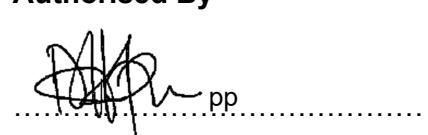


 Eskom	Specification	Generation
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Title:	<b>Duvha Power Station Civil Services Maintenance 5 years contract scope for work</b>	Unique Identifier:	
		Alternative Reference Number:	<b>N/A</b>
		Area of Applicability:	<b>Engineering</b>
		Documentation Type:	<b>Specification</b>
		Revision:	<b>1</b>
		Total Pages:	<b>28</b>
		Next Review Date:	<b>N/A</b>
		Disclosure Classification:	<b>CONTROLLED DISCLOSURE</b>

Compiled by	Functional Responsibility	Authorised By
 V Chirwa System Engineer: Civil Structures Date: 2025/11/11	N Hlophe Auxiliary Engineering Manager Date: 2025/11/11	 M Mamoleka Engineering Group Manager Date: 2025/11/11

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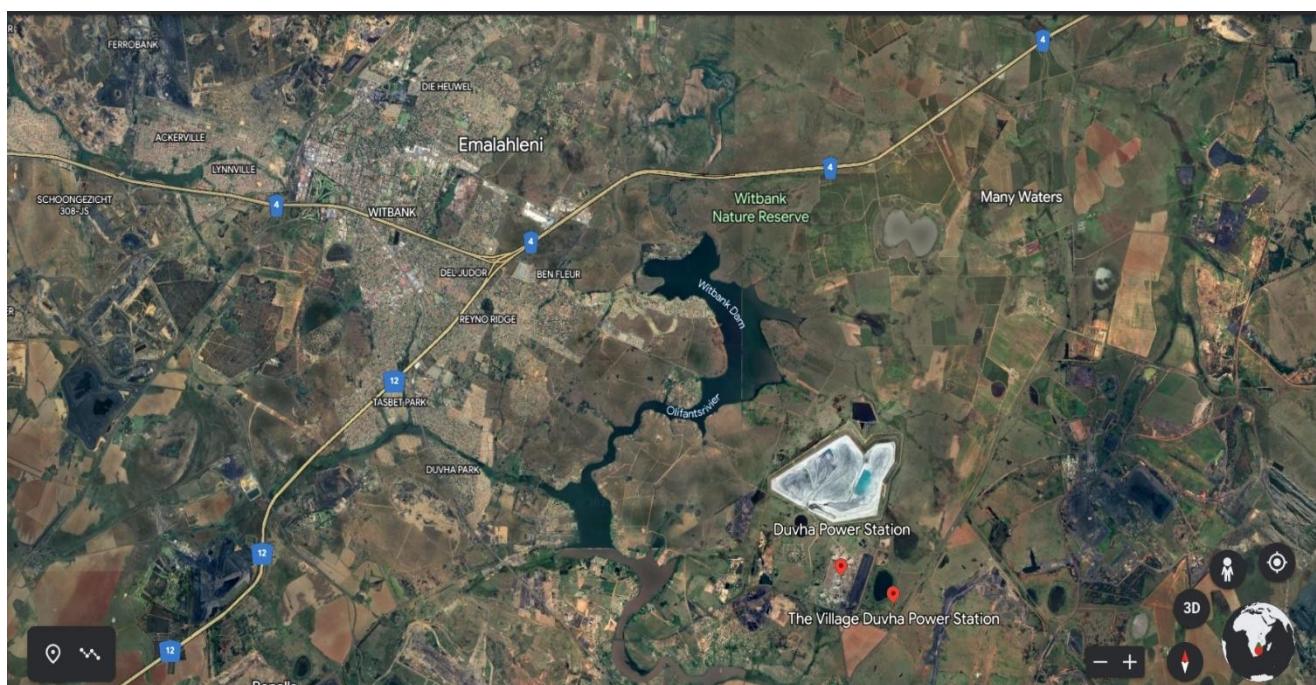
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## **1. INTRODUCTION**

Duvha Power Station, owned and operated by Eskom is a coal-fired power station of five power-generating units with a combined capacity of 3,000MW (excluding unit 3 which was decommissioned). The power station is located about 13 kilometres southeast of Emalahleni in the Nkangala District Municipality, Mpumalanga Province. The location is illustrated in Figure 1 below. The centre co-ordinates (WGS 84) for the power station are as follows:

25° 57' 40.96" S 29° 20' 17.06" E

Duvha Power Station has over 40 years in operation and civil and structures are required to be inspected and maintained periodically for safe use as per the construction regulations. This document contains the technical requirement for corrective and preventative maintenance works to be carried out by an appointed contractor for a period of 5 years. The technical requirements are in line with the maintenance strategy for Duvha Power Station civil and structures. All defective infrastructures will be executed and prioritised in accordance with the requirements stipulated in (240-44948953 Work Prioritisation Procedure). The maintenance works for the civil structures is for period of 5 years to ensure compliance with construction regulations to render the civil structures and infrastructures safe for continue use.



**Figure 1:** Showing a topographical location of Duvha Power Station

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## **2. SUPPORTING CLAUSES**

### **2.1 SCOPE**

This document covers the technical requirement for the provision of a maintenance contract for Duvha Power Station civil and structures. The service for the maintenance works is outsourced to a contractor to execute the works on behalf of the client. This works includes but not limited to the followings works.

- Plumbing works such as repair, unblocking and replacement.
- Carpentry works such as repair, replacement, and weather protection (outdoor).
- Floor and roof tiling works such as repair, replacement, and weather protection (outdoor).
- Weather proofing of structures such as waterproofing for roof sheeting and repairs of concrete roof slab water proofing.
- Painting works such as repair and replacement.
- Remove, repair and replacement of paving blocks

#### **2.1.1 Purpose**

The purpose of this document is to describe in detailed the requirement for the provision of a maintenance contract for Duvha Power Station civil and structures to comply with Construction Regulations and the Occupational Health and Safety Act, no 85 of 1993 (OHS).

#### **2.1.2 Applicability**

This document applies to Duvha Power Station.

## **2.2 NORMATIVE/INFORMATIVE REFERENCES**

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

### **2.2.1 Normative**

- [1] 32-727 - Eskom Safety, Health, Environment and Quality (SHEQ) Policy.
- [2] Occupational Health and Safety Act No. 85 of 1993, Construction Regulations.
- [3] ISO 9001 Quality Management Systems.
- [4] 240-99527377, Inspection manual for civil works at Eskom's Power Stations.
- [5] 03A-ENS0040 Rev 3 - Civil Structures Maintenance Execution Strategy.
- [6] 03A-ENS0042 Rev 3 - Water Retaining Structure Outside Plant Maintenance Strategy.
- [7] 240-44948953 Work Prioritisation Procedure.
- [8] 240-106365693, Standard for External Corrosion Protection of Plant Equipment and Associated Piping with Coatings.
- [9] 240-75655504 Corrosion Protection Standard for New Indoor and Outdoor Eskom Equipment.
- [10] 240-106628253, Standard for Welding Requirements on Eskom Plant

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- [11] National Environmental Management Act, 1998 (Act 107 of 1998)
- [12] National Environmental Management Waste Act, 2008 (Act 59 of 2008)

These documents are indispensable for the application of this document, i.e., documents to be used together with this document.

## **2.2.2 Informative**

- [13] 474-58 (Rev1): Document and Records Management
- [14] 240-53113685, Design Review Procedure
- [15] 240-53114002, Engineering Change Management Procedure
- [16] 240-76992014, Project/Plant Specific Technical Documents and Records Management Work Instruction

## **2.3 DEFINITIONS**

<b>Definition</b>	<b>Description</b>
<b>Controlled disclosure</b>	controlled disclosure to external parties (either enforced by law, or discretionary).
<b>Task Order</b>	A task order is a written instruction to proceed with the task as stipulated on the particular task order. The task order will only be valid if a “45 number” appear on the task order. The “45 number” will serve as the order number for the task and need to be stated on the invoice for the work done as per task order.
<b>Client</b>	The owner of the Power Station at which the inspections are to be done. Normally the Client will be represented by the Power Station or System Engineer
<b>Contractor</b>	Service provider appointed to supply a specific service to Eskom, Duvha Power Station.
<b>Employer</b>	Eskom, or Eskom Duvha Power Station or representative
<b>Sub-contractor</b>	An individual or business which has a contract with a principal contractor to supply some portion of the work or services on a project which the contractor has agreed to perform

## **2.4 ABBREVIATIONS**

<b>Abbreviation</b>	<b>Description</b>
CCTV	Closed-Circuit Television
CV	Curriculum Vitae
CM	Contract Manager
ECSA	Engineering Council of South Africa
ESP	Electrostatic Precipitator
FFP	Fabric Filter Plant

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<b>Abbreviation</b>	<b>Description</b>
ISO	International Standard Organisation
MW	megawatt
SANS	South African National Standards
SHEQ	Safety, Health, Environmental & Quality
SE	System Engineer
PPE	Personal protective Equipment
PSR	Plant Safety Regulations
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Plan
WGS	World geodetic System

## **2.5 ROLES AND RESPONSIBILITIES**

### **2.5.1 Employer**

#### **Safety, Health and Environmental**

The Employer shall ensure the following:

- The Contractor is in good standing with the compensation fund, or any licensed compensation insurer as contemplated in the compensation for occupational injuries and diseases act, before work beginning work on site.
- A Health and Safety specification or plan is in place/available, implemented and maintained. The Employer shall also ensure that a copy of the Principal Contractor's health and safety plan is available on request to an Employee, Inspector or Contractor. Non-compliances will result in work stoppages.
- Audit periods are mutually agreed between the Client and Principal Contractor.
- The Contractor is notified promptly of situations which may affect the health and safety of any person carrying out works on site.
- Sufficient health and safety information as well as resources are made available to the Principal Contractor, where changes are brought about.
- Persons appointed by the Employer may at any stage during the term of the contract:
  - Conduct health and safety audits to establish the effectiveness of the Contractor's health and safety management systems.
  - Refuse employees or agents of the Contractor access to the Power Station Site if such persons commit unsafe acts or unsafe working practice or is found not competent or authorised.
  - Stop works should there be unsafe working practices and procedures.

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## **General**

The Employer shall ensure the following:

- Employees of the Contractor have the necessary competencies and resources to carry out works.
- The work is carried out by appropriately by competent person(s).
- All relevant Eskom governance documents are provided to the Contractor.
- Conduct periodical inspections for the works performed by the Contractor.
- Provide quality assurance for the works performed by the Contractor.

### **2.5.2 Appointed Principal Contractor**

#### **Safety, Health and Environmental**

The Principal Contractor shall ensure the following:

- Compliance with all requirements of the Occupational Health and Safety Act no 85 of 1993 and its regulations and all other relevant health and safety legislation to ensure the health and safety of persons carrying out works. This shall also apply to sub-contractors.
- A health and safety plan, based on the employer's health and safety specification is provided to the employer. This shall be applied from the date of commencement and duration of works. The contents of the health and safety plan shall also be discussed and negotiated with sub-Contractors. The health and safety plan shall be implemented and maintained on site.
- Compliance with Eskom's SHE policy, procedures, standards, guidelines, specifications, and site regulations.
- All employees undergo safety induction training on-site.
- All employees or agents, visitors of the Contractor are medically, physical, and psychologically fit to enter the Power Station and carry out works. Employees shall also have a valid medical certificate of fitness specific to the work to be performed.
- Sub-Contractor(s) is in good standing with the compensation fund, or any licensed compensation insurer as contemplated in the compensation for occupational injuries and diseases act, before work beginning work on site.
- Safeguard all employees by maintaining a safe and hygiene working environment and culture.
- A safety profile is kept for tracking and auditing purposes.
- All safety and health related incidents around site or working areas and threats that pose a danger to one's life or health are at once reported.
- Sufficient health and safety information as well as resources are made available to the Contractor, where changes are brought about.
- The Contractor shall also ensure that ergonomic related hazards are evaluated and addressed in the risk assessment.
- The Contractor's employees and/or sub-Contractors are notified promptly of situations which may affect the health and safety of any person carrying out works on site.
- The Contractor shall wear the full PPE as displayed at different plant areas. The provision of the PPE to the Contractors' Employees is the responsibility of the Contractor.

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- Employees/agents are supervised. Full responsibility and accountability shall be taken to ensure that all employees are competent and aware of all requirements needed to execute works safely.
- Perform quality control and risk assessments on all on-site activities or works. These shall be performed by a competent person appointed in writing. The risk assessment shall form part of the health and safety plan to be applied on the site and shall include at least:
  - The identification of the risks and hazards to which persons may be exposed to.
  - The analysis and evaluation of the risks and hazards identified.
  - A documented plan of safe work procedures to mitigate, reduce or control the risks and hazards that have been identified.
  - A monitoring plan; and
  - A review plans.
- Compliance with all applicable environmental laws and regulations, guidelines and procedures during the execution of maintenance services. Subcontractors and others under the Contractor's direction and control shall observe and comply with the latter.

## **General**

- All Contractors shall work within the parameter of the job description and scope of work. To keep all instructions/ procedures on hand and supply Eskom power station with reference to be included in this document and supply record and history requirements.
- The Contractor is responsible for executing the works as detailed in this document. The Contractor takes all necessary precautions that may be required to safeguard existing infrastructure and services including protection of all surface works. These additional works are formally documented in method statements for the Employer's review and acceptance.
- The Contractor takes note that review and acceptance of any document/ drawing/ design calculations by the Contract Manager in no way relieves the Contractor of his liability for the works. The Contractor remains liable for all works conducted as per this document.
- The Contractor is liable and fully accountable for the works and the constructability thereof.
- The Contractor interacts with others through the Contract Manager or Contract Manager's delegates, to ensure seamless integration of the various works.
- Execute the scope of work as per the employer's specification.
- Shall work with and consult with the other functions/structures of the Employer.
- Resources and tools required by personnel for executing works are provided by the Contractor.
- Shall produce and submit to the Employer for approval, the number and details of personnel that will execute the works. Qualifications and proof thereof shall also be provided to the Employer.
- Shall procure or co-ordinate the supply of required consumables.
- Shall assist the maintenance Contract Manager in planning, organizing, and managing all maintenance related activities.
- Shall take adequate precautions to prevent damage to civil and structural assets.

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- The Contractor's employees or agent shall abide to Eskom's Life Saving Rules. If found to have violated any of the Eskom Life Saving Rules, they may face disciplinary action.
  - Open, isolate, test, earth, bond, and/or insulate before touch.
  - Hook up at heights.
  - Buckle up.
  - Be sober.
  - Ensure that you have a permit to work.
  - Wear correct PPE at all times.
  - Report all incidents.

## **2.6 REQUIRED CRITERIA FOR CONTRACTOR**

### **2.6.1 site Core crew**

The Contractor shall provide a site core crew, equipment and tools as stated in the price list as part of daily routine maintenance, breakdown, and emergency maintenance repairs. Maintenance includes monitoring, testing, inspecting and repairs. Maintenance activities will be carried out according to National and Eskom Standards and procedures listed in this document. SAP Plant Maintenance system will be used to record defects and schedule works. The description, priority and location of the works will be recorded as part of the notification system through SAP.

The core crew will be subjected to the same working hours as Eskom employees to ensure oversight of works by the Employer. The working time from Mondays to Thursdays will be from 07h00 to 16h15 and on Fridays will be from 07h00 to 12h00. The lunchtime break will be 30minutes on Mondays to Thursdays starting from 12h00 to 12h30.

### **2.6.2 Skills requirement**

1x Site Manager – Minimum requirements for skills and qualifications:

- National Diploma in Civil Engineering with supervisor or management related course/Contracts or project management.
- Safety/Legislation training, e.g., OHS Act, Legal liability, HIRA, Construction Regulations, Labour relations.
- Minimum five years post qualification experience in construction or industrial environment with at least three years at management level.
- Computer skills (such as Microsoft word, outlook, excel and power point)
- Ability to obtain Authorisation as a 'Responsible Person" in terms of the Eskom Plant Safety Regulations at Duvha Power Station.
- Evaluation, analysing and decision-making skills for technical problems.
- Manage and lead the team to ensure proper adherence to the contract scope and execution of all work by the team.
- Provide advice and guidance to technical problems and possible solutions.
- Ensure adherence to national and local legislative requirements.

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- Ensuring compliance to the Eskom Quality requirements for engineering and construction in generation standard (QM 58 Rev 2).

**2x Supervisors – preferred minimum requirements for skills and qualifications:**

- N6 or National Diploma in Civil Engineering.
- Supervisory training.
- Safety/Legislation training, e.g., OHS Act, Legal Liability, HIRA, Construction Regulations, Labour relations.
- Minimum three years post qualification experience in construction or industrial environment.
- Ability to obtain Authorisation as a ‘Responsible Person’ in terms of the Eskom Plant Safety Regulations at Duvha Power Station.
- Control and manage daily activities.
- Prioritise and allocate work.
- Monitor progress and provide report progress.
- Perform quality control for works.
- Ensure that work is carried out safely.
- Provide advice to the team for plant problems and possible solutions.
- Conduct tests and inspections for works performed by the team.
- Preparing and completion of quality control plans
- Perform plant inspections, identify defects, and initiate corrective actions including closing of such defects.

**1x Safety Officer – preferred minimum requirements for skills and qualifications:**

- National Diploma in Safety Management or SAMTRAC certificate and registered with the SACPCMP as a safety officer.
- Field experience on civil maintenance/structures for at least 3 years as a safety officer in the construction/civil/power plant industry.
- Knowledge of emergency response and crisis management.
- Experience in managing safety in diverse work environments.
- Proficiency in safety auditing, inspection and identifying hazards.
- Well-versed in creating emergency response plans tailored to various scenarios.
- Familiar with compliance with OSH act standards and other relevant safety regulations.
- Knowledge of safety regulations, standards, and best practices.
- Analytical and problem-solving skills to identify and mitigate potential risks.
- Excellent communication and interpersonal skills to effectively interact with employees at all levels.
- Attention to detail and the ability to enforce safety procedures and protocols.
- Knowledge of Eskom safety laws and regulations applicable to the power plant.

**4x Plumber – preferred minimum requirements for skills and qualifications:**

- Trade test and a minimum of 3-year post graduation working experience as a plumber.
- Safety training.
- Work-at-Height training.
- Provide possible solutions in respect to plant problems and execute the tasks safely.

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- Ability to obtain Authorisation as a 'Responsible Person" in terms of the Eskom plant safety regulations at Duvha Power Station.
- Ability to Carry Heavy Equipment (Including tools and equipment, loading and off-loading material).

**2x Carpenter – preferred minimum requirements for skills and qualifications:**

- Apprentice trained with a trade test and a minimum of 3-year previous relevant experience.
- Safety training such as OHS act, Legal Liability, HIRA, Construction Regulations.
- Working at height training.
- Provide possible solutions in respect to plant problems and execute the tasks safely.
- Ability to obtain authorisation as a 'Responsible Person" in terms of the Eskom plant safety regulations at Duvha Power Station.
- Ability to carry heavy equipment (Including tools and equipment, loading and off-loading material).

**3x Painter – preferred minimum requirements for skills and qualifications:**

- Apprentice trained with a trade test and a minimum of 3-year previous relevant experience.
- Safety training such as OHS act, Legal Liability, HIRA, Construction Regulations.
- Working at height training.
- Provide possible solutions in respect to plant problems and execute the tasks safely.
- Ability to obtain Authorisation as a 'Responsible Person" in terms of the Eskom plant safety regulations at Duvha Power Station.
- Ability to carry heavy equipment (Including tools and equipment, loading and off-loading material).

**2x Tiler – preferred minimum requirements for skills and qualifications:**

- Apprentice trained with a trade test and a minimum of 3-year previous relevant experience.
- Safety training such as OHS Act, Legal Liability, HIRA, Construction Regulations.
- Working at height training.
- Provide possible solutions in respect to plant problems and execute the tasks safely.
- Ability to obtain Authorisation as a 'Responsible Person" in terms of the Eskom plant safety regulations at Duvha Power Station.
- Ability to carry heavy equipment (Including tools and equipment, loading and off-loading material).

**10x Semi-skilled labourer – preferred minimum requirements for skills and qualifications:**

- Physical fitness test
- Safety related courses for semi-skilled resources.
- Working at height training.
- Performs other related duties as required.
- Ability to carry heavy equipment (Including tools and equipment, loading and off-loading material).

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### **2.6.3 Emergency/callouts**

The Contractor shall ensure availability of personnel to attend to civil related plant issues afterhours. A weekly/monthly standby rooster must be provided. The standby team per week to be made of the following skills but additional resources maybe be requested depending on the size of the breakdown:

- 1x Supervisor
- 1x Plumber
- 1x Carpenter
- 2x Unskilled labourer

Only the skill that is related to the plant breakdown, an assistant/unskilled labourer or labourers depending on the extent of the breakdown and a Contract Manager shall respond to a call-out. The callout hours will be based on the time entering the Duvha PS entrance gate and on completion of the work. Callouts traveling is limited to 30 min in each direction (1 hr in total) per call-out.

### **2.7 RELATED/SUPPORTING DOCUMENTS**

Not Applicable

## **3. SCOPE OF WORKS**

### **3.1 DESCRIPTION OF THE WORKS**

The objective of the Employer is to appoint a Contractor for maintenance services of civil and structures at Duvha Power Station for a period of 5 years. The works entails the following:

- Provision of a site core crew of competent personnel to carry out daily routine maintenance, breakdown, and emergency maintenance repairs.
- Provision of correct tools, gears, equipment, and consumables to carry out the work.
- Ensure the safety of own personnel, other contractors, and Eskom employees in the vicinity of the works by complying with the OHS act No.85 of 1993 and Regulations.
- Draft QCPs/ITPs for the works assigned to the contractor.
- Perform quality control on own work as per pre-approved quality control plans.
- Perform work within the specified period and to the acceptable ISO 9001:2015 quality standard.
- Provide labourers to carry out after normal working hours emergency works.

### **3.2 REQUIRE SERVICE FOR CONTRACTOR**

#### **3.2.1 Plumbing**

##### **3.2.1.1 Plumbing services**

- Unblocking of drainage system.
- Replacement or repairs of sewer and portable water supply pipelines.
- Installation of sewer drainage pipes and portable water supply pipelines.
- Installation of new water closet sets and cisterns, sewer pipe bends and elbows, rodding eye caps, and inspection eye caps.
- Remove, repair/replace & install geysers and hydro boiler components such as pipe fittings, element, valves, and thermostat.

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- Installation of fittings (taps, shower heads, toilet paper holders, stopcocks, soap dispensers, mirrors etc)
- Performs other related duties as required.

### **3.2.1.2 Plumbing specifications and requirements**

Galvanised sheet iron pipes have seams at the back and shall be jointed with soldered slip joints.

Pipes are fixed to walls, etc., with galvanised mild steel holderbats spaced at not exceeding 2 m centres with tails driven in or cut and pinned in 3:1 cement mortar.

Unplasticized polyvinyl chloride pipes shall comply with SANS 11 and are jointed and fixed in accordance with the manufacturer's instructions.

Pipes are fixed with standard aluminium alloy holderbats with tails driven in or cut and pinned in 3:1 cement mortar.

Plastic and rubber traps comply with SANS 1322.

Wash hand basins, sinks, washdown closet panes, urinals, cisterns and block channels of fireclay or vitreous China and with vitreous glazed finish comply with SANS 497 and the under-mentioned requirements:

Hand operating flushing cisterns complies with SANS 821. Cisterns with automatic operation are fitted with flushing mechanism of corrosion free material and adjusted to flush at regular intervals.

Flush pipes for high level cisterns comply with SANS 821 (Appendix X) and are of drawn galvanised steel.

Flush pipes for low level cisterns comply with SANS 821 and are of plastic.

Electric geysers comply with SANS 151. Descriptions are deemed to include for the necessary fixing, bolts and jointing to pipes.

<b>Pipes And Fittings</b>	<b>Specification</b>	<b>Class Or Type</b>
Concrete non pressure pipes	SANS 677	SC Type: Class B
Reinforced concrete pressure pipes	SANS 676	-
Vitrified clay sewer pipes and fittings	SANS 559	-
Fibre cement drainpipes	SANS 819	Class 3
Fibre cément pressure pipes (constant internal diameter type)	SANS 1223	-
Pitch impregnated fibre pipes, couplings, and fittings	SANS 921	Fittings shall be polypropylene
Cast iron pipes and fittings for use above ground in drainage installations	SANS 746	Type B Pipes
Unplasticized polyvinyl chloride (UPVC) pipes and fittings for cold water supply	SANS 966	-
Polypropylene pressure pipes	SANS 1315	-
Black polyethylene pipes for cold water supply	SANS 533	-
Cast iron fittings for fibre cement pressure pipes	SANS 546	-

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Cast iron fittings up to 150 mm nominal bore and suitable for screwing to ISO R7 pipe threads	SANS 62	Medium class, galvanised
Copper and copper alloy tubing	SANS 460	Class 1 - above ground
Hard drawn copper tubing	SANS 460	Class 2 - under ground
Stainless steel pipes for use with compression fittings	BS 4127	Class 0 - above ground
Compression and capillary solder fittings for copper tubing	SANS 1067	-

### **3.2.2 Carpentry and Glazing**

#### **3.2.2.1 Carpentry and glazing services**

- Install and repair furniture.
- Erection of formwork/ shutter boards for preparing and shaping fresh concrete where required.
- Remove, repair/replace & install doors.
- Construction of special furniture.
- Installation wooden floors, wall frameworks (timber) and roofs, and lay timber floors.
- Installation/ repair/ replacement of ceiling boards, panels including fittings, supports and accessories.
- Installation of door handles, hinges, locks, hardware, flooring underlay, and other fixtures.
- Removal and replacement of broken glass in wood or metal framed openings.
- Repairs and replacement of window hardware and door closures.
- Performs other related duties as required.

#### **3.2.2.2 Carpentry specifications and requirements**

<b>Material</b>	<b>SANS Specification</b>	<b>Grade or class</b>
Softwood structural timber	563	Stress Grade 4
Softwood engineering timber	1245	As specified
Softwood studs for timber frames in buildings	1146	-
Softwood brandering and battens	653	-
Softwood floor boarding	629	Flooring Grade
Softwood joinery timber	1359	-
Hardwood joinery timber	1099	Knotty grade
Hardwood for boarding	281	As specified
Laminated timber (gluelam)	1460	As specified
Gypsum cove cornice	622	-
Wood fibre building board	540	-
Wood fibre panels (cement bonded)	637	As specified

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Fibre-cement sheets: profiled and flat	685	-
Fibre cement boards	803	As specified
Aluminium roofing sheets	903	As specified
Materials for thermal insulation for buildings	1381	-
Plywood and composite boards	929	As specified
Flush doors	545	-
Glass reinforced polyester laminated sheets	1150	-
Mild steel nails	820	-
Metal screws for woods	1171	-
Fasteners for sheet roof and wall coverings	1273	-
Creosote	538	-

No joinery is primed until it has been inspected and accepted by the *Contract Manager*. Skirtings, cornices, rails, etc., are in single lengths wherever practicable and have splayed heading joints where necessary. Skirtings are trenched at back.

All exposed angles of wrought woodwork, unless otherwise specified, are arris rounded. The term arris rounded denotes that the angles are rounded off to approximately 3 mm radius and sandpapered to a smooth surface.

Angles of wrought woodwork specified to be angle rounded are rounded to a 6 mm radius, unless otherwise and includes, in framed joinery, for housed and mitred joints.

All joinery liable to injury are covered with temporary casing to the entire satisfaction of the *Contract Manager*. All exposed faces of joinery which are eventually to be stained, oiled, or varnished are oiled to preserve them during building operations.

Where joiner's work is described as fixed to walls, etc, except where specifically stated, no method of fixing is specified, but the *Contractor* may employ any accepted method of fixing, etc., plugging, steel nailing, power nailing or power bolting provided that the method used is suitable for the requirements of the specific member to be fixed.

Descriptions of fixing of timber are deemed to include for nails, screws, plugs, adhesives, etc.

All nails and screws are of the size, length and type appropriate to their respective uses. All screws for hardwood joinery work are brass.

Adhesives comply with BS 1204 and 4071 where applicable. Adhesives used in the manufacture of external joinery or joinery exposed to excessive moisture (e.g., kitchen and laboratory worktops) are of the WBP type.

### **3.2.2.3 Glazing specification and requirements**

#### **Glass**

Glass complies with BS 952.

Unless otherwise described, ordinary glazing is clear float glass of "Glazing Quality" polished plate glass of "Glazing Quality", laminated safety glass of "Selected Quality".

Unless otherwise described float glass in panes not exceeding 0.5 m<sup>2</sup> are of 3 mm thickness and float glass in panes exceeding 0.5 m<sup>2</sup> and not exceeding 1.5 m<sup>2</sup> are 4 mm thickness.

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Obscure glass for glazing, unless otherwise specified, are Pacific or other similar accepted figured rolled glass, of a nominal thickness of not less than 4 mm for glass panes up to a surface of 0.5 m<sup>2</sup> and not less than 5 mm over 0.5 m<sup>2</sup>.

### **Putty**

Glazing putty complies with SANS 680 and is Type I for wooden sashes and Type II for steel sashes. Putty for glazing to unpainted hardwood is tinted to match the colour of the wood.

Back putty does not exceed 3 mm thick. Soft or oily putty is not painted and if the putty does not form a surface crust it is to be replaced.

Butyl putty is used where glass is to be fixed in aluminium sashes with glazing beads.

Non-setting compounds are used where laminated glass is fixed in sashes with glazing beads.

Silicone-rubber-base sealing compounds comply with SANS 1305.

### **Glazing**

Glazing is executed in accordance with SANS 10137.

Special glass such as heat-reflecting, toughened or laminated glass and glass units with sealed edges are fixed in accordance with the manufacturer's instructions.

### **Mirrors**

Silvered mirrors comply with SANS 1236 Class A

### **Fixing of Glass**

All glass is cut to suit openings, with sufficient clearance all round to prevent cracking by expansion or contraction, vibration, etc.

Unless otherwise described, the whole of the glass is to be well back puttied, sprigged as necessary and puttied.

Sashes with glazing beads are built in with beads fixed in position and the *Contractor* allows for unscrewing the beads and refixing after glazing.

Glass fixed without back putty with glazing beads in unpainted hardwood doors are bedded on strips or rubber, velvet, leather or felt turned over on to both sides of glass in the rebates to form a soft packing between the glass and the woodwork. In all other cases the glass is well bedded in back putty in the rebates.

No soft or oily putty is to be covered by paintwork until rectified. All putty forms a surface crust and has a smooth finish before any paint is applied. A priming coat is applied to the putty within seven days of putty being applied.

### **3.2.3 Tiling**

#### **3.2.3.1 Tiling Services**

- Surface preparations before installing tiles, takes measurement and advice on tile materials, designs, and colour.
- Removal and installation of floor, roof, and wall tiles.
- Removal and installation of vinyl floor tiles.
- Installation of new tiles in areas where there are modifications and new request.

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- Removal and installation of skirting.
- Loads and unloads materials.
- Performs other related duties as required.

### **3.2.3.2 Tiling specifications and requirements**

Tiles, mosaics, etc., shall be even in shape and size, free from cracks, twists or blemishes and uniform in colour.

#### **Glazed Ceramic Wall Tiling**

Glazed ceramic wall tiles and fittings comply with SANS 22.

Tiles are fixed in accordance with SANS 10107. All tiles are dipped in water before fixing and bedded in 3:1 sand/cement mortar backing to true and even surfaces. Horizontal and vertical joints are straight and continuous, and all joints are rubbed in solid with neat white cement grout and finished off. Tiles are set out from the top and only the bottom tiles may be cut. Great care is taken to avoid scratching the tiles during fixing and cleaning. Damaged tiles are taken out and replaced at the *Contractor's* expense.

Descriptions of tiling is deemed to include for necessary preparatory work, beds, and backings (as distinct from plaster or screeds which are measured separately), symmetrical arrangement of tiling with cutting along both sides of panels and for square cutting.

#### **Floor Tiling**

On a concrete floor, tiles shall be well soaked in water before laying and solidly bedded in 3:1 sand/cement mortar and flush pointed on all exposed faces with semi dry cement mortar pressed in. No account may liquid grout be poured on.

Where specified as adhesive fixed, tiles are fixed to adequately cured plaster backing or screeded bedding in strict accordance with the recommendations of the adhesive manufacturer and with an adhesive accepted by the manufacturer of the tiles.

The works includes vinyl tiling using liquid based adhesives.

### **3.2.4 Painting**

#### **3.2.4.1 Painting services**

- Prepare, prime, sand, seal, patch and paint furniture, surfaces, buildings, and fixtures utilizing all types of painting materials such as varnish, lacquer, shellac, enamel, latex, epoxy, waterproofing and heat resistant finishes.
- Tapes, flushes, repairs, and applies texturing, wallpaper, and acoustic layers on a variety of surfaces. Adjusts colours when necessary; utilizes enhanced finishing skills when appropriate.
- Operate, clean, and maintain all painting equipment, including brush, roll, sprayers and electrostatic sprayers, pumps, etc. Safely stores and labels all materials.
- Offers assistance and advice on materials, designs, and colour.
- Loads and unloads materials.
- Urethane based paint is to be used for concrete surfaces.

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### **3.2.4.2 Painting specifications and requirements**

<b>Material</b>	<b>SANS</b>	<b>Grade or Type</b>
Priming coats on structural steel	312	Grade I
Priming coats on steel	679	Type I
Priming coats on galvanised iron	723	-
Red oxide zinc chromate primer	909	-
Priming coats on wood for external work	678	Type I
Priming coats on wood for internal work	678	Type III
Undercoats for paint (except emulsion paint)	681	Type I
Distemper	322	-
Emulsion paint for internal work	633	Grade I
Emulsion paint for external work	634	Synthetic Polymer base
Matt, eggshell, or semi-gloss paint for internal work	515	-
Oil gloss paint for internal and external work	631	-
High gloss enamel paint for internal and external work	627	Grade I
Roof paint	633	Type B
Structural steel paint	684	Type B
Aluminium paint	682	Grade II
Varnish for interior use	887	Type I

### **Preparatory Work**

All walls and ceilings, etc., are thoroughly cleaned prior to commencement of painting and the premises kept clean and free from dust during painting operations. All surfaces not to be painted are protected against spotting and spilling, thereafter are cleaned down and made good as necessary. Locks, door handles, and similar fittings or fixtures are removed (or masked) and refitted on completion of painting.

Plastered surfaces are thoroughly washed down and brushed to remove any traces of efflorescence and allowed to dry completely before any paint finish is applied. Before any paint is applied, holes, cracks and irregularities in plaster and other surfaces are filled with suitable filler and finished smooth. Unfinished concrete surfaces have all projections rubbed off and are thoroughly cleaned with a spirits-of-salts solution (1-part concentrated spirits-of-salts to 4 parts water).

Metal surfaces are sanded, where necessary, washed with a suitable cleaning agent and left smooth.

Protective coatings applied by manufacturers to galvanised metal surfaces are removed with a suitable agent and the surfaces washed down.

Rust, grease, and defective factory primers on metal surfaces to be painted, as well as pitch on cast iron pipes, are removed.

Knots in woodwork are treated with knotting and cracks, splits and holes caused by nails filled with suitable filler. Wood surfaces are sanded smooth.

### **Application of Paint**

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Primers to wood surfaces are applied by brush. Primers to other surfaces may be applied by roller with the acceptance of the *Contract Manager*. Undercoats and finishing coats may be applied by brush or roller.

Paint shall be not sprayed on except in the case of cellulose and other special paints where spray painting is the accepted method of application.

Before subsequent coats of paint are applied the previous coat is properly dry and sanded down where necessary.

Should a perfectly uniform finish and texture, free from any blemishes and with sufficient coverage, not be obtained because of defective preparation of surfaces and/or application, the *Contractor* applies an extra coat or coats of paint of the prescribed finish at his own expense to the satisfaction of the *Contract Manager*.

A colour scheme comprising colours and the blending of colours as directed by the *Contract Manager* is used for the paintwork. The tints of the undercoats closely match the finishing coat but nevertheless differ substantially to indicate the number of undercoats. Colour samples of the finishing coats are provided in all cases.

The *Contractor* provides necessary tarpaulins, covers, etc., for the protection of the *works*. Before the paintwork is commenced all floors are swept and walls dusted and no further sweeping or dusting is allowed before all painted surfaces are perfectly dry.

Backs of wooden doors and similar frames and surfaces or other new or refixed joinery in contact with brickwork, etc., and built in as the *Works* proceeds, are primed before building in, whether the article is to be painted or not, to prevent moisture seeping into the wood from the masonry backing.

Priming to new external structural timbers is applied before the timbers are fixed in position and All doors and opening sections of windows are left ajar after painting or varnishing until the paint is perfectly dry.

includes all surfaces such as backs of facias and barge boards.

### **3.2.5 Earthworks (plumbing pipework)**

**a) Excavations**

- Excavate in soft and hard material for various depths depending on the type and purpose of the excavation.
- Excavation for construction, underground services expose and/or installations.
- Excavate to dispose material to a dumping site of not more than 10km.
- Excavate to re-use as backfilling material.
- Excavation to re-use as backfilling material is inclusive of compaction of soil material in layers as instructed by the Employer.
- Compacted layer works must be tested for compaction as per Mod AASHTO requirements.

**b) Borrow to fill material selected material.**

- Lay selected material.
- Compact material in layers as instructed by the client.

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### **3.3 APPLICABLE PLANT AREAS**

#### **3.3.1 Permanent Buildings (including carports):**

- Main administration building
- Medical and Fire station buildings
- Main access control buildings
- Old simulator buildings
- Compressor house building
- Ablution blocks
- Shisa taba and kitchen complex
- Hydrogen plant building
- Water Treatment Plant (WTP) (south and North) and Laboratory building
- Electrical maintenance Workshop (EMD) and Maintenance training building
- Welders and Platers Workshop building
- Oil Burner Workshop
- Mogolo building.
- Coal management building (CMD)
- Heavy Maintenance Workshop (HMD) and Stores Building
- Steam Cleaning building
- Sling stores
- Shot Blasting building.
- Resin Store Building
- Gas Store building
- Outside Plant Control building
- Lapa
- Outside plant Electrical sub-station buildings
- New Outage Stores
- GO Store
- Eskom Village

#### **3.3.2 Prefabricated buildings and Park homes (including carports):**

- Outage Management Offices
- GCD offices
- Planner's offices
- Operating Support offices
- Risk Management offices
- Auxiliary Engineering offices
- Project Management offices
- Transport Department offices
- IR and HR offices
- Technical Support services offices
- Heavy Maintenance offices
- Design and Specifications offices

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- Training offices and classrooms

### **3.3.3 Power Station Structures:**

- Boiler house structures (unit 1 to 6)
- Turbine house structures (unit 1 to 6)
- Coal Staithe 1 and 2
- Conveyor structures
- Precipitators & bag filter plant (unit 1 to 6)
- Auxiliary bays (unit 1 to 6)
- Ash silos (unit 4 to 6)
- Flue ducts (unit 1 to 6)
- Boiler bottom ash sumps (unit 1 to 6)
- Pump houses (cooling water, process water, ash water return, Booster)
- Water treatment plant structures (Clarifiers, concrete channels, launders, Valve pits)
- Sewage Treatment Plant
- Cooling towers 1 – 6
- Lime silos
- Smokestack chimneys (North and South)
- Site Roads
- Station surface drains and underground drainage.

## **4. SAFETY REQUIREMENTS**

- Safety File must be pre-approved by Duvha Safety Department.
- Contractor employees must complete Duvha Safety Induction Course before any work can be executed.
- Risk assessment and Pre-job brief shall be conducted by Contractor's Contract Manager with all his/her employees. Copies shall be handed over to the client.
- No work shall be performed without a Permit to Work. Domestic installations are exempted.
- No work shall be performed without pre-arrangement with the contract manager.
- All required Personal protective equipment (PPE) must be worn all the time.
- All Eskom's and other safety rules must be adhered to all the time.

### **4.1 RISK ASSESSMENT**

A risk assessment must be conducted prior to carrying out the works to identify any hazards and risks that may be encountered during maintenance activities.

## **5. QUALITY REQUIREMENTS**

The *Contractor's* ISO 9001:2015 Certificate of compliance or equivalent must be supplied with tender documents. If the *Contractor* is not certified, the objective evidence of a developed and fully implemented Quality Management System that complies with ISO 9001:2015 requirements shall be submitted.

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The *Contractor* shall comply with the *Employer's* Quality Requirements as specified in the Supplier Quality Management Specification 240 – 105658000 (QM-58). Form A (Tender and contract quality requirements for QM 58 and Quality Requirements for ISO 9001 standard) of this Specification indicates the specific application thereof.

All Quality Control documentation must be submitted to the *Employer* at least a week before planned works starts. Quality Control Plans must include hold and witness points, must clearly state 3<sup>rd</sup> party interventions and quality/test specifications where applicable.

The Quality Control documentation that will be handed over within 30 days of order placement by the successful *Contractor* to the Employer and shall consist of the following:

### **5.1 QUALITY CONTROL PLAN**

The Quality Control Plan shall consist of the following as a minimum and shall be accepted by the *Quality representative* of the *Contractor* prior to commencement of work and shall be sent to Eskom for approval. The QCP will also include welding procedures where applicable.

A covering page, table of contents and QCP which includes and makes provision for the following but not limited to: -

- QCP unique number.
- Revision number.
- Page number
- Provision for QCP approval signatures by the *Contractor* (Contract Manager and Quality Controller) and Eskom System Engineer and/ or Eskom QC.
- Provision to incorporate all inspection reports or any form of records to prove conformity to requirements.
- High level description of work in execution including Item/ component/ system/ sub-system.
- Provision for nomination of intervention points for each activity as per SOW.
- Provision for review and approval signatures and dates by the *Contractor* (Contract Manager and Quality Controller) and Eskom System Engineer and/ or Eskom QC.
- Provision for final acceptance/ releases approval signatures by the *Contractor* (Contract Manager and Quality Controller) Eskom System Engineer and/ or Eskom QC.

### **5.2 TEST REPORTS**

Where tests were performed, they shall be recorded, and the positions of measurements are traceable to the specific area of testing against the records. Therefore, the Contractor will submit all test reports that has been performed in the form of Data Pack.

### **5.3 PROCEDURES**

Contractor to submit all work procedures/instructions before any work commences. These must be submitted together with QCP for approval.

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## **6. AUTHORISATION**

This document has been seen and accepted by:

<b>Name &amp; Surname</b>	<b>Designation</b>
Lamlile Mthimunye	Manager: Auxiliary Maintenance
Thulani Zondo	Senior Supervisor: Auxiliary Maintenance (Civil and structures)
Tembeka Tshamano	Manager: Technical Support Services
Bulelani Flekisi	Officer Quality Management
Stephina Matsebe	Manager: Occupational Health and Safety
Mphokuhle Khohliso	System Engineer: Auxiliary Engineering (Dams)
Thilivhali Muthakhi	System Engineer: Auxiliary Engineering (Water retaining structures)

## **7. REVISIONS**

<b>Date</b>	<b>Rev.</b>	<b>Compiler</b>	<b>Remarks</b>
May 2024	A	Chirwa V	Draft Document for review
May 2024	B	Chirwa V	Incorporation of comments
May 2024	0	Chirwa V	Final Document
November 2025	0.1	Chirwa V	Removal of earthworks, drywalls and Bricklaying
November 2025	1	Chirwa V	Final Document

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