

	Scope of Work	Peaking Engineering
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Title: **Scope of work for Corrosion Protection Services on an 'As and When Required' Basis for Eskom Peaking**

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1. Introduction

The Scope of Work (SoW) defines the requirements for the inspection, assessment, preparation, repair, rehabilitation, maintenance, and protection of corroded plant, equipment, structures, tanks, piping, buildings, and associated assets across Eskom Peaking's power plants on an "as and when required" basis.

The objective is to restore the integrity of corrosion protection systems, extend asset life, minimise unplanned failures, maintain structural integrity, improve plant reliability, and ensure compliance with Eskom standards and statutory requirements.

The SOW is applicable to the following power stations:

- Open Cycle Gas Turbine (OCGT) Power Stations:
 - Gourikwa Power Station
 - Ankerlig Power Station
- Pumped Storage Power Stations:
 - Ingula Pumped Storage Scheme
 - Drakensberg Pumped Storage Scheme
 - Palmiet Pumped Storage Scheme
- Hydropower Stations:
 - Gariep Hydropower Station
 - Vanderkloof Hydropower Station
 - Ncora Power Station
- Renewable Energy:
 - Sere Wind Farm
- Aeroderivative Power Stations:
 - Port Rex Power Station (only essential, once-off corrosion protection work will be undertaken as required, given the planned decommissioning of the station in 2035).

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to:

- Define corrosion protection maintenance requirements,
- Provide requirements for defect identification and repair,
- Define station-specific corrosion remediation requirements and
- Establish quality assurance and inspection requirements.

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2.1.2 Applicability

This Scope of Work is applicable to Eskom Peaking.

2.1.3 Effective date

This document becomes effective upon approval and implementation.

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] Occupational Health and Safety Act (Act 85 of 1993)
- [2] Construction Regulations 2014
- [3] 240-106365693 Standard for the external Corrosion Protection of Plant, Equipment and Associated Piping
- [4] 240-101712128 Standard for the internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings
- [5] ISO 12944 Protective Paint Systems
- [6] ISO 4628 Evaluation of Coating Degradation
- [7] ISO 8501-1: Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings
- [8] ISO 8501-4: Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 4: Initial surface conditions, preparation grades and flash rust grades in connection with high-pressure water jetting
- [9] ISO 8502-3: Preparation of steel substrates before application of paint and related products – Tests for the assessment of surface cleanliness-Part 3: Assessment of dust on steel surfaces prepared for painting (pressure sensitive tape method)
- [10] ISO 8503 Preparation of steel substrates before application of paint and related products – Surface roughness characteristics of blast cleaned steel substrates – Part 4: Method for the calibration of ISO surface profile comparators and for the determination of surface profile – stylus instrument procedure
- [11] ISO 8504: Preparation of steel substrates before application of paint and related products – Surface preparation methods
- [12] SANS 1200 series of standardized specifications for civil engineering construction
- [13] ASTM D4541: Standard Method for Pull-off Strength of Coatings using Portable Adhesion Testers
- [14] BS 6374: Part 5 - Lining of equipment with polymeric materials for the process industries

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- [15] ISO 813: Rubber, vulcanized or thermoplastic. Determination of adhesion to a rigid substrate - One plate method
- [16] ISO 12944: Paint and varnishes – Corrosion protection of steel structures by protective paint systems. Parts 1 to 8
- [17] ISO 4628: Paints and varnishes – Part 1 to 6
- [18] ISO 19840 – Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Measurement of, and acceptance criteria for, the thickness of dry films on rough surfaces

2.2.2 Informative

- [19] RTD/MAT/19/211 – Gourikwa Corrosion Assessment Report
- [20] RTD/MAT/19/234 – Gourikwa Corrosion Protection Specification
- [21] Plant Assessments (Station Audit Reports, System Health Reports etc.)

2.3 Definitions

Definition	Description
Corrective Maintenance	Maintenance undertaken to restore an asset after a defect or failure.
Corrosion Protection System	A protective coating, wrapping, lining, sealant or associated protection system intended to prevent corrosion.
Defect	A condition impairing safety, functionality, appearance or reliability.
Emergency Maintenance	Work required immediately to eliminate safety, environmental or operational risks.
Full Recoating	Complete removal and replacement of an existing coating system.
Reactive Maintenance	Maintenance undertaken after notification of a fault.
Spot Repair	Localised repair of coating failures.
Structural Repair	Repair of corrosion-induced deterioration affecting structural integrity.

2.4 Abbreviations

Abbreviation	Explanation
ASTM	American Society for Testing and Material
BS	British Standard
CSP	Corrosion Protection System
GIS	Geographic Information System
GPS	Global Positioning System
DFT	Dry Film Thickness
HVAC	Heating, Ventilation and Airconditioning
ISO	International Organization for Standardization
ITP	Inspection and Test Plan
MCC	Motor Control Center

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Abbreviation	Explanation
MIC	Microbiologically Influenced Corrosion
MMD	Mechanical Maintenance Department
MOC	Material of Construction
MPI	Magnetic Particle Inspection
NDT	Non-Destructive Testing
OCGT	Open Cycle Gas Turbine
PDF	Portable Document Format
PPE	Personal Protective Equipment
PS	Power Station
PSS	Pumped Storage Scheme
PT	Penetrant Testing
QA	Quality Assurance
QCP	Quality Control Plan
RTD	Research, Testing & Development
SANS	South African National Standards
SDS	Safety Data Sheet
SEM	System Engineering Manager
SOW	Scope of Work
UPS	Uninterrupted Power Supply
UT	Ultrasonic Testing
UTT	Ultrasonic Thickness Testing
UV	Ultraviolet
WFT	Wet Film Thickness

2.5 Roles and Responsibilities

Role	Responsibility
SEM Civil & Structures	Responsible for implementation, governance, maintenance, periodic review and update of this document. Ensure consistent application of the requirements contained herein.
System Engineer	Identify maintenance requirements, prepare technical scopes, review and accept contractor submissions, assess technical compliance, review Method Statements, QCPs and ITPs, and monitor execution of the Works.
Asset Management	Identify asset risks, prioritise maintenance activities, provide asset condition information and support long-term asset integrity management.
Contractor	Execute the works in accordance with this Scope of Work, approved method statements, QCPs, ITPs, relevant Eskom standards and applicable legislation.

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Role	Responsibility
Site Construction Engineers/ Project Co-ordinator	Verify compliance with approved quality documentation, inspection requirements, test requirements, hold points, witness points and acceptance criteria.
Environmental Officer	Monitor compliance with environmental requirements, containment measures, waste handling and disposal requirements.

2.6 Process for Monitoring

Monitoring includes:

- Plant inspection,
- Coating application inspections,
- Climate conditions,
- DFT measurements,
- Surface profile measurements,
- Salt contamination testing,
- Quality assurance audits & inspections,
- Progress reviews,
- Defect tracking,
- Monthly contract review meetings,
- System Health Monitoring and
- Condition status reports.

2.7 Related/Supporting Documents

Refer to Section 2.2.

3. Scope of Work

The *Contractor* is required to undertake corrosion assessment/survey (as a minimum this includes inspection, testing and reporting on plant infrastructure), corrosion protection system remediation, corrosion protection system rehabilitation, corrosion protection coating application, repair/replacement of degraded components, exposed to atmospheric, industrial, coastal, freshwater and hydro-mechanical environments or similar.

The *works* includes all exposed steelwork, tanks, vessels, pipework, structural steel, buildings, civil interfaces and electro-mechanical equipment requiring corrosion protection.

The *Contractor* provides all labour, supervision, equipment, materials, access systems, scaffolding, consumables, testing services, specialist engineering support, quality control, environmental management and documentation necessary to execute the *works*.

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3.1 General Corrosion Protection Maintenance

The SoW makes provision for the *Contractor* to perform:

- Planned maintenance,
- Corrective maintenance,
- Reactive maintenance,
- Emergency maintenance and
- Corrosion protection during storage and preservation (inhibitor coatings or temporary protective film coatings).

This includes as a minimum:

- Repair and/or replacement of full or sections of defective components,
- Repair or replace corrosion protection systems,
- Perform corrosion inspections and assessments, with repair recommendations presented in report format, including photographs
- Identify coating failures,
- Specify suitable corrosion protection products,
- Repair degraded coatings,
- Reinstate corrosion protection systems,
- Seal water ingress points and
- Repair galvanic and crevice corrosion defects, including the repair of the materials causing galvanic corrosion and sealing the crevices causing crevice corrosion.

Work shall be performed upon instruction from the *Service Manager*.

Unless a different period is agreed upon for a specific Task Order, the *Contractor* responds to and completes work within the following minimum timeframes, measured from moment of notification by the *Service Manager* as per Table 1 below:

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Table 1: Timeframes for Maintenance Categories

Category	Response Time (on site)	Completion Target
Emergency Maintenance	8 hours	Per accepted programme for the repairs
Reactive Maintenance	48 hours	Per accepted programme for the repairs
Corrective Maintenance	As per agreed Task Order / Maintenance Programme	Per accepted programme for the repairs
Planned Maintenance	As per agreed Task Order / Maintenance Programme	Per accepted programme for the repairs

3.2 Building Envelope and Structural Repairs

3.2.1 Roofing and Waterproofing

The *Contractor* shall identify roof, waterproofing, gutter and drainage defects where such defects contribute directly to corrosion, coating degradation, water ingress affecting corrosion protection systems, or deterioration of protected plant, equipment and structures.

The *Contractor* shall document and report such defects, together with recommendations for corrective action, to the *Service Manager*.

Unless otherwise instructed by the *Employer*, the repair of roofing, waterproofing, gutter and drainage defects shall be undertaken by *Others* under the applicable Building and Infrastructure Maintenance Contract.

3.2.2 Painting and Corrosion Protection

The scope includes but is not limited to:

- Assessing and surveying coating systems, including classification of coating defects in accordance with ISO 4628 and identification of corrosion mechanisms, coating failures and repair requirements,
- Submit detailed corrosion protection system QCP/ITP and method statements,
- Submit safety requirements and considerations for confined spaces, ventilation and lighting during applications of all coatings systems,
- Supply corrosion protection products, conforming to all the requirements specified,
- Use of Skilled and qualified supervision, inspectors and applicators,
- Monitor (testing and measuring) climate conditions,
- Surface preparation, as a minimum:
 - Mechanical cleaning,

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- Abrasive blast cleaning where approved.
- Salt and Oil contamination removal, including salt test,
- Application of coating systems,
- WFT verification
- DFT verification
- Recording of environmental conditions (humidity, surface temperature, ambient temperature, etc.)
- Surface roughness testing (possibly with Testex tape and Elcometer gauge)
- Tape test (ISO 8502-3) and
- Quality control.

The *Contractor* ensures that all *works* are executed in compliance with the manufacturer's specifications, standards listed in Section 2.2 and that the *Contractor* is an approved applicator of the system.

In addition, the *Contractor* ensures that all corrosion protection works comply with the requirements of:

- ISO 12944 – Corrosion protection of steel structures by protective paint systems;
- ISO 4628 – Evaluation and classification of coating degradation;
- ISO 8501 Series – Surface preparation and cleanliness assessment;
- ISO 8502 Series – Surface cleanliness testing;
- ISO 8503 Series – Surface profile assessment;
- ISO 8504 Series – Surface preparation methods;
- ISO 19840 – Measurement of dry film thickness on roughened steel surfaces; and
- Applicable Eskom corrosion protection standards.

3.3 Doors, Windows and Walkways

The *Contractor*, as a minimum executes the following:

- Repair corroded door panels,
- Replace corroded hardware,
- Repair hinges,
- Reinstall protective coatings,
- Repair ladders and platforms and
- Repair and replacement should mitigate against bi-metallic corrosion.

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3.4 Piping and Supports

The *Contractor* is required, as a minimum, to:

- Repair and/ or replace corroded piping,
- Repair and/ or replace steel pipe supports,
- Reinstall protective coatings systems,
- Repair valves and fittings,
- Recoat hydrants and
- Repair corrosion damage on pipe supports.

3.5 Applicable Plant Areas

The scope includes, but is not limited to, the following equipment and structures stated below.

3.5.1 Fuel Storage and Fuel Handling Systems (OCGT Stations)

The *Contractor* as a minimum, executes work in the following areas (specifically at Ankerlig, Gourikwa and Port Rex PS):

- Fuel storage tanks and bunds,
- Tank chimes and plinth areas,
- Tank roofs and structures,
- Stairways and access platforms,
- Pipe bridges and supports,
- Fuel loading and offloading bays,
- Fuel Transfer piping,
- Valves and flanges,
- Pumping stations,
- Ignition gas installations,
- MCC,
- Fuel skids,
- Air cylinder tanks steel support structures and
- Cooling water piping.

3.5.2 Water Systems and Water Retaining Structures (Hydro and Pumped Storage Stations)

The *Contractor* as a minimum, executes *work* in the following areas (specifically at Gariep PS, Vanderkloof PS, Ingula PSS, Drakensberg PSS, Palmiet PSS and Ncora PS):

- Intake and Outlet Structures,
- Shafts and Adits,

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- Penstocks, Extension Pieces, Draft Tubes, Spiral Casings, Surge Shafts and Waterways,
- Guide Vanes and Stay Vanes,
- Stoplogs, Trash racks, Emergency, Bulkhead and Radial Gates,
- Conduits, Valves and Flanges,
- Gantries, Cranes and Hoist structures,
- Roof steel structures,
- Embedded Steel components,
- Raw Water pipelines, cooling water systems, pump systems and drainage systems and
- Pipe support steelwork.

3.5.3 Powerhouse & Civil Structures

The *Contractor* as a minimum, executes the *work* in the following areas (all stations):

- Powerhouse structures,
- Crane girders, rails, hoists, gantries and beams, base plates and holding down bolts,
- Stairways, cat ladders and Handrails,
- Structural steel frameworks,
- Roofing systems and steel structures,
- Steel portal frame structures and associated purlins, girts etc.
- Unit enclosures including roof sheeting, side panels and acoustic panels,
- Support structures and
- Access, walkways, bridge decks etc.

3.5.4 Mechanical Plant

The *Contractor* as a minimum, executes the *work* in the following areas (all stations):

- Pumps, Turbines and Pump-turbines and Generators,
- Vessels, Tanks and Sumps (oil, diesel, air, nitrogen, propane, and water) – internal & external,
- Governor and Guide Vane systems,
- Turbine Pits, Turbine Liners and Turbine Head Covers,
- Seal Water systems,
- Main Inlet Valves and associated systems,
- Brakes and Jacking systems,
- Grease systems,
- Oil Mist systems,
- Centreline bearing systems,

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- Valves and Flanges,
- Cooling systems, Ventilation systems, Air intake systems, Air Stabilising systems, Lube oil systems, Exhaust systems and Hydraulic systems,
- Compressors and Heat exchangers,
- Ducting, Pipe supports and Structural supports,
- HVAC ducting and
- Diesel generators fuel supply equipment.

3.5.5 Electrical and Control Plant

The *Contractor* as a minimum, executes the *work* in the following areas (all stations):

- Generators,
- Enclosures, MCCs and PCCs,
- Switchgear buildings and Control Rooms,
- Protection panels and Instrument cabinets,
- HVAC equipment,
- Cable trays and Cable duct systems,
- Busbar ducts and
- Earthing systems.

3.5.6 Dams

The *Contractor* as a minimum, executes the *work* in the following areas (Ingula PS):

- Dam steelwork,
- Radial, emergency and maintenance gate structures,
- Hoisting equipment and steel Gantry structures,
- Access bridges and ancillary steelwork,
- Dam inlet and outlet structures,
- Spillways (steelwork),
- Intake and outlet towers (steelwork),
- Trash rack systems and
- Embedded steel components exposed to freshwater environments.

3.5.7 Balance of Plant

The *Contractor* as a minimum, executes the *work* in the following areas (all stations):

- Fire protection systems,
- Potable water systems,

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- Compressed air systems,
- Service water systems,
- Cooling water systems,
- Demin water systems,
- Heating and Ventilation systems
- Drainage systems,
- Pipe racks and supports,
- Lifting lugs and Loading points,
- Special tools and equipment,
- Structural steelwork and
- External plant areas.

3.5.8 Wind Farm Infrastructure (Sere Wind Farm)

The *Contractor* performs corrosion assessments, repairs, rehabilitation, maintenance and corrosion protection of all exposed steel, concrete interfaces, electrical equipment and ancillary infrastructure associated with the wind farm.

The scope includes, but is not limited to:

3.5.8.1 Wind Turbine Structures

- Wind turbine towers (external and internal surfaces),
- Tower flange connections,
- Tower access doors,
- Internal platforms and ladders,
- Internal handrails and guardrails,
- Tower fastening systems,
- Nacelle external surfaces,
- Hub assemblies,
- Access hatches and
- Tower transition pieces

3.5.8.2 Foundations and Concrete Interfaces

- Turbine foundation anchor cages,
- Foundation anchor bolts,
- Grouted connections,
- Concrete-to-steel interfaces,
- Foundation access covers,

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- Base flange connections and
- Corrosion protection sealants around foundations.

3.5.8.3 Electrical Infrastructure

- Wind turbine transformers and Transformer enclosures,
- Switchgear kiosks,
- Electrical cabinets and Control panels,
- Instrumentation enclosures,
- Junction boxes, Cable terminations and
- Earthing system exposed connections

3.5.8.4 Balance of Plant

- Overhead structures,
- Cable support structures, Cable trays,
- Lighting masts, Meteorological masts,
- Communication towers,
- Support structures and
- Cranes and Gentries.

3.6 Corrosion Protection Systems

The *Contractor* designs and applies corrosion protection systems appropriate to the site-specific environmental conditions and surrounding environment in accordance with Eskom and Relevant Standards. The *Contractor* submits all designs and Corrosion Protection Systems to the *Service Manager* for approval prior to implementation of any of the *works*.

Site-specific environmental conditions, include as a minimum:

- C5 Coastal Industrial Environments
- Freshwater Hydro Environments
- Immersed and Splash Zone Environments
- Combine Coastal and Industrial Environments (i.e. refinery industrial)
- Oil Environments (Oil baths, housings, sumps, tanks & heat exchangers (internal & external))

The *Contractor* selects coating systems suitable for:

- Atmospheric exposure
- Immersion service
- Splash zone service
- Condensation exposure

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- Abrasion resistance
- UV resistance
- Chemical resistance
- Operating and service temperature range
- Cyclic wet/dry conditions
- Salt-laden or marine environments
- Industrial pollution exposure (SOx, NOx, etc.)
- Impact resistance
- Erosion resistance
- Cathodic disbondment resistance (where cathodic protection is applied)
- Resistance to microbial attack or biological fouling (where applicable)
- Resistance to solvents, hydrocarbons, oils and fuels
- Resistance to cleaning chemicals and disinfectants
- Fire or high-temperature performance requirements (where specified)
- Compatibility with the substrate material
- Surface preparation requirements and achievable surface profile
- Compatibility with existing coatings (for maintenance works)
- Application conditions, including temperature, humidity and dew point limitations
- Expected design life and maintenance intervals
- Colour and aesthetic requirements
- Environmental and regulatory compliance requirements
- Repairability and ease of maintenance
- Manufacturer's recommendations and warranty requirements

All coating systems are to comply with, as a minimum:

- 240-106365693 – Standard for Specification for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings rev 2,
- 240-101712128 - Standard for the internal corrosion protection of water systems, Chemical Tanks and Vessels and Associated Piping with Linings rev 2,
- ISO 12944 industry standard for corrosion protection of steel structures by protective paint systems,
- ISO 8501 series: Preparation of steel substrates before application of paints and related products, etc,
- ISO 8502 Series: Assessment of surface cleanliness,
- ISO 8503 Series: Surface roughness characteristics,

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- ISO 8504 Series: Surface preparation methods,
- ISO 19840: Measurement of dry film thickness on roughened steel surfaces and
- Project-specific coating specifications.

3.6.1 C5 Coastal Industrial Environments

Applicable primarily to:

- Gourikwa Power Station
- Ankerlig Power Station
- Palmiet Pumped Storage Scheme

3.6.2 Freshwater Hydro Environments

Applicable primarily to:

- Ingula Pumped Storage Scheme
- Drakensberg Pumped Storage Scheme
- Gariep Power Station
- Vanderkloof Power Station
- Ncora Power Station

3.6.3 Immersed and Splash Zone Environments

Mild steel substrates exposed to aqueous or chemical immersion conditions including but not limited to gates, trash racks, bulkheads, penstocks, dam outlet structures, water conveyance systems, tanks, and vessels shall be lined in accordance with 240-101712128 Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings.

4. Technical Service Requirements

4.1 Corrosion Assessment Requirements

The *Contractor* is required to, as a minimum:

- Perform comprehensive condition assessments of the plant, equipment, coating systems, MOC, assessing the current systems and recommending improvements or alternatives based on case studies/proving track record,
- Identify corrosion mechanisms including, but not limited to:
 - Atmospheric corrosion
 - Marine corrosion
 - Freshwater corrosion
 - Galvanic corrosion

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- Crevice corrosion
- Edge corrosion
- Under-film corrosion
- Microbiologically influenced corrosion (MIC)
- Erosion-corrosion
- Classify defects according to ISO 4628,
- Determine repair, replacement and monitoring requirements,
- Compile corrosion condition reports with photographic evidence and
- Develop station-specific corrosion repair recommendations.

Notwithstanding the above, the *Contractor* submits detailed:

- Method Statements.
- Quality Control Plans (QCPs).
- Inspection and Test Plans (ITPs).
- Product Specifications and Material Data Sheets.

for acceptance by the *Service Manager* before commencement of any of the *works*.

4.1.1 Corrosion Reporting and Asset Records

The *Contractor* shall maintain detailed electronic records of all corrosion assessments, inspections, repairs, rehabilitation works and corrosion protection activities undertaken during the Contract.

As a minimum, the *Contractor* shall:

- Submit electronic corrosion assessment and inspection reports in an approved format.
- Provide clear before and after photographs for all repair, rehabilitation and coating activities.
- Include defect location information and asset identification details in all reports.
- Record GPS coordinates and/or GIS location information for all external assets and infrastructure where practical.
- Maintain photographic records of coating degradation in accordance with the defect classifications defined in ISO 4628.
- Provide corrosion mapping information where required by the *Service Manager*.
- Record the type and extent of corrosion, degradation mechanism, defect classification, repair method and coating system applied.
- Update corrosion registers and defect registers following completion of inspections, repairs and rehabilitation activities.
- Maintain an auditable history of all inspections, repairs, coating systems applied, test results and maintenance interventions.
- Submit corrosion register updates in electronic format at intervals specified by the *Service Manager*.

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- Include photographic evidence, inspection findings, corrective actions, coating system details, Dry Film Thickness (DFT) measurements and acceptance records within the final close-out report.
- Provide all records in native electronic format and PDF format for incorporation into Eskom asset management records.

4.1.2 Defect Criticality Assessment and Prioritisation

The *Contractor* shall categorise all identified defects according to their severity, risk and potential impact on safety, environmental compliance, asset integrity, plant reliability and operational performance.

As a minimum, defects shall be classified as follows:

Category	Description	Recommended Intervention	Typical Response
Critical	Defects presenting an immediate risk to personnel safety, environmental compliance, structural integrity, plant availability or asset failure.	Immediate corrective action and/or emergency maintenance.	Immediate / Emergency
High	Defects likely to result in significant asset deterioration, loss of reliability or increased repair costs if not addressed promptly.	Repair programme to be developed and implemented as a priority.	Within 30 days
Medium	Defects requiring corrective action but not currently posing a significant operational or safety risk.	Planned maintenance intervention within an agreed timeframe.	Planned outage / maintenance period
Low	Minor defects with limited impact on performance, reliability or asset integrity.	Monitor and address during future planned maintenance activities.	Monitor

The *Contractor* shall:

- Assign a criticality rating to each identified defect.
- Provide supporting justification for the assigned classification.
- Recommend corrective actions, replacement requirements or monitoring activities.
- Propose intervention timeframes for each defect category.
- Include the defect classification and recommended intervention period in all corrosion assessment reports and corrosion register updates.
- Highlight all Critical and High-risk defects to the *Service Manager* immediately upon identification.

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4.2 NDT and Structural Integrity Assessments

Prior to commencement of repairs the *Contractor* performs:

- Detailed visual inspections,
- Corrosion mapping,
- Corrosion severity classification and
- Repair/replacement identification.

Where severe corrosion is identified, the *Contractor* performs, as determined by the *Supervisor* one or more of the tests below:

- Ultrasonic Thickness Testing (UTT),
- Magnetic Particle Inspection (MPI),
- Penetrant Testing (PT),
- Visual Weld Inspection,
- Structural integrity evaluations,
- Corrosion mapping and
- Material loss assessments.

NDT inspections shall comply with Eskom NDT standards and applicable engineering requirements.

4.3 Surface Preparation

Surface preparation is to be performed in accordance with ISO 8501 and Eskom requirements.

The *works* includes, as a minimum:

- Removal of salts by potable water washing,
- Degreasing using approved solvents or isopropanol,
- Mechanical cleaning to ISO 8501 Grade St2-St3,
- Abrasion of sound coatings where recoating is required,
- Feather edging of existing coatings,
- Removal of loose rust and scale and
- Preparation of welds, corners, and edges.

The *Contractor* ensures all sharp edges are rounded to a minimum radius of 2 mm.

The *Contractor* notes that at some sites, (Sere PS as an example), the potable water is supplied by the *Contractor*. Limited quantities may be supplied by site, but the *Contractor* notes limitations in the potable water tank capacity.

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4.3.1 Surface Preparation Containment, Housekeeping and Waste Disposal

The *Contractor* shall implement suitable containment, housekeeping and environmental protection measures before commencement of any surface preparation, coating removal, cleaning, blasting, grinding, painting or corrosion protection activities. The objective is to prevent contamination of adjacent plant, structures, equipment, water systems, operating areas and the environment.

The *Contractor* shall, as a minimum:

- Prepare a site-specific containment and waste management plan for acceptance by the *Service Manager* prior to commencement of the *Works*.
- Establish suitable containment systems including screens, tarpaulins, encapsulation systems, barriers, bunding, drip trays, drop sheets, temporary enclosures or vacuum recovery systems appropriate to the activity.
- Prevent the uncontrolled release of rust scale, paint flakes, spent abrasive media, dust, overspray, solvents, wash water, coating residues and other contaminants.
- Protect adjacent plant, equipment, structures, electrical equipment, instrumentation, cables, roadways, walkways, drains, watercourses and environmentally sensitive areas from contamination or damage.
- Collect all coating debris, rust, scale, spent abrasive media and waste materials generated during the *Works*.
- Remove all debris and waste materials from the work area on completion of the work activity.
- Segregate hazardous and non-hazardous waste in accordance with applicable legislation and site environmental requirements.
- Ensure paint products, thinners, solvents, cleaning agents and associated waste are stored, transported and disposed of in accordance with the applicable Safety Data Sheets.
- Prevent contaminated water, solvents, chemicals and coating residues from entering stormwater drains, sewage systems, waterways, dams, reservoirs or water retaining structures.
- Dispose of waste only at approved waste disposal facilities.
- Maintain records of waste disposal and provide waste disposal certificates upon request.
- Reinstate and clean the work area to the satisfaction of the *Service Manager* following completion of the *Works*.

4.4 Corrosion Protection Systems

The *Contractor* designs and applies corrosion protection systems appropriate to each site-specific environmental conditions and surrounding in accordance with Eskom and Relevant Standards. The *Contractor* submits all designs and Corrosion Protection Systems to the *Service Manager* for approval by the Eskom RT&D specialists prior to implementation of any of the *works*.

4.4.1 Corrosion Protection During Storage and Preservation

Applicable, but not limited, to:

- Tools, special equipment, supports, jigs, etc,

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- Corrosion susceptible spares and components during storage and
- Preservation of unit/plant components due to unit temporary unavailability for service.

4.5 General Painting and Corrosion Protection

The *Contractor* undertakes painting, coating and corrosion protection *works* for buildings and associated infrastructure.

The scope includes, as a minimum:

- Structural steel,
- Exposed steelwork and
- Roof support structures.

For the *works*, the *Contractor* ensures:

- Paint and Corrosion Protection systems are selected to suit site environmental conditions and exposure classifications as per the Eskom standards.

Unless otherwise instructed by the *Service Manager*, colours shall match Eskom Corporate Identity requirements and/ or existing.

The *Contractor* is required to:

- Obtain approved colour swatches from an approved supplier,
- Submit product data sheets and Safety Data Sheets (SDS) prior to commencement,
- Assess substrate conditions and identify causes of coating failure and
- Recommend compatible coating systems.

The *Contractor* ensures that surface preparation includes:

- Removal of loose paint and rust,
- Removal of oil and grease,
- Removal of mould and biological growth,
- Surface cleaning,
- Feathering of existing paint edges and
- Repair of defective surfaces.

The *Contractor* further ensures:

- Adjacent surfaces and equipment are protected,
- Covers, handles and removable fittings are removed where practical,
- Reinstatement is completed upon completion of the *works*,
- Coating application shall comply with manufacturer specifications relating to:

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- Coating product shelf life and application prior to expiry dates
- Principle characteristics
- Applicable fluid media (oil, water, air, nitrogen, chemicals)
- Coverage rates
- Surface preparation
- Film thickness
- Overcoating intervals
- Environmental conditions
- Curing time
- Substrate conditions and temperatures
- Product instruction for use
- Spray or brush/roller applications
- The completed coating system is to be:
 - Uniform in appearance
 - Fully bonded
 - Free of defects
 - Free of contamination
 - Applied to the specified coating thickness
- Where applicable, project-specific coating warranties shall be submitted for acceptance.

Notwithstanding the above, the Contractor submits detailed:

- Method Statements,
- Quality Control Plans (QCPs),
- Inspection and Test Plans (ITPs), and
- Product Specifications and Material Data Sheets.

for acceptance by the *Service Manager* before commencement of any *works*.

4.5.1 Colour Coding Requirements

The *Contractor* shall ensure that all coating and painting works comply with the applicable Eskom colour coding standards, station-specific colour coding requirements and plant identification requirements. Applicable colour coding standards and requirements shall be obtained from the relevant *Power Station* and/or *Service Manager* prior to the application of any coating system.

Where colour coding standards do not exist, the *Contractor* shall match the existing coating colour and obtain approval from the *Service Manager* prior to application.

Any proposed deviations from existing colour coding requirements shall be submitted to the *Service Manager* for acceptance prior to implementation.

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4.6 Repair and Replacement Activities

The *Contractor* performs, as a minimum:

- Surface preparation,
- Coating repairs,
- Full recoating,
- Weld repairs (certified by registered professional engineer and in accordance with Eskom standards for Welding),
- Steel plate replacement (certified by registered professional engineer),
- Structural strengthening (certified by registered professional engineer),
- Fastener replacement (certified by registered professional engineer),
- Sealant replacement,
- Galvanic isolation upgrades,
- Corrosion wrapping systems,
- Protective lining installation and
- Concrete/steel interface sealing.

4.7 Contractor's Procurement of Plant and Materials

Where there are any materials and/or external services that were not initially anticipated in the contract, the *Contractor* provides the *Service Manager* with a quotation with the agreed markup percentage for all materials, parts, spares or specialised services required to perform repairs/ works.

The *Contractor* attaches the Vendor's invoice or proof of purchase together with the *Contractor's* quotation as supporting evidence. The warranties from suppliers are to be in favour of the *Employer* and not just the *Contractor*.

4.8 Quality Assurance and Quality Control

The *Contractor* develops and implements:

- Project-specific Method Statements,
- Inspection and Test Plans (ITPs) and
- Quality Control Plans (QCPs).

Inspection points include as a minimum:

- Surface preparation and cleanliness verification,
- Surface profile inspections,
- Environmental condition monitoring,
- Wet film thickness measurements,
- Dry film thickness measurements,

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- Holiday testing where applicable,
- Coating curing verification and
- Final acceptance inspections.

As a minimum, the following hold points are required:

- Surface preparation, coating removal or abrasive cleaning activities shall not commence until containment measures, environmental controls and waste management arrangements have been inspected and accepted by the *Service Manager*.
- Coating application shall not commence until surface preparation, cleanliness, surface profile, dust contamination, salt contamination and substrate condition have been inspected and accepted by the *Service Manager*.
- Application of coating systems shall not commence until coating system specifications, product data sheets, method statements, QCPs and ITPs have been reviewed and accepted by the *Service Manager*.
- Coating application shall not commence when environmental conditions fall outside the coating manufacturer's requirements unless specifically accepted by the *Service Manager*.
- Application of subsequent coats shall not proceed until the preceding coat has been inspected and accepted for thickness, adhesion, coverage and defects.
- The coating system shall not be accepted until final inspection, DFT verification, defect inspection and quality documentation review have been completed and accepted by the *Service Manager*.

4.9 Warranties

The *Contractor* provides:

- A joint performance guarantee from the coating applicator and manufacturer, for a minimum period of 8 years, covering the applied coating system,
- The criteria for failure will not exceed Ri 2 of ISO 4628-3,
- Manufacturer-backed coating warranties,
- Joint guarantees from coating manufacturer and applicator in accordance with Eskom requirements and
- Coating systems designed to achieve a long-term service life in a C5-M coastal industrial environment as per ISO 12944-1.

4.10 Personnel Competency and Certification Requirements

The *Contractor* shall ensure that all personnel engaged in any of the *works* such as corrosion assessment, inspection, surface preparation, coating application, quality control, testing and supervision are suitably trained, competent and certified for the activities being performed.

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As a minimum:

- Corrosion inspectors shall be suitably trained and experienced in corrosion assessment, coating failure investigations and defect classification in accordance with ISO 4628.
- Coating inspectors shall be suitably trained and competent in coating inspection, surface preparation verification, environmental monitoring, DFT measurements and coating acceptance inspections.
- Personnel performing NDT activities shall be certified in accordance with recognised industry requirements.
- Surface preparation and coating application personnel shall be trained and competent in the specific coating systems and application methods being utilised.
- Supervisors shall have demonstrable experience in corrosion protection and coating rehabilitation works of a similar nature and complexity.
- The *Contractor* shall submit personnel competency records, training certificates and certification records to the *Service Manager* upon request.
- The *Contractor* shall ensure that only approved and competent personnel perform specialised activities affecting coating quality, corrosion protection performance and asset integrity.

4.11 Machine Hall Crane beam – Drakensberg PS

The *service* includes as a minimum:

- Overhead crane crawl beams,
- Crane rails,
- Rail clips,
- Rail fixing systems,
- Rail support structures,
- Crane girders,
- Crane access walkways and
- Structural steel supporting crane systems

Corrosion resulting from continuous water ingress from bedrock seepage is causing deterioration of rail fixings, rail support systems, concrete channels, and structural steel components. The *Contractor* is required, as a minimum, to assess corrosion caused by continuous wetting. Water ingress and pooling currently create the ideal conditions for crevice corrosion and accelerated deterioration of the rail fixing components.

4.11.1 Crane Rail Corrosion Repairs

The *Contractor* is required to:

- Inspect all crane rail systems,
- Perform condition assessments,

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- Conduct dimensional checks and
- Assess rail fastening systems.

Works may include:

- Rail clip replacement,
- Rail fixing replacement,
- Fastener replacement,
- Structural steel repair,
- Corrosion rehabilitation,
- Reinstatement of rail alignment and
- Concrete rehabilitation.

Notwithstanding the above, the *Contractor* submits detailed:

- Method Statements,
- Quality Control Plans (QCPs),
- Inspection and Test Plans (ITPs), and
- Product Specifications and Material Data Sheets.

for acceptance by the *Service Manager* before commencement of any *works*.

4.12 Fuel Storage Tanks – OCGT Plant & Port Rex PS

The *Contractor* carries out corrosion repair and coating rehabilitation on:

- Tank external sidewalls,
- Tank roofs,
- Tank manhole covers,
- Tank nozzles,
- Roof attachments, and
- Tank chime/plinth interface areas.

Works include as a minimum:

- Mechanical cleaning,
- Corrosion and rust removal,
- Structural assessments,
- Flange wrapping,
- Application of corrosion protection systems,

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- Fastener replacement,
- Localized steel repairs where required,
- Removal of failed coatings,
- Chime seal restoration,
- Repair of flaking and cracked coatings,
- Surface preparation,
- Full recoating of tank sidewalls and roofs,
- Replacement of degraded fasteners,
- Repair of localized corrosion at welds and attachments,
- Inspection of all spiral stairways and roof access structures,
- Replacement of corroded handrails,
- Replacement of degraded stanchions,
- Replacement of corroded brackets and supports,
- Replacement of failed fasteners,
- Repair corrosion-damaged welds,
- Rebuild non-load-bearing material loss sections where approved,
- Application of corrosion wrap systems to designated welds and connections, and
- Application of corrosion protection coatings to repaired structures.

The *Contractor* further repairs and protects:

- Fuel transfer piping,
- Structural support members,
- Baseplates,
- Webs,
- Flanges,
- Girders,
- Pipe supports, and
- Valve assemblies.

4.13 Fuel Unloading Bays – OCGT Plant

The *Contractor* is required to repair, as a minimum, corrosion occurring on:

- Structural Components: Columns, Girts, Purlins and Structural fasteners.
- Process Components: Filter vessel stations, Pipe supports, Pump skids, Piping systems, Cable trays, Tie rods and Valve assemblies.

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The *works* includes:

- Surface preparation,
- Fastener replacement,
- Component replacement where required,
- Coating repairs, and
- Corrosion wrapping of welded and flange connections.

4.14 Ignition Gas Tank Yard – OCGT Plant

The *Contractor* repairs:

- Structural steel members,
- Piping and supports,
- Flanges,
- Valve installations and
- Cable trays.

Particular attention shall be given to:

- Galvanic corrosion,
- Edge corrosion and
- Crevice corrosion.

Only approved hand-cleaning methods shall be used in designated gas areas.

4.15 Air Intake – OCGT Plant

The *Contractor* as a minimum:

- Repairs corroded roof joints, intake clean side walls and floors, the walls and floors in the dirty side of the air intake, as well as the external structure (elbow, intake duct and compressor intake area),
- Repairs dissimilar-metal connections,
- Replaces failed clamps,
- Restores roof sealant systems,
- Repairs roof fasteners,
- Reinstates damaged coatings and
- Replaces failed downpipe support clamps.

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5. Acceptance

This document has been seen and accepted by:

6. Revisions

7. Development Team

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8. Acknowledgements

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Appendix A – Applicable Standards

Description	Reference
Occupational Health and Safety Act, Act 85 of 1993	
Steel bars for concrete reinforcement	SANS 920
Standardized specification for civil engineering construction	SANS 1200
Code of practice for use with standardized specifications for civil engineering construction and contract documents	SANS 10120
The structural use of steel Part 1: Limit-states design of hot- rolled steelwork	SANS 10162 -1
The structural use of steel Part 2: Cold-formed steel structures	SANS 10162 -2
The application of the National Building Regulations	SANS 10400
Eskom Corporate ID	ESK AM AAA 1
Eskom Architectural standard for structures and other buildings	240-56364535
Standard for the external Corrosion Protection of Plant, Equipment and Associated Piping	240-106365693
Standard for the internal corrosion protection of water systems, Chemical Tanks and Vessels and Associated Piping with Linings	240-101712128

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