at a component level using a zero-based estimation model where the cost is calculated based on the appropriate industry percentage of CRC, as per the asset register, of the relevant component, and considering the extent of each component. This includes routine inspections and work done on a periodic basis, which may be on cycles less than a year, or more than a year. The elements, activities and costs (excluding VAT) which have been considered, are as follows:

- Human resources including costs for management, technical, artisan and labour staff;
- All transport costs;
- Tools, plant and equipment required for tasks;
- Materials and spares used; and
- Contracts directly related i.e. support and maintenance work outsourced, repair work, etc.

Table 16: Maintenance categorisation - Per cidb discipline

Asset class	Maintenance category	Maintenance discipline (CIDB)
Improved property	Buildings	EB / GB / ME / SF / SI / SK / SM / SO
	Civil structures	GB / SC
	DC systems	EP
	Drainage	SB / SO
	Earthworks	SC
	Electrical equipment	EB
	External facilities	EB / GB / SH / SK / SL / SM / SO / SQ
	HV switching station equipment	EP
	Mechanical equipment	ME
	Metal work	SL
	MV Conductors	EP
	MV Mini-substations	EP
	MV switching station equipment	EP
	MV transformers	EP
	Pavements	SB
	Pipe work	SF / SO
	Road furniture	GB
	Service connection on site	SO

For purposes of this maintenance plan, maintenance costs have been estimated at the level of Asset Type (e.g. building). Accordingly, maintenance costs at asset type level have been estimated for mechanical, civil and electrical asset types and work, or some combination of these where appropriate, at an asset class level.

5.3.2 Estimated maintenance costs for 2024/25

Total estimated maintenance funding needs for IOH Office Park in 2024/25 amounts to R10 021 081, as shown in **Table 17**.

Table 17: Summarised maintenance funding needs for the IOH Office Park (2024/25)

Facility name	Total	Corrective maintenance	Preventative maintenance
IOH Office Park	R10,021,081	R2,004,216	R8,016,864

Table 18 provides the overall picture of estimated maintenance funding needs for IOH Office Park in 2024/25 at an asset class level, followed by tables showing the required estimated maintenance funding needs per building complex on the IOH Office Park facility as required for budgeting purposes.

Table 18: Cost of annual maintenance per maintenance category for the IOH Office Park

Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
Buildings	EB - Electrical engineering works - Building	R1,378,759	R275,752	R1,103,007
	GB - General building works	R3,046,305	R609,261	R2,437,044
	ME - Mechanical engineering works	R1,480,448	R296,090	R1,184,358
	SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R381,607	R76,321	R305,285
	SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R355,548	R71,110	R284,438
	SK - Road markings and signage (installation, renewal, removal, alteration or dismantling)	R50,540	R10,108	R40,432
	SM - Timber buildings and structures	R1,028,211	R205,642	R822,568
	SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R75,719	R15,144	R60,575
Civil structures	GB - General building works	R388,296	R77,659	R310,636
	SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R117,012	R23,402	R93,609
DC systems	EP - Electrical engineering works - Infrastructure	R0	R0	R0
Drainage	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R5,577	R1,115	R4,462
	SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R13,278	R2,656	R10,622
Earthworks	SC - Building excavations, shaft sinking and lateral earth	R4,890	R978	R3,912

IOH Maintenance plan for WHC

Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
	support (development, extension, installation, removal and dismantling)			
Electrical equipment	EB - Electrical engineering works - Building	R817,292	R163,458	R653,834
	SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R173,384	R34,677	R138,707
External facilities	EB - Electrical engineering works - Building	R28,636	R5,727	R22,909
	GB - General building works	R38,576	R7,715	R30,861
	SH - Landscaping, irrigation and horticulture works (development, extension, installation, maintenance, renewal, removal, renovation, alteration or dismantling)	R91,382	R18,276	R73,105
	SK - Road markings and signage (installation, renewal, removal, alteration or dismantling)	R1,705	R341	R1,364
	SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R7,402	R1,480	R5,922
	SM - Timber buildings and structures	R520	R104	R416
	SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R157	R31	R126
	SQ - Steel and precast concrete palisade fencing, wire netting fences supported on metal droppers and standards or metal posts and stays or steel sheet fences and precast concrete walls (development of fences)	R168,589	R33,718	R134,872
HV switching station equipment	EP - Electrical engineering works - Infrastructure	R38,016	R7,603	R30,413
Mechanical equipment	ME - Mechanical engineering works	R1,129	R226	R903
	SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R28,463	R5,693	R22,770
Metal work	SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R89,977	R17,995	R71,981
MV conductors	EP - Electrical engineering works - Infrastructure	R22,671	R4,534	R18,137
MV mini-substations	EP - Electrical engineering works - Infrastructure	R58,578	R11,716	R46,863
MV switching station equipment	EP - Electrical engineering works - Infrastructure	R1,005	R201	R804
MV transformers	EP - Electrical engineering works - Infrastructure	R53,819	R10,764	R43,055
Pavements	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R9,361	R1,872	R7,489
Pipe work	SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation,	R23,176	R4,635	R18,541

Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
	alteration or dismantling)			
	SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R40,788	R8,158	R32,630
Road furniture	GB - General building works	R42	R8	R33
Service connections on site	SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R225	R45	R180
Total for the IOH Office Park (excluding VAT)		R10,021,081	R2,004,216	R8,016,864
Value added tax		R1,503,162	R300,632	R1,202,530
Total for the IOH Office Park (inclusive of VAT)		R11,524,243	R2,304,849	R9,219,394

Table 18.1: Cost of annual maintenance per maintenance category for Harrow Court buildings

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
Harrow Court buildings	Buildings	EB - Electrical engineering works - Building	R256,594	R51,319	R205,275
		GB - General building works	R486,260	R97,252	R389,008
		ME - Mechanical engineering works	R205,597	R41,119	R164,478
		SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R28,322	R5,664	R22,657
		SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R31,604	R6,321	R25,283
		SK - Road markings and signage (installation, renewal, removal, alteration or dismantling)	R11,830	R2,366	R9,464
		SM - Timber buildings and structures	R217,981	R43,596	R174,385
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R24,027	R4,805	R19,221
	Civil structures	GB - General building works	R90,922	R18,184	R72,738
		SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R10,288	R2,058	R8,230
	Drainage	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R911	R182	R729
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation,	R1,416	R283	R1,133

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Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
		renewal, removal, alteration or demolition)			
	Electrical equipment	EB - Electrical engineering works - Building	R94,547	R18,909	R75,637
		SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R21,673	R4,335	R17,338
	External facilities	EB - Electrical engineering works - Building	R3,294	R659	R2,635
		GB - General building works	R9,370	R1,874	R7,496
		SH - Landscaping, irrigation and horticulture works (development, extension, installation, maintenance, renewal, removal, renovation, alteration or dismantling)	R32,292	R6,458	R25,834
		SK - Road markings and signage (installation, renewal, removal, alteration or dismantling)	R1,483	R297	R1,187
		SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R5,602	R1,120	R4,482
		SM - Timber buildings and structures	R520	R104	R416
		SQ - Steel and precast concrete palisade fencing, wire netting fences supported on metal droppers and standards or metal posts and stays or steel sheet fences and precast concrete walls (development of fences)	R285	R57	R228
	Mechanical equipment	ME - Mechanical engineering works	R147	R29	R117
		SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R3,558	R712	R2,846
	Metal work	SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R19,031	R3,806	R15,225
	MV switching station equipment	EP - Electrical engineering works - Infrastructure	R370	R74	R296
	MV transformers	EP - Electrical engineering works - Infrastructure	R26,910	R5,382	R21,528
	Pavements	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R1,035	R207	R828
	Pipe work	SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R4,952	R990	R3,962
	Total for Harrow Court buildings		R1,590,820	R318,164	R1,272,656

Table 18.2: Cost of annual maintenance per maintenance category for Old Trafford buildings

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
Old Trafford buildings	Buildings	EB - Electrical engineering works - Building	R824,124	R164,825	R659,300
		GB - General building works	R1,554,274	R310,855	R1,243,419
		ME - Mechanical engineering works	R760,339	R152,068	R608,272
		SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R226,688	R45,338	R181,351
		SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R237,032	R47,406	R189,625
		SK - Road markings and signage (installation, renewal, removal, alteration or dismantling)	R1,774	R355	R1,419
		SM - Timber buildings and structures	R407,237	R81,447	R325,790
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R39,179	R7,836	R31,343
	Civil structures	GB - General building works	R89,834	R17,967	R71,867
		SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R8,375	R1,675	R6,700
	Drainage	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R420	R84	R336
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R249	R50	R199
	Earthworks	SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R528	R106	R422
	Electrical equipment	EB - Electrical engineering works - Building	R555,460	R111,092	R444,368
		SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R108,365	R21,673	R86,692
	External facilities	EB - Electrical engineering works - Building	R18,979	R3,796	R15,184
		GB - General building works	R10,617	R2,123	R8,494
		SH - Landscaping, irrigation and horticulture works (development, extension, installation, maintenance, renewal, removal, renovation, alteration or dismantling)	R23,133	R4,627	R18,506
		SK - Road markings and signage (installation, renewal, removal, alteration or dismantling)	R222	R44	R177
		SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R1,800	R360	R1,440

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
	Mechanical equipment	ME - Mechanical engineering works	R983	R197	R786
		SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R17,789	R3,558	R14,231
	Metal work	SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R44,244	R8,849	R35,396
	MV mini-substations	EP - Electrical engineering works - Infrastructure	R58,578	R11,716	R46,863
	Pavements	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R304	R61	R243
	Pipe work	SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R4,400	R880	R3,520
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R9,572	R1,914	R7,658
	Road furniture	GB - General building works	R42	R8	R33
Total for Old Trafford buildings			R5,004,543	R1,000,909	R4,003,634

Table 18.3: Cost of annual maintenance per maintenance category for the Heritage House

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
Heritage House	Buildings	EB - Electrical engineering works - Building	R3,332	R666	R2,665
		GB - General building works	R9,962	R1,992	R7,970
		SM - Timber buildings and structures	R21,922	R4,384	R17,538
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R634	R127	R507
	Civil structures	SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R215	R43	R172
Total for Heritage House			R36,065	R7,213	R28,852

Table 18.4: Cost of annual maintenance per maintenance category for the Common Areas

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
Common assets	Civil structures	GB - General building works	R1,489	R298	R1,191
		SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R83,940	R16,788	R67,152
	DC systems	EP - Electrical engineering works - Infrastructure	R0	R0	R0
	Drainage	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R3,474	R695	R2,779
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R11,009	R2,202	R8,807
	Earthworks	SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R3,781	R756	R3,025
	External facilities	EB - Electrical engineering works - Building	R1,814	R363	R1,451
		GB - General building works	R4,897	R979	R3,918
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R157	R31	R126
		SQ - Steel and precast concrete palisade fencing, wire netting fences supported on metal droppers and standards or metal posts and stays or steel sheet fences and precast concrete walls (development of fences)	R164,943	R32,989	R131,954
	HV switching station equipment	EP - Electrical engineering works - Infrastructure	R38,016	R7,603	R30,413
	MV conductors	EP - Electrical engineering works - Infrastructure	R22,671	R4,534	R18,137
	MV switching station equipment	EP - Electrical engineering works - Infrastructure	264	R53	R211
	Pavements	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R7,048	R1,410	R5,638
	Pipe work	SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R12,063	R2,413	R9,650
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R22,402	R4,480	R17,921
	Service connections on site	SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R225	R45	R180
Total for Common Areas			R378,193	R75,639	R302,554

Table 18.5: Cost of annual maintenance per maintenance category for Wilds View buildings

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
Wilds View buildings	Buildings	EB - Electrical engineering works - Building	R288,374	R57,675	R230,699
		GB - General building works	R640,974	R128,195	R512,779
		ME - Mechanical engineering works	R514,511	R102,902	R411,609
		SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R126,537	R25,307	R101,230
		SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R86,912	R17,382	R69,529
		SK - Road markings and signage (installation, renewal, removal, alteration or dismantling)	R36,936	R7,387	R29,549
		SM - Timber buildings and structures	R168,905	R33,781	R135,124
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R11,650	R2,330	R9,320
	Civil structures	GB - General building works	R103,956	R20,791	R83,165
		SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R8,298	R1,660	R6,639
	Drainage	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R772	R154	R618
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R306	R61	R245
	Earthworks	SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R581	R116	R465
	Electrical equipment	EB - Electrical engineering works - Building	R166,590	R33,318	R133,272
		SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling)	R43,346	R8,669	R34,677
	External facilities	EB - Electrical engineering works - Building	R4,549	R910	R3,639
		GB - General building works	R13,691	R2,738	R10,953
		SH - Landscaping, irrigation and horticulture works (development, extension, installation, maintenance, renewal, removal, renovation, alteration or dismantling)	R35,957	R7,191	R28,765
		SQ - Steel and precast concrete palisade fencing, wire netting fences supported on metal droppers and standards or metal posts and stays or steel sheet fences and precast concrete walls (development of fences)	R822	R164	R657
	Mechanical equipment	SI - Lifts, escalators, travellers and hoisting machinery (development, extension, installation, repair, maintenance, renewal, removal, renovation,	R7,116	R1,423	R5,693

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
		alteration or dismantling)			
	Metal work	SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R 24,795	R 4,959	R19,836
	MV switching station equipment	EP - Electrical engineering works - Infrastructure	R 370	R 74	R296
	MV transformers	EP - Electrical engineering works - Infrastructure	R 26,910	R 5,382	R21,528
	Pavements	SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	R 974	R 195	R779
	Pipe work	SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R 3,175	R 635	R2,540
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R 3,861	R 772	R3,089
Total for Wilds View buildings			R2,320,867	R464,173	R1,856,694

Table 18.6: Cost of annual maintenance per maintenance category for the Parking Garage buildings

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
Parking Garage	Buildings	EB - Electrical engineering works - Building	R907	R181	R726
		GB - General building works	R352,392	R70,478	R281,913
		SM - Timber buildings and structures	R209,121	R41,824	R167,297
	Civil structures	GB - General building works	R101,962	R20,392	R81,570
		SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R5,753	R1,151	R4,602
	Drainage	SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R297	R59	R238
	Electrical equipment	EB - Electrical engineering works - Building	R662	R132	R530
	Metal work	SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R1,906	R381	R1,525
	Pipe work	SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R3,539	R708	R2,831
	Total for Parking Garage buildings		R676,540	R135,308	R541,232

Table 18.7: Cost of annual maintenance per maintenance category for the Security House

Asset complex within facility	Asset type maintenance category	Maintenance discipline	Total required	Sum of Corrective maintenance budget need	Sum of Preventative maintenance budget need
Security House	Buildings	EB - Electrical engineering works - Building	R5,428	R1,086	R4,342
		GB - General building works	R2,444	R489	R1,955
		SF - Fire preventions and protection infrastructure (drencher and sprinkler systems and fire installation) (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	R59	R12	R48
		SM - Timber buildings and structures	R3,044	R609	R2,435
		SO - Water installations and soil and waste water drainage associated with buildings (wet services and plumbing) (development, extension, installation, renewal, removal, alteration or demolition)	R230	R46	R184
	Civil structures	GB - General building works	R132	R26	R106
		SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	R143	R29	R114
	Electrical equipment	EB - Electrical engineering works - Building	R34	R7	R27
	External facilities	SQ - Steel and precast concrete palisade fencing, wire netting fences supported on metal droppers and standards or metal posts and stays or steel sheet fences and precast concrete walls (development of fences)	R2,540	R508	R2,032
	Total for Security House		R14,053	R2,811	R11,242

5.3.3 Implications of modelled maintenance needs

The modelled annual maintenance need indicate that WHC should spend R10 021 081 (excluding VAT) on the IOH Office Park for maintenance in the 2024/25 financial period but it excludes the R51 million (excluding VAT) immediately needed to overcome the current condition (or technical) backlog described in the following section. These modelled amounts include provision for both annual preventative and reactive maintenance only. Accordingly, the ideal split between preventative and corrective maintenance is 80:20.

Table 19: 2024/25 modelled for IOH Office Park needs (excluding VAT)

Asset facility	2024/25 modelled needs	Preventative maintenance needs	Corrective maintenance needs	Preventative maintenance cost %	Corrective maintenance cost %
IOH Office Park	R10,021,081	R8,016,864	R2,004,216	80%	20%

The actual budget provision for the IOH Office Park facility maintenance for 2024/25 should be R10,02 million.

5.4. Condition based maintenance or renewals requirements

5.4.1 Restore each component to working order based on the assessed condition of the component (condition-based maintenance or renewals)

During the assessment phase, it was established that some asset components currently have a condition backlog. These asset components were identified to be defective and need to be restored to a working condition which is

typically undertaken from either a capital (CAPEX) or an operation (OPEX) budgeting mechanism. The prioritised maintenance or renewals work packages (based on condition backlog) identified during the assessment phase, shows a total immediate funding requirement to deal with the condition backlog of R51 003 746 (excluding VAT) for the IOH Office Park facility. The summary of the bill of material informing this technical backlog costing report to deal with this condition backlog, is in the table below.

Table 20: Condition (or technical) backlog

Asset type	Component type to work on	Mar-2024
Buildings	Air conditioning	R44,620,140
	Electrical installation (building)	R639,071
	Finishes, fixtures & fittings	R1,533,379
	Roof	R2,453,207
	Walls	R66,503
Civil structures	Retaining wall	R40,568
Electrical equipment	Extraction blower	R356,200
External facilities	Carport	R39,047
	External lighting	R8,906
	Irrigation	R464,289
	Paving	R38,027
	Perimeter protection	R191,550
Mechanical equipment	Gearbox	R5,634
Metal work	Fabricated steel	R149,618
Pavements	Road structural layer	R39,441
Pavements	Road surface	R348,398
Road furniture	Street rubbish bin	R9,769
Total for the IOH Office Park (excluding VAT)		R51,003,746
Value added tax		R7,650,562
Total for the IOH Office Park (inclusive of VAT)		R58,654,308

5.4.2 Condition based maintenance or renewals requirements according to trades

It is necessary to package the component-based work into typical built environment work packages / disciplines applicable. The summary of the bill of material informing this typical built environment work packages / disciplines necessary to deal with this condition backlog, is in the table below.

Table 21: Technical backlog expressed in trades necessary

Typical built environment work packages / disciplines	Mar-2024
Carpentry	R38,831
Electrical	R746,293
Floors	R728,312
HVAC	R44,976,340
Iron Mongery (refurbish or new)	R350,938
Landscaping	R464,289
Mechanical	R5,634
Painting	R656,864

Typical built environment work packages / disciplines	Mar-2024
Paving (refurbish or new)	R38,027
Roof covering	R2,540,146
Tarring or bitumen (layering, speed humps or road marking)	R387,839
Walls / Brickwork	R70,233
Total for IOH Office Park (excluding VAT)	R51,003,746
Value added tax	R7,650,562
Total for IOH Office Park (inclusive of VAT)	R58,654,308

Table 22: Technical backlog expressed as OPEX or CAPEX budget requirements

Remedial action to be taken	Typical built environment work packages / disciplines	Component type to be worked on	Corrective from OPEX	Preventative from OPEX	Renewals from CAPEX
Painting	Iron Mongery (refurbish or new)	Fabricated steel	R149,618		
		Street rubbish bin	R864		
	Painting	Finishes, fixtures & fittings	R620,026		
		Walls	R36,838		
Patch	Roof covering	Finishes, fixtures & fittings	R47,893		
		Roof	R1,549,815		
Repair	Carpentry	Finishes, fixtures & fittings	R4,085		
	Electrical	Electrical installation (building)	R225,400		
	Iron Mongery (refurbish or new)	Street rubbish bin	R8,906		
	Landscaping	Irrigation	R464,289		
	Paving (refurbish or new)	Paving	R38,027		
	Roof covering	Carport	R39,047		
	Walls / Brickwork	Retaining wall	R40,568		
		Walls	R29,665		
Replace	Carpentry	Finishes, fixtures & fittings	R34,746		
	Electrical	Electrical installation (building)	R413,677		
		External lighting	R8,906		
		Finishes, fixtures & fittings	R98,317		
	Floors	Finishes, fixtures & fittings			R728,312
	HVAC	Air conditioning			R44,620,140
		Extraction blower			R356,200
	Iron Mongery (refurbish or new)	Perimeter protection			R191,550
	Roof covering	Roof			R903,392
	Tarring or bitumen (layering, speed humps or road marking)	Road structural layer			R39,441
		Road surface			R348,398
Service	Mechanical	Gearbox		R5,634	
Total for IOH Office Park (excluding VAT)			R3,801,774	R5,634	R47,196,338
Value added tax			R570,266	R845	R7,079,451
Total for IOH Office Park (inclusive of VAT)			R4,372,040	R6,480	R54,275,788

5.4.3 Condition based maintenance or renewals requirements according to cidb contractor's classification

It is necessary to package the component-based maintenance or renewals work to be done into the cidb contractor's classifications applicable. The summary of the bill of material informing this cidb contractor's classification of contractors necessary to deal with this condition backlog, is in the table below.

Table 23: Technical backlog per cidb contractor's classification

Cidb contractor's classification to execute condition-based maintenance or renewals work packages	Component to be worked on	OPEX / CAPEX March 2024
EB - Electrical engineering works - Building	Electrical installation (building)	R639,071
	External lighting	R8,906
	Finishes, fixtures & fittings	R44,062
GB - General building works	Fabricated steel	R20,627
	Finishes, fixtures & fittings	R1,430,124
	Paving	R38,027
	Street rubbish bin	R9,769
	Walls	R66,503
ME - Mechanical engineering works	Air conditioning	R44,620,140
	Extraction blower	R356,200
	Gearbox	R5,634
SB - Asphalt (extension, installation, repair, maintenance or renewal, or removal)	Road structural layer	R39,441
	Road surface	R348,397
SC - Building excavations, shaft sinking and lateral earth support (development, extension, installation, removal and dismantling)	Retaining wall	R40,568
SH - Landscaping, irrigation and horticulture works (development, extension, installation, maintenance, renewal, removal, renovation, alteration or dismantling)	Irrigation	R464,289
SL - Structural steelwork and scaffolding (development, extension, installation, renewal, removal, renovation, alteration or dismantling)	Carport	R39,047
	Fabricated steel	R128,992
SM - Timber buildings and structures	Roof	R903,392
SN - The extension, installation, repair, maintenance, renewal, removal, renovation or alteration, as relevant, of the waterproofing of basements, roofs and walls using specialist systems.	Finishes, fixtures & fittings	R59,193
	Roof	R1,549,815
SQ - Steel and precast concrete palisade fencing, wire netting fences supported on metal droppers and standards or metal posts and stays or steel sheet fences and precast concrete walls (development of fences)	Perimeter protection	R191,550
Total for IOH Office Park (excluding VAT)		R51,003,746
Value added tax		R7,650,562
Total for IOH Office Park (inclusive of VAT)		R58,654,308

The prioritised maintenance work packages based on the condition backlog above as identified during the assessment phase, cannot be further prioritised because it is an immediate need from CAPEX or OPEX to address the technical backlog existing now in asset components.

Normal annual maintenance requirements however could be further prioritised from the available CAPEX or OPEX budgets for best results as discussed in **Section 6.2** and **6.3** below.

6. MAINTENANCE APPROACH

6.1. Introduction

The preceding section demonstrated that budget provision in 2024/25 for IOH Office Park assets is insufficient to address all the maintenance needs. The budget provision should increase from a zero base significantly over the MTREF period.

The following two factors combined will however have an influence on the maintenance funding provision over the MTREF period:

- At the time of preparation of this maintenance plan, the inflation rate stood at 6%.
- WHC will invest R51 million (excluding VAT) in new asset creation in the investment property asset portfolio. These additional assets will also require maintenance.

The impact of the above factors, and how they contribute to a maintenance funding surplus / shortfall over the MTREF period, are shown in **Table 24** below:

Table 24: Projected maintenance funding shortfall over the MTREF period (excluding VAT)

Item	2025 - MTREF	2026 - MTREF	2027 - MTREF
<i>Provision for increase in maintenance allocations over MTREF (current asset facility)</i>			
Annual expenditure / provision for IOH Office Park	R10,993,126	R12,087,492	R13,296,241
Annual increase in maintenance expenditure	9.70%	9.96%	10.00%
Inflation rate	6.00%	6.00%	6.00%
Effective increase (%)	3.70%	3.96%	4.00%
Effective increase (Rand value)	R370,780	R434,778	R483,500
<i>Estimated need adjusted for asset portfolio expansion and inflation</i>			
6% annual increase in CRC of base IOH Office Park facility	R640,650,059	R679,089,062	R719,834,406
CAPEX budget for new IOH Office Park facility assets	R51,003,746	R0	R 0
Combined CRC of assets	R691,653,805	R679,089,062	R719,834,406
Total annual maintenance funding need at 3.8204703% of CRC	R26,424,428	R27,892,979	R27,501,060
Total annual budgeted shortfall for maintenance	R15,431,302	R16,465,075	R16,024,434
Total budgeted shortfall for maintenance over MTREF	R47,920,811		

The total maintenance funding shortfall for the IOH Office Park facility assets is projected to be R47,9 million (excluding VAT) over the MTREF period. This situation requires that the available maintenance budget be prioritised for best results.

6.2. Approach to the prioritisation of maintenance

The following methodology is used to prioritise the maintenance budget to deal with the challenge of insufficient funding if it does arise:

- Using the asset register, establish the risk exposure profile of IOH Office Park assets based on asset criticality (see **Section 2.5**, and note that criticality is an indicator of the level of the consequence of failure) and asset condition

(see **Section 2.4**, and note that condition is an indicator of the likelihood or probability of failure). The result will be a risk exposure profile, with the CRC of assets indicated in each level of risk exposure:

Figure 12: Asset risk exposure matrix

		CONSEQUENCE				
		Insignificant	Minor	Moderate	Major	Catastrophic
PROBABILITY	Almost certain	M	S	H	E	E
	Likely	L	M	S	E	E
	Moderate	L	M	S	H	E
	Unlikely	L	L	M	H	H
	Rare	L	L	M	H	H

The resulting maintenance priority is then:

Table 25: Maintenance priority

Risk exposure		Maintenance priority	
E	Extreme	1	Critical
H	High	2	Essential
S	Significant	3	Necessary
M	Medium	4	Relax maintenance when budget constraints exist
L	Low	5	Can be deferred when budget constraints exist

- b. Calculate the maintenance funding requirements for assets in each level of asset risk exposure.
- c. Compare the maintenance funding requirements for each level of asset risk exposure to approved maintenance budget provisions to determine whether the approved budget is enough to deal with maintenance priorities 1-3, statutory compliance requirements as well as adequate provision for corrective maintenance for maintenance priorities 4-5.
- d. If the available maintenance budget is still insufficient, consider the following measures:
 - Identify opportunities for a maintenance payment holiday by considering recent and current asset renewal programmes and projects, in instances where it will not affect statutory compliance requirements, asset useful life or service delivery. An example is the refurbishment / renewal projects underway where say a third of the facility has been replaced within the past 12 months or so, and as such this portion of the facility is in "as new" condition. As a result, preventative maintenance on this facility can be deferred for a year or two, and budget provisions for corrective maintenance can be reduced as failures should be limited.
 - In instances where assets are known to be in very poor condition and are scheduled for imminent renewal or replacement, reduce preventative maintenance actions and focus on providing for corrective maintenance only.
 - Further prioritise based on factors such as asset redundancy and revenue potential.
- e. Based on the above, finalise the maintenance plan and budget allocations for the IOH Office Park.

The above is short to medium term prioritisation tactics. In the medium to long term, it will be necessary to:

- Increase maintenance budget provisions; and to
- Optimise asset portfolios by reducing the amount of redundant assets and therefore ease the maintenance funding requirements, as shown in **Figure 13** below.

Figure 13: Asset portfolio optimisation



6.3. Asset risk exposure and funding requirements for different levels of maintenance priorities

The risk exposure profile for the IOH Office Park assets, with the CRC of assets indicated in each level of risk exposure, is shown in **Table 26**.

The asset components with the highest risk rating include fire protection, batteries and battery charger as part of the HV sub-station, pipe – fire fighting water, sign – regulatory, generators and MV cable with the second highest risk rating then for the channels and pipe-storm water carrying surface run-off water, the HV and MV bulk electrical installations, roof, electrical installation (building) and fabricated steel especially on access doors as asset components. As part of this second highest risk rating follows hydrants, some air conditioning and all the service connections to site with perimeter protection last in this risk rating category.

Table 26: Risk exposure matrix for IOH Office Park - CRC values

Probability	Consequence					Total CRC [R]	% CRC
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Critical (5)		
Almost certain (5)	R0	R0	27,828,653	R1,619,332	R349,213	R29,797,199	5%
Likely (4)	R49,848,248	R0	R96,096,818	R10,090,642	R155,186	R156,190,894	26%
Moderate (3)	R9,345,334	R299,892	R31,642,731	R2,695	R0	R41,290,652	7%
Unlikely (2)	R0	R822,472	R371,014,842	R0	R0	R371,837,314	62%
Rare (1)	R1,272,064	R0	R3,530,279	R468,447	R0	R5,270,790	1%
Total CRC	R60,465,645	R1,122,364	R530,113,324	R12,181,116	R504,399	R604,386,848	100%

The risk exposure profile for the IOH Office Park in terms of the calculated maintenance funding requirements in each level of risk exposure, is shown in **Table 27**.

Table 27: Risk exposure matrix - maintenance funding requirements

Probability	Consequence					Total [R]
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Critical (5)	
Almost certain (5)	R0	R0	R519,655	R22,671	R0	R542,326
Likely (4)	R1,196,358	R0	R1,973,028	R360,539	R776	R3,530,701
Moderate (3)	R205,597	R7,113	R934,926	R13	R0	R1,147,650
Unlikely (2)	R0	R7,402	R4,677,246	R0	R0	R4,684,649
Rare (1)	R50,883	R0	R62,999	R1,874	R0	R115,755
Total CRC	R1,452,838	R14,515	R8,167,854	R385,097	R776	R10,021,081

An analysis of the risk exposure matrix in terms of the maintenance funding requirements shows that the maintenance funding requirements for the different risk exposure categories are as in **Table 28**.

Table 28: Maintenance priority

Risk exposure		Maintenance priority		Maintenance funding requirements
E	Extreme	1	Critical	R542,326
H	High	2	Essential	R3,530,701
S	Significant	3	Necessary	R1,147,650
M	Medium	4	Relax maintenance when budget constraints exist	R4,684,649
L	Low	5	Can be deferred when budget constraints exist	R115,755

The total maintenance cost for maintenance priority categories 1 to 5 is R10,02 million. The annual expenditure / provision for maintenance funding from the 2024 – MTREF amounts to R10,02 million. The current MTREF budget provision is therefore enough for the annual maintenance requirements for all maintenance priority categories.

Statutory requirements from the regulations listed in previous sections, specify an annual inspection for lifts and escalators which are not relevant to Isle of Houghton as well as fire fighting equipment, in some cases even more regular. This entails that all facilities with these assets be inspected, and its condition assessed at least once a year, sometimes even serviced as well. From the developed maintenance model, it is calculated that the required funding for IOH Office Park annual inspections (including for amongst others fire protection, batteries, battery charger, pipe - fire fighting water, sign - regulatory, generators, MV cable and lifts) are at least R718 298. Therefore, the current MTREF maintenance budget is enough to deal with maintenance priorities 1-5 and statutory compliance requirements.

7. MAINTENANCE MANAGEMENT ROLES AND RESPONSIBILITIES

7.1. Maintenance management

Maintenance should start with proper planning. A risk assessment must be carried out and workers should be involved in this process. It must be ensured that the working conditions are safe and that the correct equipment is used during the process.

The following steps can be taken to ensure proper maintenance is carried out.

7.1.1 Planning

Issues to be covered at the planning stage include:

- The scope of the task – what needs to be done, and how it will affect other workers and activities in the workplace;
- Risk assessment – potential hazards must be identified (e.g., dangerous substances, confined spaces, moving parts of machinery, chemical substances or dust in the air), and measures necessary to eliminate or minimize the risks;
- Permits to work and lock-out systems;
- The time and resources that the activity will require;
- Communication between maintenance and production staff, and all other parties concerned; and
- Competence of the employees and adequate training.

Employers need to ensure that workers have the skills that they need to carry out the necessary tasks, are informed about safe work procedures, and know what to do when a situation exceeds their competence.

7.1.2 Making the workplace safe

The work area needs to be secured by preventing unauthorized access, by using barriers and signs, for example. The area also needs to be kept clean and safe, with power locked-out, moving parts of machinery secured, temporary ventilation installed, and safe routes established for workers to enter and exit the work area.

Warning cards should be attached to machinery, with the date and time of lock-out, as well as the name of the person authorized to remove the lock. This way, the safety of the worker performing the maintenance on the machine will not be jeopardized by another worker inadvertently starting it up.

If possible, safety guards should be designed to allow minor maintenance on the machines without removing them. If the guards must be removed or deactivated, then lock-out procedures should be followed. Maintenance workers must be trained on how, and under which conditions, safeguards may be removed.

7.1.3 Use of appropriate equipment

Workers involved in maintenance tasks should have the appropriate tools and equipment, which may be different from those that they normally use. Considering that they may be working in areas that are not designed to have people working in them, and that they may be exposed to a variety of hazards, they must also have appropriate personal protective equipment (PPE).

With respect to the equipment and tools to be used, employers should ensure that:

- The right tools and equipment for the job are available (together with instructions in using them, if required);
- They are in an appropriate condition; and

- They are suitable for the work environment, and they have an ergonomic design.

All personal protective equipment must:

- Be appropriate for the risks involved, without the equipment itself leading to any increased risk;
- Correspond to existing conditions at the workplace;
- Take account of ergonomic requirements and the worker's state of health; and
- Fit the wearer correctly after any necessary adjustment.

7.1.4 Working as planned

Safe work procedures must be communicated and understood by workers and supervisors and applied correctly. The work should be monitored so that the agreed safe systems of work and jobsite rules are observed.

Maintenance is often carried out under pressure – for example, when a fault has caused the mini-substations to stop working, leading to a block-out. Safe procedures need to be followed, even when there is time pressure. Shortcuts could be very costly if they lead to accidents, injuries or damage to property.

Procedures need to be in place for unexpected events. Part of the safe system of work should be to stop work when faced with an unforeseen problem or a problem exceeding one's own competence. It is very important to remember that exceeding the scope of one's own skills and competence may result in accidents.

7.1.5 Final check

The maintenance process needs to end with checks to make sure that the task has been completed, that the machine under maintenance is in a safe condition, and that all waste material that has been generated during the maintenance process has been cleaned away. When all is checked and declared safe, then the task can be signed off on the job card, and supervisors and other workers can be notified.

This final step also involves completing a report, describing the work that has been performed and including comments on any difficulties that have been encountered, together with recommendations for improvement. Ideally, this should also be discussed at a staff meeting where the workers involved in the process, as well as those working around them, can comment on the maintenance activity and come up with suitable suggestions to improve the process.

A proposed Master Task list has been provided in **Annexure C** providing a detailed description of work required and how it should be performed for a work order.

8. CONCLUSION AND RECOMMENDATIONS

This maintenance plan presents a short to medium term intervention for ensuring that assets function according to their expected useful lives based on a condition grading of asset components and at the expected levels of functionality where after it get extrapolated to a 10-year horizon. It highlights the following:

- the componentised asset register, based on the detailed visual condition assessments completed, shows the infrastructure valued at a CRC (R604,4 million) as well as at a DRC (R331,9 million) as at 31 March 2024;
- an annual maintenance budget provision to be made as an OPEX item for the 2024/25 financial year (R10,2 million), is based on industry norms applied to the maintenance percentages per asset component required;
- sources need to be finalised for the additional funding required with regard to, amongst others, condition backlog eradication amounting to more than R51 million (excluding VAT) as a OPEX as well as a CAPEX item;
- if the total annual maintenance requirement is considered for the existing and new assets created by addressing the current condition backlog and factors such as inflation are considered, then the WHC has a budget shortfall for maintenance over the MTREF period up to the 2027 cycle, of R47,9 million (excluding VAT) which could be divided between OPEX as well as CAPEX items; and
-

Each time infrastructure failure occurs, money is lost, either to the actual cost of repairing the failure (or the cost of an accident in the case of safety related failures), or due to production loss, or a combination of both. The process of failure must be managed properly, and one of the most important steps in this regard is to establish an appropriate maintenance strategy - deciding what maintenance to do, when, how often and by whom.

The following recommendations emanate from the assessments:

- 8.1 That this maintenance plan dated March 2024 be adopted for implementation.
- 8.2 That the data model used to recognise, unbundle and value infrastructure assets at the IOH Office Park facility, be considered for a WHC application.
- 8.3 That the asset register established for 31 March 2024 containing the unbundled infrastructure and the associated letter of valuation thereof, be used for insurance purposes.
- 8.4 That the necessary budgetary alignment for 2024/25 maintenance, and going forward, takes place.
- 8.5 Implement a Business Centred Maintenance (BCM) strategy and develop O&M performance measurement indicators for implementation. Both qualitative and quantitative measures to be used to encourage a culture of continuous improvement. Service levels are not only adopted in terms of costs, but also in terms of effectiveness (fulfilment of client needs), efficiency (minimising resources and costs) and pro-activity (response to client's expectations). O&M managers must be able to use tools and techniques to provide management with the correct information and performance reports. Performance measures may vary but should be focussed on the four E's of performance management: Economy, Effectiveness, Efficiency and Efficacy. In the end, it is about doing the right things and then doing things right.
- 8.6 That the WHC develops the asset management policy, the asset accounting policy and the asset disposal policy.
- 8.7 That the WHC considers embarking on the wider and more comprehensive asset management system development and its implementation, firstly to be compliant and meeting South African regulatory stipulations, but ultimately as foreseen by ISO / SANS 5500X.

ANNEXURE A: RISK IMPACT RATING SCALE AND PROBABILITY GRADING SCALE EXAMPLE

Impact rating	Indicative spatial scale of impact	Organisation's ability to cope with impact	Assumed monetary value (for purposes of prioritisation only)		Impact category				
			Risk cost range	Assumed risk cost	Service delivery performance	Health and safety	Environmental damage	Municipal image	Direct costs (repair, lost, income, third party damage)
1. Insignificant	One or a few customers	Is readily absorbed under normal operating conditions	< R 200 000	R 100 000	Service delivery interruption of less than 2 hours, limited to one or a few non-critical customers	Health impact limited to first aid at most	Minor transient environmental damage, visual effects only	Individual interest only, no community concern	R 100 000
2. Minor	A few street blocks	Can be managed under normal operating conditions	R 200 001 - R 1 000 000	R 500 000	Service delivery impact of between 2-6 hours, affecting one or few customers, or service delivery impact of less than 2 hours affecting several street blocks	Minor health impact of a temporary nature on small number of people	Minor damage to environment, longer effect	Minor community interest, minor local media report	R 500 000
3. Moderate	Whole village, suburb or neighbourhood	Can be managed but requires additional resources and management effort	R 1 000 001 - R 5 000 000	R 2 500 000	Service delivery interruption affecting a whole village, suburb or neighbourhood for upto 2 hours	Serious health impact on small number or minor impact on large number of people	Moderate environmental impact. Prosecution expected	Public community discussion, major local media interest	R 2 500 000
4. Major	CBD/Primary node/special economic zone/major industrial area/multiple neighbourhoods	Will have a prolonged impact and extensive consequences	R 5 000 001 - R 30 000 000	R 15 000 000	Service delivery interruption affecting a major node, or which exceeds the maximum duration allowed for one event in terms of legislation	Extensive injuries or significant health impacts, single fatality. May result in inquiry or prosecution	Major long term environmental impact. Prosecution expected	Major loss in community confidence	R 15 000 000
5. Catastrophic	Municipal-wide	Irreversible and extensive impacts, or significantly undermining key business objectives	> R 30 000 000	R 40 000 000	Non-achievement of legal mandate	Multiple fatalities. Likely to result in commission of inquiry and prosecution	Serious damage of national importance and irreversible impact. Prosecution expected	National media	R 40 000 000

The probability rating scale is used to assess the likelihood of a risk materialising.

Likelihood grade	Likelihood	Description	Probability
5	Almost certain	This risk is expected to occur within 1 year	0.99
4	Likely	This risk is expected to occur between 1 and 5 years	0.333
3	Moderate	This risk is expected to occur between 6 and 20 years	0.077
2	Unlikely	This risk is expected to occur between 21 and 50 years	0.033
1	Rare	This risk is expected to occur after 51 years	0.013

ANNEXURE B: CONDITION ASSESSMENT RESULTS

- 1. Fieldwork results**
- 2. Photographs**

ANNEXURE B-1. FIELDWORK RESULTS

ANNEXURE B-2. PHOTOGRAPHS

ANNEXURE C: MAINTENANCE ACTIVITIES

Component type	Descriptor type	Workflow description	Rolled up activity description	Internal description	Annual occ.	Maintenance priority (1-5)
Air conditioning	All subclasses of this component have the same maintenance activities	6 Monthly service	Service	• Inspect for physical damage • Check filter condition, clean/replace as required • Check dip tray, clean as required • Check electrical connection • Check operation of all controls and safety • Clean unit casing.	2	3
Air conditioning	All subclasses of this component have the same maintenance activities	Yearly service	Service	• In addition to 6-month inspections • Check refrigerant coil and Operating Pressure, clean as required.	1	1
Carports	All subclasses of this component have the same maintenance activities	5 Yearly Service	Service	Repair and perform general maintenance including repaint of roof and poles.	0,2	1
Commuter shelter	All subclasses of this component have the same maintenance activities	3 monthly Inspection	Inspection	•Check condition of shelter and clean up.	4	1
Commuter shelter	All subclasses of this component have the same maintenance activities	5 Year Service	Service	Perform general maintenance including repainting of roof and structure.	0,2	3
Earthworks	Platform	1 Yearly Inspection	Inspection	•Check for subsidence, moisture, settlement. •Sub soil drains, slope protection, slips, bulging.	1	5
Electrical installation	All subclasses of this component have the same maintenance activities	05 Yearly Service	Inspect and repair	•Test circuit breakers operation •Test Wall Plugs and Switches •Check and Test Light Fittings •Check and Test Earth Connection •Issue a Certificate of compliance.	0,2	1
External furniture	All subclasses of this component have the same maintenance activities	1 Yearly inspection	Inspect	•check condition of paint and state of component.	1	5
External furniture	All subclasses of this component have the same maintenance activities	1 Yearly service	Service	Repaint component and carry out minor repairs.	1	5
External lighting	All subclasses of this component have the same maintenance activities	Yearly Inspection and service	Inspect and Service	•Check luminaire, structure, wiring, check water proofing and clean.	1	3
Fabricated	All subclasses of this component	1 Yearly inspection	Inspect	Structural integrity checks	1	5

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Component type	Descriptor type	Workflow description	Rolled up activity description	Internal description	Annual occ.	Maintenance priority (1-5)
steel	have the same maintenance activities			Identify steel needing corrective work.		
Fabricated steel	All subclasses of this component have the same maintenance activities	1 Yearly Service	Service	•Apply corrosion protection where applicable •Sand and paint according to the general corrosion protection specification.	1	5
Finishes, fixtures & fittings	All subclasses of this component have the same maintenance activities	Yearly Inspection	Inspection	Check for visual damage to fittings and finishes.	1	5
Finishes, fixtures & fittings	All subclasses of this component have the same maintenance activities	5 Yearly service	Service	Perform general maintenance including painting inside of buildings.	0,2	5
Fire protection	Extinguishers, hose reels only	Yearly inspection and service	Inspection and Service	Service, test and check equipment for operation Replace where non-functional.	1	1
Floor	RC surface bed	1 Yearly Inspection and Service	Inspection and Service	•Repair cracks or surface failures prevent water ingress.	1	5
High Mast	All subclasses of this component have the same maintenance activities	1 Yearly Service	Service	•Measure earth resistance of trench •Measure earth resistance of electrode •Service luminaire •Inspect and replace light fittings (lamp, ballast, igniter) •Check for loose nuts •Check winch oil •Check nut bolt greasing •Check wire rope •Check motor chain greasing •Level the lifting carriage, wire rope greasing ground check.	1	3
High Mast	All subclasses of this component have the same maintenance activities	3 Monthly Inspection	Inspection	•Check earth connection at footing •Check mast door for weatherproof seal •Service luminaire.	4	3
Hydrant	All subclasses of this component have the same maintenance activities	1 Yearly Inspection	Inspection	•Confirm hydrant is working •Confirm hydrant is functional and accessible.	1	1
Hydrant	All subclasses of this component have the same maintenance activities	1 Yearly Service	Service	•Lubricate the threads with light white grease •Replace seals if required check that the street valve is open •Clean out any debris in the hydrant •Cut back any plants over-growing the hydrant •Exercise the valves	1	1

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Component type	Descriptor type	Workflow description	Rolled up activity description	Internal description	Annual occ.	Maintenance priority (1-5)
				•Verify presence of gaskets •Check the status of the ash pit.		
Landscaping	All subclasses of this component have the same maintenance activities	6 Monthly Service	Service	•Fertilize and enrich lawn and plants, prune trees.	2	5
Mini round-about	All subclasses of this component have the same maintenance activities	Yearly inspection	Inspection	Check round about for damage.	1	5
Mini round-about	All subclasses of this component have the same maintenance activities	1 Yearly Service	Service	•Renew road markings •Replace/renew traffic calming features, etc.	1	5
Paving	All subclasses of this component have the same maintenance activities	2-year inspection	inspection	•Inspect paving for cracks and damage.	0,5	5
Perimeter protection	All subclasses of this component have the same maintenance activities	6 Monthly inspection	inspection	•Check fence for rust, tightness or plumpness' •Check for any damaged poles that require replacement •Check that the gates working properly •Check for vandalism of fencing •Check the fence for litter and any growth or any other element interfering with the function or integrity of the system within 0,5m on each side of the fence and remove.	2	5
Perimeter protection	All subclasses of this component have the same maintenance activities	5 Yearly service	Service	Repaint fence, poles, gates, etc.	0,2	5
Plumbing	All subclasses of this component have the same maintenance activities	Yearly inspection	Inspection	Check for wet spots or dripping pipes and connections	1	5
RC structure	Shuttered RC engineered structure	Yearly inspection	Inspection	•Check for spalling, cracks, leaks, corrosion •Check for and remove debris or empty, clean, disinfect •Check for sediment deposits •Check for slides or erosion on banks.	1	3
RC structure	Below ground structure	Yearly inspection	Inspection	•Check for spalling, cracks, leaks, corrosion •Check for and remove debris or empty, clean, disinfect •Check for sediment deposits •Check for slides or erosion on banks.	1	3
RC structure	Mass concrete	Yearly inspection	Inspection	•Check for spalling, cracks, leaks, corrosion •Check for and remove debris or empty, clean, disinfect	1	3

IOH Maintenance plan for WHC

Component type	Descriptor type	Workflow description	Rolled up activity description	Internal description	Annual occ.	Maintenance priority (1-5)
				•Check for sediment deposits •Check for slides or erosion on banks.		
Roof	All subclasses of this component have the same maintenance activities	Yearly roof inspection	Inspection	Check for damaged roofs Check for leaks Check for sagging.	1	5
Security system	All subclasses of this component have the same maintenance activities	3 Monthly Inspection	inspection	•Check and clear vegetation from the electric fence •Check for damaged insulators •Check earth wire are connected correctly to earthing rod •Check energizer is in working condition (pulse should be less than 2m apart). •Check the Fence Voltage using a Voltmeter and record it •Check for broken and weak posts.	12	5
Sign - general	All subclasses of this component have the same maintenance activities	Annual inspection	inspection	•Check road signs.	2	5
Sign - regulatory	All subclasses of this component have the same maintenance activities	6 Monthly inspection	inspection	•Check road signs.	2	3
Small building / enclosure	All subclasses of this component have the same maintenance activities	1 Yearly Inspection	inspection	•Check for cracks, damage.	1	5
Small building / enclosure	All subclasses of this component have the same maintenance activities	5 Yearly service	Service	Repaint building.	0,2	5
Speed hump	All subclasses of this component have the same maintenance activities	1 Yearly Service	Service	•Repaint so that speed hump remains conspicuous •Check condition, repair G49 hazard signs as required.	1	5
Speed hump	All subclasses of this component have the same maintenance activities	1 Yearly Inspections	Inspection	Check for damage to speed hump.	1	5
Street Light	All subclasses of this component have the same maintenance activities	3 Monthly Inspection	inspection	•Check luminaire •Check that all pole covers are secure •Measure earth resistance of electrode.	4	3
Walls	All subclasses of this component have the same maintenance activities	5 Yearly service	Service	Repaint walls.	0,2	5

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Component type	Descriptor type	Workflow description	Rolled up activity description	Internal description	Annual occ.	Maintenance priority (1-5)
Walls	All subclasses of this component have the same maintenance activities	Yearly inspections	Inspection	Check for cracks.	1	5
Water meter	All subclasses of this component have the same maintenance activities	6 Monthly inspection	Inspection	•Check if any mechanical noise can be heard when the meter is running •Check general condition for leakages, damage, etc.	2	5