

	Report	Kusile Power Station
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Title: Scope of Work: Execution of Alterations to Existing Building Structures including Construction & Commissioning Supervision at Kusile Power Station

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1. Introduction

The Employer requires the provision of construction services for alterations and additions to various station buildings at Kusile Power Station. The Contractor shall provide all labour, supervision, materials, plant, equipment, temporary works, tools, testing facilities and all other resources necessary to execute and complete the works in accordance with this scope. The Contractor shall also monitor all construction and commissioning activities and provide all record documentation required to demonstrate compliance with the scope and applicable standards. The works are executed in accordance with the Employer's designs and relevant codes of practice.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to outline the project specifications for the intended works at Kusile Power Station.

2.1.2 Applicability

This document applies to Kusile Power Station only.

2.1.3 Effective date

This document will be effective from the date of its authorisation.

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] Guideline Scope of Services and Professional Fees [Scope of Services and Professional Fees for Persons Registered in terms of the Engineering Profession Act, 46 of 2000]
- [2] ISO 9001 Quality Management Systems
- [3] 36-681: Eskom Plant Safety Regulations
- [4] 474-58 (Rev1): Document and Records Management
- [5] 240-105658000: Supplier Quality Management Specification

2.2.2 Informative

- [6] 240-53114002: Engineering Change Management Procedure
- [7] 240-53113685: Design Review Procedure
- [8] 240-53665024: Engineering Quality Manual
- [9] 240-53114186: Document and Records Management

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2.2.3 Standards and Specifications

The Contractor carries out all works in accordance with applicable South African National Standards (SANS), prescribed Eskom standards (where applicable) and all relevant codes of practice and specifications. References to standards, codes or manuals refer to the latest editions in force at the contract date unless otherwise stated. The Contractor complies with all normative and informative references stated in the scope. Where there is any conflict or inconsistency between standards, specifications or scope requirements, the Contractor notifies the Project Manager for clarification before proceeding. The Contractor uses industry recognised software using the latest approved versions as appropriate for the execution of the works. The Contractor ensures that all software is appropriately licensed and suitable for the performance of the works.

2.3 Roles and Responsibilities

Employer's Obligations:

- The Employer shall provide all information required by the contract.
- Review and approve Contractor submissions i.e. designs, work plans etc.
- Monitor project compliance with contractual obligations and standards.
- Facilitate coordination between the Contractor and other stakeholders on site

Contractor's Obligations:

- Executes all construction works in accordance with the works information and contract requirements
- Ensure compliance with applicable health, safety and environmental regulations.
- Provide all labour, materials, equipment and supervision necessary to complete the works.
- Maintain quality control and carry out inspections and testing as required.
- Prepare progress reports and coordinate with the Employer on site activities.

2.4 Related/Supporting Documents

N/A.

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3 Description of the works

3.1 Executive Overview

Eskom intends to appoint a suitably qualified external Contractor to execute alterations and additions to existing buildings at Kusile Power Station. The works are multidisciplinary in nature and include architectural, civil, structural, mechanical, electrical and control and instrumentation (C&I) components. The works generally comprise but are not limited to:

- Demolition and removal of existing building elements and services
- Alterations/modifications and additions to existing structures
- Construction of new building works and associated installations
- Reinstatement and making good of existing finishes and affected areas
- Installation, alteration, relocation and reconnection of building services
- Testing, commissioning, and handover of completed works etc

The Contractor shall execute the works in accordance with the Employer's designs and in general conformity with applicable codes, standards and recognised industry best practices. The Contractor is responsible for providing all labour, supervision, plant, equipment, materials, temporary works and all other resources necessary for the successful completion of the works.

The Contractor shall examine and familiarize himself with the building site conditions i.e. access limitations, operational constraints, interfaces with existing services and all conditions that may influence the execution of the works. The Contractor notes that the works shall be carried out within an operational power station environment. The Contractor shall therefore plan, coordinate and execute the works in a manner that minimises disruption to the Employer's operations and ensures the safety of personnel, plant, equipment and existing infrastructure etc.

The works include Construction and Commissioning Monitoring services. The Contractor provides these services in accordance with this scope and the Employer's requirements. The Contractor shall be responsible for all testing and commissioning of the completed works, to ensure compliance with performance and operational requirements. The Contractor shall also provide training to the Employer's personnel in the operation and maintenance of the installed systems and equipment. Upon completion, the Contractor shall provide all required construction records i.e. as-built drawings, operation and maintenance manuals and any other documentation necessary to support the operation and maintenance of the facility.

3.2 Employer's objective and purpose of the works

The objective of the works is to improve the functionality and efficiency of existing facilities through alterations and additions that provide a comfortable and productive working environment while meeting the Employer's operational requirements.

3.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

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Abbreviation	Description
ACS	Access Control System
AFC	Approved for Construction
CADD	Computer Aided Drawing and Design
CBMS	Consolidated Building Management System
CCTV	Closed Circuit Television
C&I	Control and Instrumentation
CV	Curriculum Vitae
DCS	Distributed Control System
DGN	Design File
DWG	Drawing File
ECSA	Engineering Council of South Africa
EPPA	Emergency Exit and Public Address
EW	Early Warning
FAT	Factory Acceptance Testing
HVAC	Heating, Ventilation and Air-conditioning
ITP	Inspection and Test Plan
KKS	Kraftwerk-Kennzeichensystem
NFPA	National Fire Protection Association
OHS Act	Occupational Health and Safety Act
O&M	Operating and Maintenance
PEC	Professional Engineering Certificate
Pr.Eng	Professional Engineer
Pr.Tech	Professional Technologist
SACAP	South African Council for the Architectural Profession
SACPCMP	South African Council for Project and Construction Management Professionals
SANS	South African National Standards
SAQCC	South African Qualification and Certification Committee
ACS	Access Control System
EPPA	Emergency Exit and Public Address

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Definitions

Definition	Explanation
Building services	Systems installed in buildings to make them comfortable, functional, efficient and safe.
Constructability Review	Review of plans and specifications either by a contractor or third-party reviewer to ensure accuracy and proper detail of the construction plans.
Contractor	Any person or a juristic person under contract to a client to perform the works or part of it on a project, including a subcontractor under contract to such contractor
Consultant	Refers to the professional Consultant team appointed to perform the engineering and project management works required for the project in terms of the NEC3 Professional Services Contract
DWG	DWG (from drawing) is a binary file format used for storing two- and three-dimensional design data and metadata. It is the native format for several CAD packages. In addition, DWG is supported non-natively by many other CAD applications
Eskom Plant Engineering	Refers to the Eskom Engineering team who will perform the design review and provide technical assistance for the work performed by the appointed Consultant.
Handover	Handover constitutes change of ownership and ensures completion. It confirms that the constructed facilities are safe to commission and operate..
Heating Ventilation and Air Conditioning	'HVAC' refers to Heating Ventilation and Air Conditioning which can be used in buildings to: • Maintain internal air quality • Regulate internal temperatures • Regulate internal humidity
IP rating	System to indicate the degrees of protection provided by an enclosure against access to hazardous parts, ingress of solid foreign objects, ingress of water and to give additional information in connection with such protection.
Project Manager	The person that coordinates and facilitates the project and project sponsors' goals in accordance with the Project Review Team's recommendations and requirements
Punch List	A list of deficiencies, incomplete, or unacceptable work items compiled by the project manager during the final inspection of a project
Renovation	Total or partial upgrading of a facility to higher standards of quality or efficiency. Under certain conditions a renovation may also be classified as an improvement.
Redlines	A red-line drawing is essentially an intermediate drawing that shows corrections or changes to a previous drawing. The term red line literally comes from the (typically) red pen used to amend the drawings by hand. These changes mark-ups show changes made to the drawing subject matter during the manufacture or construction of the product

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4 Management and start up

4.1 Management meetings

Regular meetings of a general nature may be convened and chaired by the Project Manager as detailed. Unless otherwise agreed, meetings shall be held in person. Meetings of a specialist nature may also be convened. Where the location of any meeting is not stated, the party convening the meeting shall determine the time and place, having regard to the convenience of the parties. Records of meetings are submitted to the Employer's agent by the person convening the meeting within five (5) days of the meeting. All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting.

Title and purpose	Intervals	Location	Attendance by:
Project kick-off meeting	Once-off	Kusile Power Station	Employer, Employer's engineering representatives, Consultant, Contractor
Project progress meeting	As required	Kusile Power Station	Employer, Employer's engineering representatives, Consultant, Contractor
Risk register and compensation events meeting	As required	Kusile Power Station	Employer, Employer's engineering representatives, Consultant, Contractor
Engineering design interface meetings	As required	Kusile Power Station	Employer, Employer's engineering representatives, Consultant, Contractor
End-of-Phase review meetings (interim and final)	As required	Kusile Power Station	Employer, Employer's engineering representatives, Consultant, Contractor

4.2 Documentation control

All document exchanges shall be conducted using formal transmittals. At a minimum, each transmittal shall include the following information:

- Title of the document
- Reason for issuing/submission
- Transmittal Number
- Transmittal Name
- Transmittal Description
- Contract Number:

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- Package Number
- Sender Name
- Sender E-Mail
- Sender Organisation
- Recipient Name
- Recipient E-Mail
- Recipient Organisation
- Disclosure Classification
- Date Received
- Quantity of documentation referenced on the transmittal
- Format/Medium Submitted (e.g. paper, External Hard Drives, etc.)
- Sender Signature
- Recipient signature, once submitted, to acknowledge receipt

Where a transmittal is issued in response to an Eskom communication, the relevant Eskom transmittal number shall be referenced.

The Contractor shall adopt a structured and standard naming convention for transmittal descriptions as follows:

YYYYMMDD – <Contract Number> – <Vendor> – <Short Description> – <Sender Initials>.

Email subject lines shall follow a standard format:

YYYYMMDD – < Contract File Number> – <Email Subject line>.

The Contractor shall select the appropriate transmittal purpose in accordance with Eskom's standard selection criteria, including but not limited to:

- Issued for Approval
- Issued for Commissioning
- Issued for Construction
- Issued for Document Review
- Issued for Handover
- Issued for Information
- Issued for Installation
- Issued for Manufacturing
- Issued for Review etc.

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Documents issued for different purposes shall be submitted under separate transmittals and shall not be combined. For email submissions, any single file exceeding 20 MB shall be uploaded to the Zendto portal, a web-based file transfer service. The applicable submission URL will be provided upon contract award by the Project Manager. Notification of such submissions shall be communicated to the Project Manager in accordance with the contract's correspondence requirements. A transmittal record shall accompany all Zendto submissions and be sent to the project document control email address, with the Employer copied. Hard copy documents shall be submitted by the Contractor. Unless otherwise specified in the schedule of submittals, the following minimum number of copies shall be provided:

Submittal Description	Copies Required
Design and Construction Data including Test and Inspection Data	2
Drawings	2

The Contractor shall submit documentation to the Employer using the following media:

- Electronic submissions: Documents may be submitted via the agreed project email address. Large files shall be delivered using secure file transfer methods. A notification email, with the transmittal note attached, shall be sent to the project email address, with the Employer copied.
- Hard copy submissions: All hard copy documents submitted to the Employer shall be accompanied by the relevant transmittal note.

4.3 Quality assurance requirements

The Contractor shall implement and maintain a comprehensive quality assurance system during the execution of the works. The Contractor shall comply with all applicable Occupational Health and Safety legislation. All works shall be executed to the highest standards of workmanship.

Construction/Installation Method Statements

The Contractor submits detailed construction and installation method statements for all applicable work activities before commencing the respective works. No work shall commence until the method statement has been reviewed and accepted by the Employer. Method statements shall be submitted for but not be limited to the following construction activities:

- Site preparation and earthworks
- Temporary works and/or construction support systems
- Structural steelwork and concrete works
- Building construction activities including partitioning works
- Mechanical, electrical, control and instrumentation including plumbing installations etc.
- Testing and commissioning activities
- Any other activity identified by the Employer or Project Manager as requiring a method statement etc.

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Each method statement shall include but not be limited to the following:

- Comprehensive construction/installation methodology for each activity
- Roles and responsibilities of Contractor personnel and subcontractors
- Health, safety and quality control measures for the proposed works
- Details of plant, equipment and machinery to be used
- Temporary work details for execution of the works
- Technical data sheets, product information, certificates of compliance for all materials/equipment i.e. mechanical, C&I and electrical components, where applicable etc
- Procedures for waste management i.e. removal of excavated materials, disposal of construction waste etc.
- Risk assessments related to the proposed activity
- Protection measures of existing infrastructure i.e. existing utilities etc.

The Contractor shall not deviate from an accepted method statement without the prior submission and acceptance of a revised method statement. Acceptance of any method statement by the Employer or Project Manager shall not relieve the Contractor of any obligation, responsibility, or liability under the Contract.

Quality Control Plans

The Contractor shall prepare and submit Quality Control Plans (QCPs) for all major work activities to ensure that the works are executed in accordance with approved designs, specifications and applicable standards. The QCPs shall form part of the Contractor's overall Quality Management system and shall be aligned with the Quality Assurance requirements stated in this works information. The Contractor notes that no construction activity shall commence without an approved QCP for that activity that has been submitted and accepted by the Employer or Project Manager. QCPs shall be submitted to the Employer for review and acceptance prior to the commencement of the relevant works. The Contractor shall submit QCPs sufficiently in advance of the planned commencement of the relevant activities to allow adequate time for review, comment, revision and resubmission, where required. Accepted QCPs shall be implemented on site and strictly adhered to by the Contractor. QCPs shall be updated, as necessary, to reflect changes in design, methodology etc. Each QCP shall include, as a minimum:

- Activity description including reference to relevant drawings, specifications and standards
- Identification of personnel responsible for related activity
- Inspection and testing requirements including the acceptance criteria. The QCP identifies;
 - Hold Points i.e. activities that shall not proceed without Employer acceptance
 - Witness Points i.e. activities where the Employer may elect to observe
 - Review Points i.e. activities requiring review of documentation, records or quality submissions etc
- Reference to the approved method statement for the activity etc

The Contractor shall ensure continuous monitoring of compliance with approved QCPs. Noncompliance with QCPs shall be treated as a defect under the Contract.

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Upon construction completion, the Contractor submits the listed items but no limited to:

- Approved Method statements and QCPs
- Completed ITP records
- Material certificates, test certificates and results
- Records of non-conformance reports and close-out actions
- Professional certifications and statutory approvals where applicable
- Warranties, guarantees, performance certificates etc.

4.4 Programming constraints

The Contractor shall prepare, submit and maintain a detailed project programme. The programme shall be realistic, fully resourced and shall demonstrate the sequence and interdependence of all activities necessary to complete the works. The programme shall include as a minimum:

- Periods required for submissions, review, comment, and acceptance by the Employer, Project Manager, authorities, or other stakeholders, where applicable
- Site access constraints, access permits, working area limitations, and work restrictions;
- Working hour restrictions and operational requirements affecting the execution of the Works;
- Anticipated weather conditions and their likely impact on the execution of the works
- Procurement activities, including manufacturing periods, delivery durations, importation requirements, and lead times for materials, equipment, and specialist items
- Dependencies between design, procurement, construction, testing, commissioning and handover activities
- Availability of labour, plant, equipment, subcontractors and specialist resources
- Construction and installation activities
- Temporary works design, approval and construction activities
- Inspection, testing, commissioning and performance testing activities
- Statutory approvals, permits and inspections required for the works.
- Float and time-risk allowances appropriate to the nature and complexity of the works

The Contractor shall update the programme at intervals stated in the contract or as instructed by the Project Manager. The Contractor shall promptly notify the Project Manager of any event or circumstance that may adversely affect progress or completion of the works and shall propose appropriate mitigation and recovery measures. The Contractor shall remain solely responsible for planning, coordinating and executing the works in a manner that achieves timely completion.

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4.5 Contractor's management, supervision and key people

The Principal Contractor shall submit a personnel schedule identifying the key persons proposed to perform the works. The personnel schedule shall include, for each key person, details of qualifications, relevant experience, professional registration (where applicable) and the estimated periods of engagement in the performance of the works. The Contractor confirms that all personnel engaged on the project shall comply with the Construction Regulations, 2014, including requirements relating to competence, skills, responsibilities and professional registration. The works shall be performed by the key persons named in the accepted personnel schedule for the periods stated therein. Upon contract award, the identified key persons shall constitute a contractual obligation of the Contractor. Where the Principal Contractor proposes to replace or utilise personnel not named in the accepted personnel schedule, the Contractor shall submit a written request to the Employer for approval, providing the proposed person's name, qualifications, experience and professional registration. The Contractor shall not implement such change unless and until the Employer has granted approval. Subject to the Employer's approval, the Principal Contractor may make adjustments to the personnel schedule to ensure the efficient and effective performance of the works, provided that such adjustments do not result in contract price exceedance.

The Contractor shall also submit a detailed organisational structure illustrating the proposed delivery model and approach. The organisational structures shall clearly indicate reporting lines and management responsibilities including the proposed execution strategy (in-house, subconsulting, joint venture (JV), or consortium arrangements etc). In the case of JV or consortium agreements the Contractor shall submit the following:

- Letters of confirmation for all portions of the work not performed by the Main Contractor. All letters or agreements must be issued on the official letterhead of the JV partner or consortium member. Letters or agreements must be signed by an authorised representative (e.g. Company Director, CEO or Legal Officer). The Contractor shall provide the name, designation, and contact details of the authorised signatory for verification purposes.

The Contractor notes that the project personnel required in the management and delivery of the works, include the following but not limited to:

a) Contract Manager

- Professional registration with the South African Council for Project and Construction Management Professions (SACPCMP)
- Minimum 5 years' experience in contract administration within engineering and/or infrastructure projects with demonstrable experience in the administration and management of NEC contracts

b) Construction Manager

- Registration with SACPCMP as a professional Construction Manager (PrCM) or Candidate
- National Diploma or Degree in Civil Engineering, Construction Management or equivalent
- Minimum of 5 years' construction management experience

d) Land Surveyor:

- Professional registration with the South African Geomatics Council (SAGC)
- Minimum 3 years' demonstrable experience in engineering and construction surveying

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e) Site Agent / Site Manager

- a) National Diploma or Degree in Civil Engineering or Construction Management
- b) Minimum of 5 years' site-based experience on engineering construction projects

e) Foreman / Construction Supervisor Resource (HVAC Works):

- Holds a national or trade certificate in HVAC construction
- Has a minimum of 5 years' demonstrable experience in supervising teams engaged in HVAC construction activities including testing and commissioning of related installations i.e. ductwork, ventilation fans, thermostats etc

f) Foreman / Construction Supervisor Resource (Fire Protection Systems and Wet Services):

- Holds a national or trade certificate in piping construction
- Has a minimum of 5 years' demonstrable experience in supervising teams engaged in Fire Protection systems and Wet Services construction activities including testing and commissioning of related installations i.e. pipe systems, valves, fire hose reels, etc

g) Fire Detection System Installation Technician

- An installer must be registered with SAQCC Fire under Fire Detection & Alarm Systems (D&GS).
- Holds a national or trade certification in the field of electrical/electronic engineering
- Has 5 years' demonstrable experience in the installation and commissioning of fire detection and fire alarm systems

h) Electrical Installation Electrician Resource:

- Holds a valid national certificate (NQF level 4 or high) in electrical Engineering or trade test certificate as an electrician
- Has possession of a wireman's license
- Registered by the Department of labour
- Has at least 5 years' demonstrable experience in the construction and/or reticulation electrical sector

i) Commissioning / Testing Engineer Resource:

- Holds a Bachelor of Technology/Bachelor of Engineering /Bachelor of Technology/Bachelor of engineering in Electrical/Electronic/electronic Engineering
- Has a minimum of 5 years hands-on commissioning experience in BMS and integrated systems and
- Professional registration with ECSA (Pr. Tech / Pr. Techni / Pr. Eng)
- Registered with SAQCC Fire as a commissioner under Fire Detection & Alarm Systems (D&GS).

j) Health and Safety Officer

- Registration with SACPCMP as a Construction Health and Safety Officer (CHSO)
- Minimum of 5 years' experience in construction health and safety management

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k) Planning / Scheduling Engineer

- Degree or Diploma in Engineering or Project Management
- Minimum of 5 years' experience in engineering project planning and scheduling
- Proficiency in planning software (e.g. Primavera or MS Project)

l) Environmental Officer

- Degree or Diploma in Environmental Management or related field
- Minimum of 5 years' experience in environmental compliance on construction projects

m) Senior Draughtsperson/s

- Has a National Diploma or Certificate in Draughting/Engineering
- Has a minimum of five (5) of practical draughting experience specializing across multiple engineering and architectural disciplines i.e. Architectural, Civil & Structural, Mechanical, Electronics & Electrical disciplines
- Has software proficiency in:
 - AutoCAD (Essential) - advanced skill level
 - SolidWorks (Mechanical)
 - Revit (Architectural/Structural/MEP)
 - Civil 3D or related softwares etc
 - Key responsibilities and skills include preparation of detailed drawings, technical draughting support

n) Document Controller/Records officer

- National Diploma or equivalent qualification in administration, Information Management or a related field
- Minimum of three (3) years' experience in document control and records management on construction or engineering projects

Resources required for design including construction and commissioning monitoring

a) Architectural Professional (Interior Designer)

- Professional Architect/ Professional Architectural Technologist
- Professionally registered with SACAP.
- Holds a formal qualification in Architecture or Architectural Technology (BArch/BAS/BTech or equivalent)
- Minimum five (5) years' demonstrable experience in architectural design and project implementation within industrial or infrastructure environments. Resource must demonstrate proven experience in multi-disciplinary engineering projects i.e. coordination with various engineering disciplines

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b) Structural Engineer / Technologist

- Professionally registered with ECSA (Pr. Eng or Pr. Tech Eng)
- Holds a formal qualification in Civil Engineering (BSc Eng/BEng/BTech/MEng or equivalent)
- Minimum five (5) years' demonstrable experience in structural engineering design

c) Geotechnical Engineer / Technologist

- Professionally registered with ECSA (Pr. Eng or Pr. Tech Eng)
- Holds a formal qualification in Civil Engineering (BSc Eng/BEng/BTech/MEng or equivalent)
- Minimum five (5) years' demonstrable experience in geotechnical engineering design

d) Mechanical Engineer / Technologist (HVAC Engineer)

- Professionally registered with ECSA (Pr. Eng or Pr. Tech Eng)
- Holds a formal qualification in Mechanical Engineering (BSc Eng/BEng/BTech/MEng or equivalent)
- Minimum five (5) years' experience in HVAC systems within industrial or infrastructure facilities
- Key responsibilities and skills include design, performance analysis, system optimisation, troubleshooting and maintenance support of HVAC systems

e) Mechanical Engineer / Technologist (Fire Engineer)

- Professionally registered with ECSA (Pr. Eng or Pr. Tech Eng).
- Holds a formal qualification in Mechanical Engineering (BSc Eng/BEng/BTech/MEng or equivalent)
- Minimum five (5) years' experience in fire suppression and detection systems including fire rational design
- Key responsibilities and skills include design, performance analysis, maintenance support, troubleshooting and system optimisation of fire systems.

f) Electrical Engineer / Technologist

- Professionally registered with ECSA (Pr Eng or Pr Tech Eng).
- Holds a formal qualification in Electrical Engineering (BSc Eng/BEng/BTech/MEng or equivalent)
- Minimum five (5) years' experience in low, medium and high voltage systems including switchgears, generator systems, transformers, protection systems etc.
- Key responsibilities and skills include electrical system design, performance analysis, troubleshooting and optimisation

g) C&I Engineer / Technologist

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- Professionally registered with ECSA (Pr Eng or Pr Tech Eng)
- Holds a formal qualification in Electrical or Electronics Engineering (BSc Eng/BEng/BTech/MEng or equivalent).
- Minimum of five (5) years' demonstrable experience in electrical and/or electronics engineering within industrial or power generation facilities.
- Resource must demonstrate proven experience in the design, integration, commissioning of control and instrumentation systems i.e. PLC, SCADA & HMI and Distributed Control Systems (DCS), Server networks supplied by vendors such as Siemens, Schneider Electric, ABB or GE. Resource also demonstrates experience in instrumentation, control system architecture, system optimisation, troubleshooting and performance analysis etc.

h) Senior Draughtsperson/s

- Has a National Diploma or Certificate in Draughting/Engineering
- Has a minimum of five (5) of practical draughting experience specializing across multiple engineering and architectural disciplines i.e. Architectural, Civil & Structural, Mechanical, Electronics & Electrical disciplines
- Has software proficiency in:
- AutoCAD (Essential) - advanced skill level
- SolidWorks (Mechanical)
- Revit (Architectural/Structural/MEP)
- Civil 3D or related software, etc
- Key responsibilities and skills include preparation of detailed drawings, technical draughting support

4.6 Training workshops and technology transfers

The Contractor provides training and carries out technology transfer to the Employer's personnel to enable them to operate and maintain the works. Training is provided by suitably qualified and experienced persons and includes both theoretical and practical instruction.

Training requirements:

The Contractor conducts training at times stated in the accepted programme or as agreed with the Employer. The Contractor conducts a minimum of two (2) formal training workshops for each major system. Trainings include the following but not limited to:

- Operation of mechanical, control and instrumentation (C&I) and electrical systems
- Maintenance procedures and schedules
- Troubleshooting and fault identification etc.

Training Materials

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The Contractor provides training materials for all training interventions. Training materials include but are not limited to:

- Operation and Maintenance (O&M) manuals

Training provided by the Contractor achieves the following:

- Enables the Employer's personnel to understand the design intent and functionality of all systems and installations
- Ensures safe operation of mechanical, electrical, control and instrumentation (C&I) and specialist sports systems
- Provides sufficient knowledge to carry out routine maintenance in accordance with manufacturer requirements
- Develops the ability to identify faults, undertake basic troubleshooting and implement corrective actions
- Familiarises personnel with emergency procedures and system responses under abnormal conditions
- Ensures understanding of performance requirements etc.

Training Competency

The Contractor ensures that training outcomes are measurable and that personnel demonstrate an acceptable level of competence prior to completion. The Contractor demonstrates that the Employer's personnel are able to operate and maintain the works. The Employer requires demonstration by practical assessment or may confirm competence by acceptance. Records of training provided, including attendance thereof, are submitted to the Employer by the Contractor.

Technology Transfer

The Contractor provides technology transfer to the Employer in relation to the operation and maintenance of the works i.e., control systems and software etc. The Contractor provides the Employer with access to information required to operate and maintain the works i.e. software systems, licences including supplier and manufacturer support details.

Handover & completion

Training and technology transfer are completed before project completion. Records of training provided, including attendance registers, are submitted to the Employer. Failure to adequately provide training and technology transfer, as stated in this scope, shall be considered a defect under the contract.

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5 Engineering and the *Contractor's* design

5.1 *Employer's* design

The Employer has prepared the designs for the works relating to building alterations and additions. The Contractor shall review the Employer's designs in accordance with the works information and shall identify any errors, omissions, ambiguities, inconsistencies or risks. The Contractor shall also assess the completeness and constructability of the designs, including the practicality of the construction methods implied by the designs. The Contractor shall notify the Project Manager as soon as practicable of any matter in the Employer's design which may affect the cost, Completion Date, Key Dates or quality of the works. Any proposal by the Contractor for a design amendment, value engineering solution or alternative design shall be submitted to the Project Manager for acceptance. The Contractor shall not implement any change to the Employer's design unless instructed or accepted by the Project Manager in accordance with the procedures of the contract. The Contractor's prices are deemed to include full allowance for:

- Reviewing and coordinating the Employer's design
- Attendance at design, review, and coordination meetings
- Liaison with the Employer's designers and other contractors
- Preparation and submission of technical information including alternative design proposals etc.

5.2 Description of the works

5.2.1 Site Description

The Kusile Power Station site is located approximately 37km northwest of eMalahleni in the Mpumalanga Province. The site is accessed from the R686 road between highways, N4 and N12. The site has approximate coordinates 25° 55' 07.34"S and 28° 54' 43.30"E. Refer to Figure 1 below for the location of the site.

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Figure 1: Location Map of Kusile Power Station

5.2.2 Boundary of Works

The Contractor shall execute all works in accordance with the Employer's designs. The scope shall include all associated multidisciplinary work and interfaces necessary to deliver the works. The area boundaries of the scope are detailed:

- Auxiliary Bay (Aux Bay) Buildings (Unit 2 – Unit 6)
- Administration (Admin) Building
- Substation South (Sub South) Building
- Station Services Building (SSB)

The Contractor is responsible for the coordination, integration and proper functioning of all interfaces between the above elements. Any item or activity reasonably necessary for the proper completion, operation and use of the works shall be deemed to be included in the Contractor's scope and pricing.

5.2.3 Geotechnical Works

The Contractor shall carry out all geotechnical works necessary for the execution of the works in accordance with the Employer's design and applicable laws and standards. The works include but are not limited to, excavation works, earthworks, foundation preparation, ground improvement and any other measures required to achieve suitable founding conditions. The Contractor reviews and verifies all geotechnical information provided by the Employer. The Contractor shall notify the Project Manager as soon as practicable of any discrepancy, ambiguity or condition which differs from that which an experienced contractor would have reasonably anticipated.

The Contractor ensures that all excavation and foundation works are inspected, tested and where required, accepted by the Project Manager before proceeding with subsequent construction activities. The Contractor takes all necessary measures to ensure the safety and stability of excavations and adjacent structures, to prevent damage to the works or any surrounding property.

CONTROLLED DISCLOSURE

5.2.4 Architectural scope of work

5.2.4.1 Employer's list of drawings

The Contractor shall execute the architectural works in accordance with the drawings and specifications issued by the Employer. The scope of work includes but is not limited to all architectural elements as detailed in the issued drawings. The Contractor shall refer to the complete list of architectural drawings provided by the Employer and ensure that all work is carried out in full compliance with these documents. The Contractor shall verify all dimensions and site conditions prior to construction and report any discrepancies to the Employer before proceeding with the works.

The Contractor shall note that the works to be executed within the C&I Workshop area located at the Auxiliary Bay Buildings will be undertaken across Units 2 to 6.

Drawing number	Revision	Title
Auxiliary Bay Buildings		
366 - 539631	R02	Floor Plan & Section – 9m Level
366 - 539632	R02	Floor Plan & Section – 16m Level
366 - 539633	R02	Ceiling Plan – 16m Level
366 - 539634	R02	Sections
366 - 539636	R02	Wall Murals
366 - 539637	R02	Drainage & Water Details – 9m Level
366 - 539639	R02	Drainage & Water Details – 16m Level
366 - 539640	R02	Door Schedule & Shower Details, Finishes Specification
Substation South		
366 - 539641	R02	Ground Floor Plan
366 - 539642	R02	Ceiling Plan

CONTROLLED DISCLOSURE

Drawing number	Revision	Title
366 - 539643	R02	Sections & Details
Substation South		
366 - 539644	R02	Interior Elevations
366 - 539645	R02	Drainage & Water Details
Administration Building		
366 - 539789	R01	Block B – Plans & Sections
366 - 539790	R01	Block A & C - First Floor Plans
366 - 539791	R01	Block A – Ground Floor Plan & Section Details
366 - 539792	R01	Doors, Windows & Finishes Schedule
Station Services Building		
366 - 539793	R02	Plan & Elevations
366 - 539794	R02	Ceiling Plan
366 - 539795	R02	Section Details
366 - 539796	R02	Internal Wall Elevations
366 - 539797	R02	Doors, Windows & Finishes Schedule
366 - 541734	R02	Drainage & Water Details
366 - 5417310	R02	Tiling Layout & Elevations

5.2.4.2 Employer's standards relating to the works

CONTROLLED DISCLOSURE

The Employer's standards applicable to the architectural discipline are listed. The Contractor shall comply with these standards, together with all applicable national, statutory and regulatory requirements, in the execution of the works.

Document number	Title
203 - 1239	Conceptual Architectural Design Specifications for Structures and Other Buildings
ESK AM AAA 1	Corporate Identity Manual
ESK PB AAQ 3	Interior Specifications for Eskom

5.2.5 Civil & Structural scope of works

5.2.5.1 Employer's list of drawings

The Contractor shall execute the civil and structural works in accordance with the drawings and specifications issued by the Employer. The scope of work includes, but is not limited to, all civil and structural elements as detailed in the issued drawings. The Contractor shall refer to the complete list of the civil and structural drawings provided by the Employer and ensure that all work is carried out in full compliance with these documents. The Contractor shall verify all dimensions and site conditions prior to construction and report any discrepancies to the Employer before proceeding with the works.

Drawing number	Revision	Title
Structural Engineering Drawings		
22841-097-114		Ground Floor Plan Concrete Details
22841-097-115		Ground Floor Plan Reinforcement Details

5.2.5.2 Employer's standards relating to the works

The Employer's standards applicable to the civil and structural engineering disciplines are listed. The Contractor shall comply with these standards, together with all applicable national and regulatory requirements, in the execution of the works.

Document number	Title
240 - 10781296	Constructability Assessment Guideline
240 - 57127953	Execution of Site Preparation and Earthworks Standard

CONTROLLED DISCLOSURE

Document number	Title
240 - 57127955	Geotechnical and Foundation Engineering Standard
203-770	Kusile Specification for Structural Concrete
240 - 57127955	Geotechnical and Foundation Engineering Standard
240 - 56364545	Structural Design and Engineering Standard
240-85549846	Standard for Design of Drainage and Sewerage Infrastructure

5.2.6 Electrical scope of works

5.2.6.1 Employer's list of drawings

The Contractor shall execute the electrical works in accordance with the drawings and specifications issued by the Employer. The scope of work includes, but is not limited to, all electrical elements as detailed in the issued drawings. The Contractor shall refer to the complete list of electrical system drawings provided by the Employer and ensure that all work is carried out in full compliance with these documents. The Contractor shall verify all dimensions and site conditions prior to construction and report any discrepancies to the Employer before proceeding with the works.

Drawing number	Revision	Title
Auxiliary Bay Buildings		
366 - 539647	R02	Small Power Layout – Level 9m (C&I Workshop Plan)
366 - 539648	R02	Small Power Layout – Level 16m (Control Room Plan)
366 - 539649	R02	Small Power Layout – Level 16m (Production Office Plan)
366-539653	R02	Lighting Layout – Level 9m (C&I Workshop Plan)
366-539655	R02	Lighting Layout – Level 16m (Control Room Plan)

CONTROLLED DISCLOSURE

Drawing number	Revision	Title
366-539657	R02	Lighting Layout – Level 16m (Production Office Plan)
Substation South		
366 - 539650	R02	Ground Floor Small Power Layout (FGD Control Room)
366 - 539658	R02	Ground Floor Lighting Layout (FGD Control Room)
Administration Building		
366 - 541815	R01	First Floor Small Power Layout (Block A & C)
366 - 544952	R01	Ground Floor Small Power Layout (Block A)
366 - 544953	R01	Ground & First Floor Small Power Layout (Block B)
366 - 541816	R01	Ground Floor Lighting Layout (Block A)
366 - 541817	R01	First Floor Lighting Layout (Block A & C)
366 - 541818	R01	Ground & First Floor Lighting Layout (Block B)
Station Services Building		
366 - 541804	R02	Ground Floor Small Power Layout (BOP Control Room)
366 - 541810	R01	Lighting Layout (BOP Control Room)

5.2.6.2 Employer's standards relating to the works

The Employer's standards applicable to the electrical engineering discipline are listed. The Contractor shall comply with these standards, together with all applicable national, statutory and regulatory requirements, in the execution of the works.

Document number	Title
240-56356396	Earthing and Lightning Protection Standard
200-11768	Station Cabling and Racking Standard
SANS 1484	Identification Marking for Electrical Conductors and Equipment

CONTROLLED DISCLOSURE

Document number	Title
SANS 10142-1:2009	The wiring of premises Part 1: Low-voltage installation
SANS 10114-2	Emergency lighting of Interiors
SANS 10198	The Selection, Handling and Installation of Electric Luminaires
240-155675380	Kusile Power Station Lighting and Small Power Operating and Control Philosophy
SANS 10114-1	Interior lighting Part 1: Artificial lighting of interiors
240-56227443	Generation Requirements for Control and Power Cables for Power Stations Standard
240-150642762	Generation Plant Safety Regulation

5.2.6.3 General Requirements (Electrical Works)

The Contractor shall execute all electrical installations i.e. lighting, small power, emergency power, dimming systems, distribution board modifications, cabling, containment systems, tagging, testing, commissioning and certification, strictly in accordance with the drawings and documents listed in Section 5.2.6.1: Employer's List of Drawings. All work shall comply with the latest editions and amendments of applicable South African National Standards (SANS) and other standards as listed in section 5.2.6.2. All materials, equipment, installations and workmanship shall comply with the manufacturer's recommendations and all applicable statutory and regulatory requirements. Only suitably qualified, competent and registered electrical personnel shall undertake the works.

Lighting Installations

The Contractor shall supply, install, connect, test and commission all lighting installations shown on the drawings, including LED panel luminaires, downlights, accent lighting, emergency lighting systems. All luminaires, control equipment, sensors, emergency fittings and associated wiring shall be installed in the locations and configurations indicated on the drawings and in accordance with the manufacturers' requirements. The Contractor shall mount and wire sensors including emergency backup circuits, strictly following the documentation shown in the drawings.

Small Power and Socket-Outlets

The Contractor shall provide general-purpose 13 A outlets and specialty sockets (e.g., kitchen, AV, communications) per the locations, quantities and load ratings shown in the drawings. The Contractor ensures RCD/earth leakage protection for each circuit as required and label each outlet per site tagging guidelines.

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Cabling and Containment

The Contractor shall route conduits, trunking and cable trays exactly as depicted. No rerouting shall be permitted without formal drawing amendment. The Contractor shall use proper cable types and sizes, identify all conductors per SANS 1484 and firestop any penetrations as shown.

Distribution Boards

The Contractor shall modify, extend and reconfigure distribution boards as indicated on the drawings, schedules and RCD/SPD specifications. The Contractor uses Type 1+2 surge protection devices in areas where lightning protection is present, or Type 2 SPDs where not, ensuring compliance with SANS 10142-1 requirements (live-earth and neutral-earth wiring, conductor sizing, <0.5 m lead length).

Testing, Commissioning and Certification

The Contractor shall perform comprehensive testing as per SANS 10142-1: insulation resistance, earth loop, continuity (including bonding conductors with $\leq 0.2 \Omega$), functional verification of all circuits and lighting control/emergency systems. The Contractor submits full commissioning documentation and compliance certificates for every area covered by the drawings.

Summary

All electrical work must align exactly with the listed drawings - this scope forms a direct instruction to follow them without exception. Compliance with South African and Eskom electrical standards and approved testing protocols is compulsory. Qualified personnel must also carry out, test and certify all work. Submittals of as-built drawings and completion documentation are required.

5.2.7 Mechanical scope of works

5.2.7.1 Heating, Ventilation and Airconditioning (HVAC) scope of works

5.2.7.1.1 Employer's list of drawings

The Contractor shall execute the HVAC system works in accordance with the drawings and specifications issued by the Employer. The scope of work includes, but is not limited to, all HVAC elements as detailed in the issued drawings. The Contractor shall refer to the complete list of HVAC drawings provided by the Employer and ensure that all work is carried out in full compliance with these documents. The Contractor shall verify all dimensions and site conditions prior to construction and report any discrepancies to the Employer before proceeding with the works.

Drawing number	Revision	Title
Auxiliary Bay Buildings		
366 - 539669	R02	Level 9m – HVAC Layout (C&I Workshop)
366 - 539670	R02	Level 16m – HVAC Layout (Control Room Plan)

CONTROLLED DISCLOSURE

Drawing number	Revision	Title
Substation South		
366 - 539680	R02	Ground Floor – FGD HVAC Layout
Administration Building		
366 - 541811	R01	Ground Floor – HVAC Layout (Administration Building – Block A)
366 - 541812	R01	First Floor – HVAC Layout (Administration Building – Block A)
366 - 541813	R01	Ground & First Floor – HVAC Layout (Administration Building – Block B)
366 - 541814	R01	First Floor – HVAC Layout (Administration Building – Block C)
Station Services Building		
366 - 541808	R03	Ground Floor - BOP HVAC Layout

5.7.1.2.2 Employer's standards relating to the works

The Employer's standards applicable to the HVAC engineering discipline are listed. The Contractor shall comply with these standards, together with all applicable national, statutory and regulatory requirements, in the execution of the works.

Document number	Title
240-56355731	Environmental conditions for process control equipment used at Power Stations
240-102547991	General Technical Specification for HVAC Systems Standard
SANS10147	Refrigeration systems including plants associated with air-conditioning systems

Auxiliary Bay – Level 9

CONTROLLED DISCLOSURE

The Contractor must relocate the existing supply air grille to the new kitchen area. This must be accompanied with a balancing damper to adjust the air flow to approximately 135 L/s. Additionally a new extraction wall fan must be installed to extract air from the kitchen at approximately 150 L/s.

Auxiliary Bay Level 16

The modification requires that the supply air terminals and it's HVAC auxiliaries at the SPO office and EOD office to be offset a certain distance such that its new location is central to the new office space as per the drawing.

The male and female ablution facilities will require the disc valves for extraction air together with its HVAC auxiliaries be offset a certain distance such that its new location is central to the new space as per the drawing. Both ablution facilities will also require the installation of new extraction ducts together with spigots and disc valves. The linear diffusers are to be blanked.

FGD Control Room – Ground Floor

The FGD Control Room would require extensive changes to its HVAC system. The supply air system to the control room would require the repositioning of certain supply air terminals as per the drawing. These may be repositioned via flexible ducting. A new supply air terminal would be required together with a damper to balance its airflow to approximately 172 L/s. Insulated galvanized steel ducting would be required for the supply air system. The supply air duct after heater bank 3 must be blanked off as per the drawing.

Return air grilles are required at the newly located offices. These must be white coloured hinged aluminium curved blade.

A new extraction air system is to be installed at the ablution facilities, change room and showers. This central system will utilise uninsulated galvanized steel ducting with branched uninsulated flexible ducting, extraction air disc valves as well as all its auxiliaries. The extraction air fan must be equipped with a sound attenuator and the air must be extracted to the outside via a powder coated aluminium weather louvre.

BOP Control Room – Ground Floor

The BOP Control Room would require the repositioning of the supply air terminals at the shift manager office, office and PTW office. A new Return Air Grille and new thermostat must be installed at the shift manager office space. At the office space and PTW office, the Return Air Grille and thermostat must be relocated.

The new shower facility will have a new extraction air system which would extract air from each shower cubicle. This central system will utilise uninsulated galvanized steel ducting with branched uninsulated flexible ducting, extraction air disc valves as well as all its auxiliaries. The extraction air fan must be equipped with a sound attenuator and the air must be extracted to the outside via a powder coated aluminium weather louvre.

The common duct for the existing extraction system utilized for the toilet facilities must be extended and located above the weather louvre of the new extraction air system.

Administration Building – First Floor Block A

Offices A201, A202, A203, A204 and Conference A201, A202, A203, A204 rooms

CONTROLLED DISCLOSURE

In these rooms it would be required that the current variable volume diffusers must be replaced with new variable volume air diffusers and these must be extended to reach the new ceiling height. The new variable volume air diffusers must also be relocated such that they are centralized. The existing thermostats must be moved accordingly as per the drawings.

Focus booths 1-4

New variable volume diffusers are required with new thermostats for each focus room. A flexible duct would be required to supply air to these focus booths via the central duct as per the referenced drawing. Each variable volume would supply an estimated 114 L/s of air to each focus room.

Administration Building – First Floor Block C

Offices C201, C202, C203, C204 and Conference C201, C202, C203, C204 rooms

In these rooms it would be required that the current variable volume diffusers must be replaced with new variable volume air diffusers and these must be extended to reach the new ceiling height. The new variable volume air diffusers must also be relocated such that they are centralized. The existing thermostats must be moved accordingly as per the drawings.

New meeting room, office C205, C206, C207, C208, C209, C210

It is required that the branched duct that originally supplies air to the south facing side of the office space is moved approximately 480 mm along the central duct coming from the air handling unit. This would enable all variable volume diffusers to be central to the newly sectioned office spaces. All new office spaces will require new thermostats. Return air grilles are to be installed in the new offices.

Office C211, C212, C213, C214

It is required that the branched duct that originally supplies air to the north facing side of the office space is moved approximately 800 mm along the central duct coming from the air handling unit. This would enable all variable volume diffusers to be central to the newly sectioned office spaces. All new office spaces will require new thermostats. Return air grilles are to be installed in the new offices.

Administration Building – Ground Floor Block A Focus booth 1-4

New variable volume diffusers are required with new thermostats for each focus room. A flexible duct would be required to supply air to these focus booths via the central duct as per the referenced drawing. Each variable volume would supply an estimated 114 L/s of air to each focus room. Focus booth 1 and 3 would require the relocation of the existing diffusers to a location central to the focus booth.

Administration Building – Ground Floor Block B

At the ground floor Block B it is required that existing variable volume diffuser must be relocated to a central point. A new thermostat must also be installed on the wall.

5.7.1.2.3 General Requirements

The Contactor must manufacture, supply, install, test and commission the HVAC systems for the areas that are relevant to the project. The modification works includes:

- The combination of adding additional HVAC equipment including the removal and relocation of HVAC equipment in various building spaces in Kusile Power Station.

CONTROLLED DISCLOSURE

- The associated electrical works with the modifications
- The associated controls and accessories for the modifications
- The associated Building, Civil and Structural works for the HVAC systems
- Re-testing, re-balancing and re-commissioning of the complete HVAC works.
- Provision of painting and corrosion protection for complete HVAC Works
- Updating of the existing operation and maintenance manuals and provision of new where required
- Update of the plant codification, labelling and drawings and provide new where required for the complete works

The Contractor to make provision for spares and maintenance support as per the requirements set out in this document. All ductwork to be manufactured in accordance with SANS 1238-2005 and SANS 10173-2003 low velocity duct standards. The Contractor must provide all sheet metal, material, joints seals, fasteners, hangers, supports, clamps and auxiliary components necessary to complete the works. All ductwork is to be installed as per the attached drawings. All supply and return ducts to be externally insulated with 25 mm FRK insulation. All ventilation ducts to be uninsulated. All bends to have minimum internal radius of 150 mm and splitters unless otherwise stated. All openings to be 100 mm bigger than duct sizes shown and to be made good after ducting has been installed. It is recommended that Deman MK2x10 wall display controllers are used if such controllers are still supported at the time of the installation. An approved alternative controller must be recommended to the engineering team for verification. The Contractor must install, test and commission such system for the employer.

Construction requirements

The Contractor to provide all scaffolding and lifting facilities necessary to complete the scope of work inclusive of civil, mechanical, C&I and electrical works. Scaffolding to be constructed as per the relevant health and safety standards as per the OHS act. Scaffolding to be inspected by a competent person prior to making the scaffolding safe for use. The modification to the HVAC systems are to be undertaken while the building services are still occurring hence the works needs to be done in a systematic manner.

Completion, Testing, Commissioning and Correction Of Faults

The contract is deemed to be complete when the following have been completed in accordance with the relevant specifications:

- The Plant is erected and commissioned
- Signed erection and safety clearance certificates
- The final as-built drawings have been submitted

CONTROLLED DISCLOSURE

- All documentation has been submitted including testing reports and the associated certificates received. All Quality Control Plan (QCP) documentation received. Final draft of the technical, operating, maintenance manuals delivered. The Quality Control Plant must be submitted for the employer to review and it must include the relevant Hold and Witness points as required by the engineering team.
- The plant and all documentation, drawings are coded and labelled.
- All special tools have been supplied

Commissioning

The Contractor must commission and test all systems. The functionality of the systems must be confirmed in the presence of the employer. The Contractor must ensure that the newly installed systems does not change the current operating parameters of the HVAC system.

The Contractor is to supply the necessary field-testing instruments (thermometers and flow meters etc) and detailed description of field testing arrangement to prove a capacity/measurement accuracy of 5% for equipment supplied.

The air distribution systems are to be commissioned as per SANS 10173: Code of Practice for the Installation, Testing and Balancing of Air Conditioning Ductwork or CIBSE Commissioning Code A: 2006 or latest revision.

The Contractor does comprehensive pre-commissioning, commissioning as well as quality monitoring on all the HVAC and its sub-systems and is to provide a report with the following details. The Contractor includes all commissioning dates, records of all functional/commissioning testing undertaken, a list of any future seasonal testing, and a written list of outstanding commissioning issues. The Contractor includes the outcomes and changes made to the building as a result of the commissioning process, accounting for all of the recommendations and references appended extracts of commissioning records for major plant and equipment. The Contractor ensures that the correct performance of the equipment, safety of plant and personnel, and compliance with the Technical Information before commissioning of plant commences is achieved.

Operational Maintenance after Completion

The Contractor is to execute maintenance and maintenance management under the supervision of Employer for a period of 12 (twelve) months from the date of Taking over of the Works. The minimum intervals for the Contractor to be onsite for inspection after taking-over of Works are to be 3, 6, 9 and 12 months respectively.

A report after each visit to site is to be submitted to the Employer in writing. The Contractor is to rectify such items in accordance with the requirements of the conditions of the Contract. The Contractor is responsible for any faults that may arise during the guarantee and maintenance period and will be called out to repair such faults as required.

The Contractor is to make all adjustments necessary for the correct operation of the plant and equipment for a period of 12 (twelve) months after the date of issue of taking-over certificate. The Contractor is to make good any faults due to inferior material or workmanship that may arise during this period. If during this period, the plant is not in working order for any reason for which the Contractor can be held responsible or if the plant develops faults, the Contractor will be notified, and immediate steps are to be taken by him to remedy the faults or to make any adjustments required.

CONTROLLED DISCLOSURE

5.7.1.3 Fire Protection & Wet Services scope of works

5.7.1.3.2 Employer's list of drawings

The Contractor shall execute the fire protection works in accordance with the drawings and specifications issued by the Employer. The scope of work includes, but is not limited to, all fire protection elements as detailed in the issued drawings. The Contractor shall refer to the complete list of fire and protection drawings provided by the Employer and ensure that all work is carried out in full compliance with these documents. The Contractor shall verify all dimensions and site conditions prior to construction and report any discrepancies to the Employer before proceeding with the works.

Fire Protection Drawings

Drawing number	Revision	Title
Auxiliary Bay Buildings		
366 - 539659	R01	Fire protection & Signage Layout – Level 9m (C&I Workshop Plan)
366 - 539664	R01	Fire protection & Signage Layout – Level 16m (Control Room Plan)
Substation South		
366 - 539662	R01	Ground Floor – Fire Protection & Signage Layout
Administration Building		
366 - 541819	R01	Fire, Block A Ground Floor Plan
366 - 541820	R01	Fire, Block A First Floor Plan
366 - 541821	R01	Fire, Block B Ground Floor Plan
366 - 541823	R01	Fire, Block B First Floor Plan
366 - 541824	R01	Fire, Block C First Floor Plan
Station Services Building		
366 - 541807	R01	Ground Floor – Fire Protection & Signage Layout

5.7.1.3.3 Employer's list of standards

The Employer's standards applicable to the fire engineering discipline are listed. The Contractor shall comply with these standards, together with all applicable national, statutory and regulatory requirements, in the execution of the works.

CONTROLLED DISCLOSURE

Document number	Title
240-123801640	Specification for Low Pressure Pipelines Standard
240-54937439	Fire Protection Detection Assessment Standard
240-54937450	Eskom's Fire Protection and Life Safety Standard
240-56356376	On-site Commissioning for Low Pressure Systems Standard
240-105020315	Standard for Low Pressure Valves
240-56247004	Thermal Insulation Standard

5.7.1.3.4 General Requirements

The fire protection systems shall comply with the latest edition of SANS 10400 – T and Eskom's Fire Protection and Life Safety Standard (240-54937450) etc. The Contractor must:

- Review the existing fire protection system installations.
- Update as built documentation and conduct full system commissioning witnessed by the client.
- Install all equipment in accordance with manufacturer's specifications and applicable codes.
- Submit as-built drawings, test certificates, and operation and maintenance manuals for approval and record purposes.

Completion, Testing and Commissioning Of Fire Protection Systems

The contract is deemed to be complete when the following have been completed in accordance with the relevant specifications:

- The Plant is erected, and commissioned
- Signed erection and safety clearance certificates.
- The final as-built drawings have been submitted.
- All documentation has been submitted including testing reports and the associated certificates received. All Quality Control Plan (QCP) documentation received. Final draft of the technical, operating, maintenance manuals delivered. The Quality Control Plant must be submitted for the employer to review, and it must include the relevant Hold and Witness points as required by the engineering team.
- The plant and all documentation, drawings are coded and labelled.

CONTROLLED DISCLOSURE

Commissioning

The Contractor must commission and test all systems. The functionality of the systems must be confirmed in the presence of the employer. The Contractor must ensure that the newly installed systems does not change the current operating parameters of the Fire Protection systems

5.7.2 Control and Instrumentation (C&I) scope of works

5.7.2.2 Employer's list of drawings

The Contractor shall execute the C&I system works in accordance with the drawings and specifications issued by the Employer. The scope of work includes, but is not limited to, all C&I elements as detailed in the issued drawings. The Contractor shall refer to the complete list of C&I drawings provided by the Employer and ensure that all work is carried out in full compliance with these documents. The Contractor shall verify all dimensions and site conditions prior to construction and report any discrepancies to the Employer before proceeding with the works.

Drawing number	Revision	Title
Auxiliary Bay Buildings		
366 - 539663	R01	Fire Detection Layout – Level 9m (C&I Workshop Plan)
366 - 539664	R01	Fire Detection Layout – Level 16m (Control Room Plan)
Substation South		
366 - 539667	R01	Ground Floor Detection Layout
366 - 539672	R00	FGD Control Room Cable Routing Drawing – Control Desks – Ground Floor View (Sheet 1)
366 - 539672	R00	FGD Control Room Cable Routing Drawing – Control Desks – Cable Basement View (Sheet 2)
366 - 539672	R00	FGD Control Room Cable Routing Drawing – Control Desks – Routing Overlay View (Sheet 3)
366 - 539672	R00	FGD Control Room Cable Routing Drawing – Control Desks – Cable Basement – Detailed Cable View (Sheet 4)
366 - 539672	R00	FGD Control Room Cable Routing Drawing – Control Desks – Cable Basement – Detailed Cable View (Sheet 5)
366 - 539672	R00	FGD Control Room Cable Routing Drawing – Control Desks – Cable Basement – Detailed Cable View (Sheet 6)

CONTROLLED DISCLOSURE

Drawing number	Revision	Title
366 - 539673	R00	Cable Schedule – FGD Control Room
Administration Building		
366 - 541825	R01	Detection, Block A Ground Floor Plan
366 - 541826	R01	Detection, Block A First Floor Plan
366 - 541827	R01	Detection, Block B Ground Floor Plan
366 - 541828	R01	Detection, Block B First Floor Plan
366 - 541829	R01	Detection, Block C First Floor Plan
Station Services Building		
366 - 544955	R01	Ground Floor Detection Layout

5.7.2.3 Employer's standards relating to the works

The Employer's standards applicable to the C&I engineering discipline are listed. The Contractor shall comply with these standards, together with all applicable national, statutory and regulatory requirements, in the execution of the works.

Document number	Title
SANS 10139	Code Practise for Design, installation, commissioning, operation, inspection, testing, and maintenance of fire detection and fire alarm systems
NFPA 72	National Fire Alarm and Signalling Code
NFPA 101	Life Safety Code
NFPA 70	National Electrical Code
SANS 10400-1	Low voltage electrical installations (power, earthing, segregation of ELV circuits)
SANS 10400-D	Public Safety (egress, door release, panic hardware interfaces)
SANS 10400-T	Fire Protection (fire override of access-controlled doors)
IEC 60839-11-1	Alarm and electronic security systems – electronic access control systems

CONTROLLED DISCLOSURE

Document number	Title
IEC 62443	Cybersecurity (zone & conduit model)
SANS 0222-5-1	CCTV surveillance systems for security applications (operational requirements, design, installation, commissioning, maintenance)
SANS 10142-1	Electrical power & earthing
IEC 62676	Video Surveillance Systems
IEC 60849	Sound systems for emergency purposes (PAGA)

The fire detection system shall comply with the latest edition of SANS 10139 and Eskom's Fire Protection Detection Assessment Standard (240-54937439). It shall be integrated into the existing building management or control system called Honeywell Enterprise Building Integrator.

The Contractor must:

- Review the existing fire detection system architecture, including the type, model, and capacity of the detection control panel (e.g., addressable, EN 54-2 compliant)
- Assess fire detection panel compatibility with additional devices in modified areas, ensuring the loop load does not exceed manufacturer's specified limits.
- Reprogram the fire detection panel logic to incorporate new devices/zones, update cause and effect matrices, and test system response accordingly.
- Perform a site wide loop integrity test and confirm all new devices are addressable and identified in the panel interface.
- Update and validate fire detection zone drawings to reflect new partitions and spatial changes as per SANS 0139 and EN 54014 standards.
- Ensure detector spacing, coverage (e.g., max 7.5m radius for smoke detectors), and mounting height comply with SANS 10139.
- Relocate or add manual call points and sounders (strobes) to meet escape route visibility and audibility requirements (minimum 65 dB(A) ambient).
- Apply SANS 10139 compliant wiring methods for the cabling: fire resistant (e.g., PH90 rates) cable, clearly labelled and separated from other devices.
- Verify environmental classification of new areas (e.g., kitchenettes, workshops etc.) and install appropriate detector (e.g., heat, optical, smoke etc.).
- Update as built documentation, panel configuration files, and devices address schedules; conduct full system commissioning witnessed by the client.

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All the new fire detection devices (Manual Control Points (MCPs), smoke detectors, heat detectors, and combined smoke/heat sensors shall be manufactured by Honeywell to align with station standardization.



Fire detection control panels, loop expanders, and associated modules shall be Honeywell compatible and integrate into the existing Honeywell infrastructure.

Sound strobes, interfaces, and ancillary devices must be Honeywell certified to ensure seamless maintenance, availability of spares, and long-term system support.

The Contractor ensures the fire detectors (smoke/heat/multi-sensor), manual control points, alarm sounders (strobes), and fire detection control panels are placed in all required locations as per design.

The Contractor installs all equipment in accordance with the manufacturer's specifications and applicable codes.

The Contractor submits as-built drawings, test certificates, and operation and maintenance manuals for approval and record purposes.

The Contractor ensures that a certified SAQCC Fire Detection Installer is responsible for the design and installation as per SANS 10139.

5.7.3 Configuration Management scope of works

The Contractor refers to Section 5.5 of the scope for the configuration management requirements. The Employer's standards applicable to the configuration management scope are listed. The Contractor shall comply with these standards, together with all applicable national, statutory and regulatory requirements, in the execution of the works.

Document number	Title
240 - 86973501	Engineering Drawing Standard
240-4332798	Engineering policy

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Document number	Title
240 - 76992014	Project/Plant Specific Technical Document and Records Management Work Instruction
240 - 66920003	Documentation Management Review and Handover Procedure for Gx Coal Projects
203 - 103437	Technical Document Submission and Review Work Instruction
240 - 71432150	Plant Labelling Standard
240 - 93576498	KKS Coding Standard
240 - 66920003	Documentation Management Review and Handover Procedure for Gx Coal Projects
240 - 109607732	Eskom Plant labelling Abbreviation Standard

5.7.4 Commissioning and Testing scope of works

The Employer's standards applicable to the commissioning and testing scope are listed. The Contractor shall comply with these standards, together with all applicable national, statutory and regulatory requirements, in the execution of the works.

Document number	Title
SANS 10139	Code Practise for Design, installation, commissioning, operation, inspection, testing, and maintenance of fire detection and fire alarm systems
SANS 10400-1	Low voltage electrical installations (power, earthing, segregation of ELV circuits)
SANS 0222-5-1	CCTV surveillance systems for security applications (operational requirements, design, installation, commissioning, maintenance)

5.8 Parts of the works which the Contractor is to design

5.8.1 Temporary Works

The Contractor shall design all temporary works required for the execution and completion of the works. Temporary works include the following but are not limited to:

- Formwork, falsework and scaffolding systems

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- Temporary supports, propping and bracing
- Temporary drainage, dewatering systems and excavation support
- Any other temporary structures, systems or works necessary for the execution of the works etc.

The Contractor ensures that all temporary works are designed by competent persons and comply with applicable legislation and standards. The Contractor carried out the duties in terms of the Construction Regulations 2014: Duties of Designer, 6(2) a-d, in relation to all temporary work designs.

5.8.2 Contractor's Design Portions

The Contractor designs and coordinates all Contractor designed portions of the works, including but not limited to:

- Shop drawings, fabrication details and installation drawings derived from the Employer's design
- Specialist systems forming part of the works etc.

The Contractor shall ensure that all Contractor designed portions are prepared by competent persons. The Contractor also ensures proper coordination with the overall design and construction of the works.

5.8.3 Design of Construction Methodologies

Where the design of any part of the work depends on the Contractor's proposed construction methodology, the Contractor carries out the necessary design. Such design/s shall include the following but not limited to:

- Structural stability assessments during all stages of construction including temporary stability analyses
- Load assessments for construction equipment and temporary loading conditions
- Design of temporary works and associated support systems etc.
- Lifting plans and craneage studies
- Any other design required for the Contractor's selected construction methodologies

The Contractor shall ensure that all such designs are prepared and certified, where required, by competent persons, possessing the necessary qualifications and experience. All designs shall comply with applicable codes of practice and regulations.

5.8.4 Design Responsibility and Liability

The Contractor shall be fully responsible for his designs. All Contractor designs shall be carried out in accordance with the applicable laws, regulations and recognised codes of practice. The Contractor shall take due account of site conditions, construction constraints and all interface requirements with other parts of the works. The Contractor shall ensure full coordination between all Contractor designed elements and the Employer's design, including coordination with other contractors, subcontractors and disciplines as necessary for the proper execution of the works. All Contractor designed elements shall be submitted to the Project Manager for acceptance prior to implementation. Submissions include, where applicable:

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- Design calculations,
- Drawings and specifications
- Certifications by suitably qualified and professionally registered persons.
- Any other documentation reasonably required by the Project Manager to demonstrate compliance with the Contract requirements etc

The Contractor acknowledges that acceptance of any design by the Project Manager does not relieve the Contractor of any of its design responsibilities or liabilities under the contract. The Contractor shall remain solely responsible for ensuring that all Contractor designed elements are fit for their intended purpose and satisfy the requirements of the Contract.

5.9 Procedure for submission and acceptance of Contractor's design

The Contractor submits particulars of the Contractor's design to the Project Manager for acceptance before the relevant part of the works is implemented. The Contractor does not proceed with manufacture, fabrication or construction of any design element until acceptance has been received from the Project Manager.

Submission Procedure

The Contractor submits design information in accordance with the accepted programme and allows sufficient time for review and resubmission. The Contractor maintains a design submission register showing status, revision history and acceptance status. The Contractor revises and resubmits design information where it is not accepted. The Contractor also coordinates submissions to avoid interface conflicts between disciplines.

Acceptance by the Project Manager

The Project Manager responds within the period for reply stated in the contract data (21 Days). The Contractor notes that acceptance of a submission does not transfer design liability to the Employer or Project Manager or relieve the Contractor of responsibility for design nor does this waive any requirement to comply with the Contract.

5.10 Other requirements of the Contractor's design

5.10.1 Multidisciplinary Coordination

The Contractor shall coordinate activities between civil, structural, mechanical, electrical, electronic and finishing trades to ensure seamless project execution. The Contractor resolves clashes and ensures integration of all building systems in accordance with the Employer's designs and applicable codes of practice.

5.10.2 Plant Coding and Labelling

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The Contractor shall undertake plant coding for all works within the scope using the KKS (Kraftwerk-Kennzeichensystem) classification system for the designation of plant and associated documentation. The Contractor complies with the requirements of the following standards and guidelines:

- Eskom Technical Documentation Classification and Designation Standard [240-54179170]
- Eskom Hybrid Coding Standard [240-131050729]
- KKS Power Plant Classification (B105e), 5th Edition (2003)
- KKS Applications: Guidelines and Explanations A, B1–B4 (B106e)
- Eskom Standard [240-93576498] (including project-specific interpretations)

All maintainable plant shall be coded to a minimum of KKS breakdown level 3 (i.e. mechanical, electrical, C&I and Civil systems), unless otherwise approved by the Employer. The Contractor applies KKS codes to all plant, equipment and associated documentation, including drawings, schedules, lists and correspondence. The Contractor ensures the accuracy, completeness and consistency of all plant and document and does not deviate from the specified coding requirements without prior approval from the Employer. The following project specific KKS interpretations apply:

- Breakdown Level 3 component codes are not used on P&IDs and PFUPs and are applied only by the control hardware supplier
- Breakdown Level 0 is indicated as a general note on P&IDs and not on individual KKS numbers
- F0 level is not used; FN level remains unassigned and without a general decoding system

The Employer assigns a coding practitioner who interfaces with the Contractor to review and agree on Eskom specific interpretations after Contract Award.

5.4.2 Plant Labelling and Nameplates

The Contractor provides, manufactures and installs labels and nameplates for all plant, equipment and infrastructure forming part of the works. All labels and nameplates shall comply with the Eskom Standard [240-71432150]. KKS plant labelling and equipment descriptions are manufactured from anodized aluminium or other approved materials.

Room & Door Signage

The Contractor to supply and install all new room and door labels and signage. The quantities are as detailed in the bill of quantities. The Contractor installs 60mm(width)x30mm(height) powder coated aluminium sheets in Eskom blue pantone 287C, with the new room door numbers in gloss opaque vinyl decals. Signage to be placed on doorframes and centred above the opening leaf of the door. The colour of the lettering to be white.

The Contractor to install 60mm (width) x 500mm (length) of wall mounted proprietary aluminium slat systems with black PVC end caps, for all new doors. These will be used for the room names.

Lettering Colour – Pantone 287C Eskom Blue Lettering Font – GILL SANS, 30mm high letters. The existing door signage/labels shall be retained by the Contractor and reinstated.

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5.11 Use of the Contractor's design

The Employer shall have total rights to use, reproduce, modify, adapt and issue the material for any purposes, including future phases/works, extensions or modifications etc, without further reference to or consent from the Contractor. All material provided by the Contractor under the contract shall become the property of the Employer upon submission. The Contractor assigns to the Employer all intellectual property rights, in the material prepared in connection with the works. The Contractor shall not use, reproduce, disclose or adapt the Employer's design material for any purpose other than the performance of the works without the prior written consent of the Employer, except where required by applicable law or by professional or statutory obligations. The Contractor ensures equivalent rights are obtained from all subcontractors and designers.

5.12 Equipment required to be included in the works

The Contractor provides all equipment necessary to execute, complete, test, commission and where applicable, maintain the works. Equipment includes all plant, tools, machinery and associated systems required for the execution of the works. Equipment requirements include the following but not limited to:

- Construction plant and machinery i.e. excavators, loaders, skid steer loaders, trenching equipment, graders, rollers, compactors and other earthworks equipment; tipper trucks, dump trucks, water carts, and material transportation vehicles; lifting equipment, including cranes and telehandlers; concrete batching equipment, transit mixers, concrete pumps, and associated placing equipment; concrete vibrators, screeds, finishing equipment, concrete curing equipment, and any other plant necessary for building and civil construction activities etc.
- Temporary works equipment i.e. formwork, falsework, propping and scaffolding systems
- Dewatering, drain pumping equipment
- Testing, inspection, calibration and commissioning equipment
- Safety and access accessories and equipment required for the execution of the works
- Any other equipment necessary for the proper and safe execution of the works

The Contractor is responsible for the selection, design (where applicable), procurement and provision of all equipment. The Contractor ensures that equipment is suitable for the intended use and appropriate for the site conditions. The Contractor also ensures that equipment and machinery are operated by competent and trained personnel. The Contractor ensures equipment is maintained in a safe working condition at all times, is certified and subject to statutory inspection, where applicable. Where specialist systems or installations are required, the Contractor provides all equipment for installation, testing and commissioning etc.

The Contractor removes all equipment from site when it is no longer required for execution or completion of the works, unless otherwise instructed by the Employer.

5.13 As-built drawings, operating manual and maintenance schedules

As built drawings

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The Contractor prepares and submits as-built drawings for all parts of the works. The as-built drawings reflect the final constructed works and are coordinated across all disciplines i.e. Architectural, Civil & Structural, Mechanical, Electrical, C&I etc. The as-built drawings are submitted in DGN/DWG and hard copy formats.

Shop Drawings & Data Sheet Samples

The Contractor or his suppliers, provide fabrication or shop drawings to detail information necessary to manufacture, fabricate, assemble and install structural, mechanical components etc. Shop drawings are prepared for components such as structural steelwork, building services equipment, ductwork, piping, plumbing, windows, doors, carpentry etc. The shop drawings are reviewed by the Principal Consultant and Employer, prior to fabrication to verify compliance with designs. The Contractor shall verify all field measurements prior fabrication of components. The Contractor notes that he bears all responsibility for correct and accurate preparation of shop and fabrication drawings.

Operating and maintenance manuals

The Contractor provides operating manuals and maintenance schedules for all systems and equipment included in the works. The manuals adhere to SANS 6750 requirements. The manuals provide detailed and complete information relating to the proper and safe operation and maintenance of machinery and equipment. These include but are not limited to:

- Mechanical, electrical and control systems
- Sports facilities and specialist installations (e.g. turf, track, irrigation systems) etc

Operating manuals and maintenance schedules include the following information but not limited to:

- Manufacturer's technical data sheets
- Detailed illustrations/drawings of equipment components and their associated systems
- Safety instructions
- System descriptions and operating procedures
- Maintenance requirements or service schedule
- Troubleshooting guidance
- Preservation and storage instructions
- Recommended spare parts lists

The Contractor submits draft operating manuals and maintenance schedules prior to commissioning of the relevant systems. Final versions of operating manuals, maintenance schedules and as-built drawings are submitted prior to completion of the works. The Contractor allows sufficient time in the accepted programme for review and resubmission of the above items.

6. Procurement

6.1 Subcontracting

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The *Contractor* may sub-contract specialised work and shall not subcontract more than a 25% of the value of the contract to any other entity that does not have an equal or higher B-BBEE status level of a contributor than the supplier concerned unless the contract is subcontracted to an EME that has the capability and ability to execute the subcontract work.

Where the Employer nominates or identifies preferred subcontractors, the Contractor shall consider such subcontractors in good faith, coordinate their inputs where appointed and remain fully responsible for the integration, coordination and performance of their works. The Contractor acknowledges that the appointment of preferred subcontractors does not relieve the Contractor of any obligations under the Contract.

6.2 Attendance by Subconsultants

The Contractor shall attend coordination meetings with subconsultants, as necessary, to ensure proper execution of the works.

6.3 Plant and Materials

6.3.1 Quality

Plant and materials used in the works shall be of good quality and suitable for the purpose for which they are intended. If a defect is notified, the Contractor corrects the defect by repair or replacement. Replacement is used where repair does not restore the item to the required standard or where instructed by the Project Manager.

6.3.2 Contractor's procurement of Plant and Materials

The Contractor procures all plant and materials required for the construction of the sports facility in accordance with the accepted programme and shall be responsible for all associated procurement, transportation, logistics, handling, delivery and storage of items. The Contractor ensures that all specialist suppliers and installers (i.e. turf, track and seating specialists) comply with the requirements of the scope and contract requirements. Where required, the Contractor shall obtain and provide warranties in the name of the Employer and these shall be valid from the date of completion. The procurement, delivery and installation of plant and materials do not delay completion or any key dates stated in the contract data.

The Contractor ensures that all plant and materials are preserved, packaged, shipped and transported in accordance with manufacturer requirements and good industry practice. The Contractor implements appropriate storage and preservation measures to protect plant and materials against adverse conditions, theft, deterioration and damage. The Contractor submits preservation, handling and storage procedures, including manufacturer instructions, for acceptance, where required.

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6.3.3 Plant & Materials provided “free issue” by the Employer

The Contractor provides all plant and materials required to provide the works.

6.3.4 Spares and consumables

The Contractor submits a priced schedule of recommended spare parts for long term operation and maintenance of all supplied equipment. The schedule includes, as a minimum the full description of each spare item, the manufacturer's part number and/or serial reference, unit rates and recommended stock quantities. The Contractor also submits supporting technical information for each item i.e technical data sheets/material certificates, where applicable. The Employer may review and comment on the schedule, but responsibility for correctness and completeness remains with the Contractor. Spare items may include the following but not limited:

- Electrical components and accessories
- Mechanical system components
- Control, instrumentation and other safety system components etc.

The Contractor also provides all spare parts and consumables required for:

- Inspection, commissioning and testing of systems forming part of the works
- Initial operation of building systems following completion
- Early maintenance of the facility, where required

The Contractor notes that all spares and consumables required for commissioning and initial operation are delivered to site prior to completion. All items are clearly labelled, packaged and stored in full accordance with manufacturer requirements and are handed over with full documentation suitable for future operation and maintenance of building systems.

6.4 Tests and inspections before delivery

All plant and materials are subject to tests and inspections as stated in this scope. Where required, tests and inspections are carried out prior to delivery to the Kusile site. The Contractor notifies the Employer in advance of any planned factory tests, off-site inspections or witness tests to enable attendance where required. The Contractor allows for a minimum of 3 working days for such notices. No plant and materials are dispatched to site without completion of any required inspections or written confirmation of acceptance, where specified. Tests and inspections prior to delivery may include, where applicable:

a) Factory acceptance testing (FAT) of mechanical, C&I and electrical equipment:

The Contractor shall perform all routine factory tests on selected C&I, electrical and mechanical plant, as required by the Employer. FATs are performed at the supplier's premises before equipment is dispatched to site. The Contractor provides test reports, certificates and any other statutory documentation, where applicable, for applicable equipment. The test reports contain the following information as a minimum but not limited to:

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- Technical data of component
- Test type/method
- Test evaluation results

b) Performance testing of mechanical, C&I and electrical equipment:

The Contractor carries out performance tests on selected C&I, electrical and mechanical equipment, as required by the Project Manager. Performance tests are performed at the supplier's premises before dispatchment of equipment to site. The Contractor prepares and submits for review and acceptance, testing procedures, Quality Control Plans and the acceptance criteria, prior commencement of tests. A representative of the Employer shall witness the performance tests but in doing so, the Contractor notes that the Employer assumes no responsibility or accountability for the proper functionality of plant or equipment. The Contractor arranges with the Project Manager for witnessing of test activities. The Contractor submits all test certificates and/or records for the test activities. The Contractor to supply all labour, materials, plant, and equipment for this purpose.

c) Site Acceptance Testing:

The Contractor shall perform site acceptance testing for selected plant and equipment, as required by the Employer. SATs are performed at the Employer's premises and witnessed by a representative of the Employer. Upon completion of the works, the Contractor shall test and commission all installations as individual systems and where required by the system configuration, as integrated systems. The Contractor shall provide adequate and suitably qualified personnel to carry out all testing and commissioning activities for the full duration of the commissioning process. The Contractor shall supply all labour, materials, plant, equipment and consumables required to complete the test and commissioning activities.

The Contractor acknowledges that witness testing by the Employer, shall only take place after the Contractor has completed all pre-commissioning activities and has confirmed that the equipment is fully operational and ready for testing.

The Contractor shall submit all test procedures to the Employer for review and acceptance prior to any inspection or testing activities. The Contractor shall provide sufficient advance notice to enable the Employer's representative to attend inspections and tests. The Contractor notes that any plant, equipment or materials that fail to comply with the requirements of the scope of work shall not be delivered to site until all defects have been rectified and the items have been re-inspected and accepted by the Employer. The Contractor acknowledges that all costs associated with testing, inspection, rectification, retesting and certification prior to delivery shall be deemed to be included in the contract price.

Upon completion of testing and commissioning, the Contractor shall submit all test certificates and records, including any applicable statutory certificates confirming that the equipment is in full working order.

7 Construction

7.1 Construction & Commissioning Monitoring

The Contractor shall provide the following services but not limited to:

The Contractor provides construction and commissioning monitoring services in accordance with the ECSA Guideline Scope of Services and Professional Fees for Registered Persons [Engineering

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Profession Act, 46 of 2000]. The service includes the provision of on-site personnel during construction and commissioning activities, as deemed necessary by the Contractor and Employer. The duties of the Contractor include the following but not limited to:

- Maintain a part-time presence on site for purposes of performing the service. The Contractor makes available all resources necessary to conduct the service
- Perform technical oversight and assurance i.e., provide design/technical clarifications and support including but not limited to the review of construction work procedures, repair methodologies, quality control plans, material samples and/or construction material, survey results, requests for information, concessions, data books etc. The Contractor attends technical meetings and provides input to Engineering Changes/Modifications and Engineering Responses
- Respond to technical queries raised by the executing contractor/s during construction and commissioning execution
- Provide the executing contractor with updated design documentation etc. where changes to the design/s are required
- Attend site meetings (technical, quality assurance, construction progress)
- Management of project interfaces with other discipline engineers, construction contractor etc.
- The Contractor performs inspection and testing activities, other than on site, of materials and plant, including inspection and testing during manufacture.
- The Contractor co-ordinates and monitors rectification of defects

a. Design, drawings and documentation

The Contractor shall:

- Prepare drawings for manufacture and installation for erection/installation fit i.e. fabrication drawings, shop drawings and workshop drawings etc.
- Review and provide technical checks of designs or drawings submitted by the Contractor as alternatives to tender documentation.
- Provide technical advice and clarifications on any design or construction documentation as required.

b. Post Completion Services

The Contractor shall provide post completion services following construction completion, including the defects liability period, as detailed below:

Defects identification and resolution

- Assist the Employer in identifying defects, incomplete works or performance issues
- Review and verify the Contractor's proposed corrective measures
- Monitor completion of remedial works
- Issue written reports summarizing outstanding items, progress and confirmation of completed rectification.

c. Final Inspections & Documentation

- Conduct final inspections jointly with the Employer and Contractor to verify compliance with design and contractual requirements

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- Review and confirm the submission of as-built drawings and maintenance documentation etc.
- Recommend acceptance of the final product once all obligations have been met

d. Handover Support

- Assist in planning and executing the formal handover process
- Ensure all final construction documentation and certifications etc. are submitted and complete

e. Close-Out Reporting

- Prepare a comprehensive close-out report summarizing inspections, outstanding issues, rectifications and final compliance with design intent
- Confirm that all Post Completion obligations within the Contractor's scope have been fulfilled

f. Design Reviews/Assessments

The Contractor reviews the existing designs, prepared by others. The assessment is performed by means of a comprehensive review of the following receivables but not limited to:

- Design reports
- Investigation reports i.e. geotechnical investigation report
- Construction drawings
- Construction data packages

The Contractor undertakes Engineering design changes in accordance to the latest revision of the Eskom Change Management Procedure [240-53114026]. The Employer shall ensure that the Contractor is provided with latest revision of this procedure. Any uncertainty regarding this procedure should be clarified with the Employer. The Contractor adjusts designs, drawings, schedules and documentation, as necessary. The findings and recommendations of the design reviews are consolidated in design end-of-phase technical reports which are submitted to the Employer for acceptance.

- **Functional and Value-Add Design Changes**

Where necessary, the Consultant shall undertake design changes prior to commencement of construction. Such changes shall be classified as either "Functional Changes" or "Value-Add Changes". Functional Changes include modifications required to address design flaws, omissions, non-conformances or deficiencies affecting the functionality and safety of the works etc. Value-Add Changes include modifications intended to improve design efficiency and optimisation, including reducing project costs, improving constructability, shortening construction duration, enhancing operational efficiency and improving lifecycle performance etc. Design changes arising during construction, including those resulting from contractor queries, site conditions or construction related issues, shall be managed separately under the Consultant's construction support services. The Consultant shall allow for:

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- 150 hours of Engineering Design Support and 150 hours of Draughtsperson Support for Functional Changes; and
- 150 hours of Engineering Design Support and 150 hours of Draughtsperson Support for Value-Add Changes.

These hours shall be utilised on an as required basis following design reviews and assessments and will require prior approval from the Employer before utilisation and be additional to any hours allocated for construction phase support and construction-related design changes.

For all proposed design modifications, the Consultant shall submit a technical report detailing the justification of the proposed change, the value-add benefits to the Employer, where applicable, an assessment of technical implications and associated risks, cost implications and potential savings, programme and construction schedule impact etc.

The Employer shall only consider design changes for implementation where such changes affect the Consultant's ability to issue statutory certifications and/or completion certificates, materially impact execution of the works or provide significant value-add benefits to the Employer.

The Consultant's responsibilities shall further include:

- Responding to project scope changes, alterations and/or Client instructions requiring the review, adaptation or amendment of designs, drawings, specifications, reports and related project documentation
- Ensuring that all designs, reports, specifications, calculations and drawings are reviewed and signed off by appropriately professionally registered Architects and Engineers, who shall assume full professional responsibility for the respective designs.

g. Statutory Compliance and Certification

The Contractor issues statutory certification and certificates of compliance for new works or portions of works forming part of their scope of services. The Contractor ensures that any work approved or certified by them, has been reviewed or inspected to the extent necessary to confirm the correctness of the approval or certification. Furthermore, the Contractor issues statutory certification for structural, fire protection and electrical systems and any other applicable systems or components forming part of their scope of works, to certify that the installation, erection or construction of the systems has been approved in terms of section 14(2A) of the National Building Regulations and any other applicable codes of practice. The persons who issue such certification assume full liability and responsibility for such installation, erection or construction.

7.2 Site information and constraints

7.2.1 Employer's site entry, security control, permits and site regulations

The Contractor complies with all site entry procedures i.e. security screening and access control requirements including induction and permitting systems. The Contractor ensures that all personnel, including Subcontractors, comply with the Kusile site regulations at all times. The Contractor allows for all costs associated with site access requirements in the prices and their programme.

7.2.2 Restriction to access on site, roads, walkways and barricades

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The Contractor complies with all restrictions relating to designated access routes, site roads and pedestrian walkways and traffic management requirements etc. The Contractor provides and maintains their barricades, signage and protection systems to ensure safe movement of people and vehicles within their work area.

7.2.3 People restrictions on site, hours of work, conduct and records

Work Hours

The Contractor notes that the site working hours are from 07:00am – 16:00pm, Monday – Thursday and from 07:00am – 12:00pm, Friday.

People records and conduct

The Contractor maintains records of all his personnel on site, including Subcontractors and makes these records available to the Employer or Project Manager, upon request. The Contractor ensures all his personnel comply with the site rules and standards of conduct.

7.2.4 Title to Materials from Demolition and Excavation

Materials arising from demolition or excavation remain the property of the Employer. The Contractor disposes of or stores such materials as instructed by the Employer.

7.2.5 Cooperating with and obtaining acceptance of others

The Contractor cooperates with others working on or adjacent to the work area. The Contractor provides access where required and coordinates activities to avoid delays or disruption.

7.2.6 Publicity and progress photographs

The Contractor does not issue publicity or communicate with the media regarding the works without approval from the Employer. The Contractor provides progress photographs as agreed upon at contract award.

7.2.7 Contractor's equipment

The Contractor maintains records of all his equipment on site. The Contractor ensures all equipment is suitable, safe and properly maintained. The Contractor complies with any restrictions on cranes, lifting operations and scaffolding and removes equipment from the site upon Completion. The Contractor's equipment shall be marked, as tools and materials need to be declared at the gate before entering the site, and the same declaration shall be used to remove equipment from site.

7.2.8 Equipment provided by the Employer

Where equipment is provided by the Employer, the Contractor uses it only for its intended purpose and maintains it in good condition.

7.2.9 Site services and facilities

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The Employer provides the following services:

- Site establishment area
- Connection points for water and electricity
- Designated waste disposal areas
- Access to existing site infrastructure

The Contractor makes all necessary connections, manages distribution and provides all other services required for providing the works.

7.2.10 Facilities provided by the Contractor

The Contractor provides all site facilities required for the works, including but not limited to:

- Personnel Protective Equipment (PPE)
- Site offices and equipment including parking facilities and site lighting
- Water storage facilities. The Contractor notes that potable water is free issue by the Employer. A return trip from the filling station is approximately 4km.
- Storage facilities
- Safety equipment (medical, firefighting equipment) etc.
- Ablutions and associated drain facility
- Parking etc.
- Site demarcation i.e. site fencing including security
- Staff/personnel transportation

All temporary facilities are removed from site at completion unless instructed otherwise.

7.2.11 Existing premises and adjoining properties

The Contractor inspects and records the condition of adjacent properties prior to starting work where there is a risk of damage. The Contractor protects surrounding structures and infrastructure and inspects the work of others where connection is required and notifies the Employer of any defects.

7.2.12 Surveying and setting out

The Contractor is responsible for the complete surveying and setting out of the works including establishment and protection of any benchmarks required to complete the works. The Contractor is responsible for the verification of all survey data relating to setting out and to immediately inform the Project Manager of any discrepancies as soon as these are discovered. The Contractor is required to submit as-built and/or red-line data and drawings of the completed works to the Project Manager upon handover. As-built drawings are submitted in PDF and native CAD (.DGN) formats.

7.2.13 Excavations and associated water control including Underground and existing services

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The Contractor notes that no excavations are permitted without an excavation permit obtained from the Project Manager. The Contractor complies with the requirements of the Construction Regulations, Execution of Site Preparation and Earthworks [19] and the Kusile Trench and Excavation Procedure [203-13626]. Scanning of underground services shall precede all excavation works. The Contractor performs geophysical assessments for detection of subsurface utilities, prior to undertaking excavations. The geophysical scanning method employed is at the discretion of the Contractor. The Contractor therefore considers the work area prior to selection of test methodology and equipment. The Contractor submits the results of the scans to the Project Manager and indicates possible services which may interfere with the works. The Contractor shall obtain all relevant drawings, indicating the position of potential underground services around the work area. Care shall be taken by the Contractor to properly demarcate and protect all underground utilities. If any service or structure is damaged by the Contractor, that should have been located or protected by the Contractor, the Contractor shall be liable for the repair works. All excavation works shall be carried out in accordance with the SANS 1200 series and SANS 2001 BE1.

The Contractor is also responsible for the control of water during construction including the dewatering of excavations, to ensure the safety of the Works. The Contractor provides, operates and maintains all required equipment for this purpose i.e., pump equipment, well points etc. The Contractor is responsible for the design, construction and maintenance of all temporary drainage controls i.e., sumps, drains, trenches and any other temporary works that may be necessary for the dewatering and protection of the permanent Works. The Contractor re-instates temporary drainage controls, when no longer required.

The Contractor is responsible for the repair of damaged Works caused by floods, water or failure of any part of the dewatering and flood protection controls. The Contractor's attention is drawn to the fact that, during rain events and seasons, high water tables may be encountered on site. The cost of the protection works, including rectification of damages, shall be borne by the Contractor.

7.2.14 Control of noise, dust, water and waste

The Contractor implements measures to control noise, dust, water runoff and waste generation. All waste is disposed of in accordance with applicable regulations.

7.2.15 Giving notice of work to be covered up

The Contractor gives notice to the Employer before work is covered up. Work is not covered until the Employer has had reasonable opportunity to inspect.

7.2.16 Hook ups to existing works

The Contractor carries out connections to existing services and infrastructure for purposes of performing the works. The Contractor obtains the Employer's approval for such works, prior to implementation. The Contractor plans and coordinates shutdowns where required, and as far as possible, minimises disruption to existing operations.

7.2.17 Removal of Existing Work

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The Contractor shall undertake all demolition, dismantling, breaking out, stripping and removal of existing work necessary for the execution of the Works. The Contractor shall carefully remove existing drywall partitions, doors, frames, ironmongery, ceilings, floor finishes, wall finishes, roof components, mechanical services, electrical services and associated fixtures and fittings as indicated on the drawings or instructed by the Project Manager. Where existing items are identified for re-use, the Contractor shall:

- Carefully dismantle and remove such items without damage
- Label all components to enable identification and reinstallation
- Store salvaged materials in a secure, dry and protected location on Site
- Protect salvaged items from theft, deterioration and damage
- Reinstall the items in their final positions as shown on the drawings

Items to be salvaged and reinstalled include, but are not limited to:

- Doors and door hardware.
- Joinery items, cupboards, cabinets and worktops.
- Mechanical equipment, boilers and heating system components where indicated.
- Other fixtures and fittings designated for retention and reuse.

The Contractor shall remove existing brickwork, concrete, reinforced concrete, roof structures, ceilings, floor screeds, ceramic tiles, wall finishes, sanitary fittings, pipework and all other redundant materials necessary to execute the Works.

The Contractor shall disconnect, remove and dispose of redundant mechanical, electrical, drainage, water and other building services. Existing services required to remain in operation shall be adequately protected and maintained throughout the Works.

The Contractor shall take all necessary precautions to prevent damage to existing structures, finishes, services and adjacent property that are to remain. Any damage caused by the Contractor shall be made good at the Contractor's cost.

Preparation of Existing Surfaces and Making Good

The Contractor shall prepare all existing surfaces receiving new work to provide a sound and suitable substrate. Preparation shall include the removal of loose material, contaminants, defective finishes, projections and any other material that may affect the quality of the completed work. The Contractor shall make good all disturbed or defective areas resulting from demolition, removals, service alterations and new installations. Making good shall include but not be limited to:

- Brickwork repairs
- Concrete repairs

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- Plaster repairs
- Closing of openings
- Ceiling repairs and reinstatement
- Raised access floor repairs
- Floor finish repairs and reinstatement
- Wall finish repairs and reinstatement
- Tiling repairs and reinstatement

Completed repairs shall match ad

7.3 Completion, testing, commissioning and correction of Defects

7.2.1 Work to be done by the Completion Date

On or before the completion date, the Contractor shall have done everything required to provide the works except for the work listed below which may be done after the completion date. The Project Manager cannot certify completion until all the work except that listed below has been done and is also free of defects which would have, in his opinion, prevented the Employer from using the works and others from doing their work. The Contractor completes all outstanding work within the stated timeframes and submits the required documentation to the Project Manager

	Item of work	To be completed by
1.	As built drawings	Within 30 days after Completion
2.	Performance testing of the works in use	Within the period stated in the Scope after Completion

7.2.2 Correction of Defects

The Contractor shall, at its own cost, promptly correct any errors, omissions or deficiencies in the services or material that arise from failure to exercise reasonable skill, care and diligence including non-compliance with the provisions of the contract, applicable laws or approved standards. The Contractor notes that the correction of defects shall not relieve the Contractor of any liability under the contract nor extend the agreed time for completion unless approved by the Employer.

7.2.3 Materials facilities and samples for tests and inspections

The Employer may require samples of materials or equipment to verify quality and workmanship. Acceptance of samples or inspection does not relieve the Contractor of its responsibility to provide the works. Any materials or workmanship not complying with applicable codes of practice and standard, are rejected and replaced or corrected by the Contractor at its own cost.

CONTROLLED DISCLOSURE

The Contractor carries out all field and laboratory testing associated with the construction works, including but not limited to concrete, earthworks and sports surface formation layers. As a minimum, the Contractor performs the following tests on soil and earthworks materials:

- Identification tests i.e. atterberg limits, sieve analysis (particle size distribution),
- Compaction and strength tests i.e. moisture-density relationship (Modified AASHTO compaction), California Bearing Ratio (CBR).
- Concrete testing (slump tests, cube strength tests).

All testing is carried out by a competent and approved laboratory. Test results are submitted to the Project Manager for review and acceptance. The Contractor ensures that all test results demonstrate compliance with the specified requirements before proceeding with subsequent work.

7.2.4 Commissioning

The Contractor is responsible for all commissioning activities for mechanical, electrical and control and instrumentation (C&I) systems installed as part of the works. Commissioning includes the planning, coordination, provision of labour, plant, materials, equipment and supervision necessary to carry out all activities. Commissioning is carried out in accordance with the scope requirements, the Employer's Specifications [240-56356376], applicable South African National Standards (SANS) and any other standards stated in the scope or instructed by the Project Manager.

The Contractor prepares detailed commissioning procedures for each system, including but not limited to:

- Electrical systems
- Low pressure services
- Mechanical equipment and components
- Control and instrumentation elements etc.

Commissioning procedures shall define the sequence of activities, identify required resources and test equipment and include acceptance criteria for each system. The Contractor submits commissioning procedures for acceptance prior to commencement of commissioning activities. Commissioning does not start until the procedures are accepted by the Employer.

The Contractor shall also record all commissioning and testing activities. All records are submitted to the Project Manager as part of the handover documentation. Commissioning records include:

- Inspection reports
- Test results
- System performance data
- Calibration certificates etc

CONTROLLED DISCLOSURE

7.2.5 Start-up procedures required to put the works into operation

The Contractor prepares and submits detailed start-up procedures required to bring the works into operation. Start-up procedures include safe energisation and operation of electrical systems, mechanical and C&I systems. The Contractor ensures that all risks associated with start-up are identified and controlled in accordance with approved procedures. Start-up activities are not carried out until commissioning has been completed and accepted where required.

7.2.6 Take over procedures

Take over occurs after project completion. The Contractor assists the Employer with take over of the works. This includes providing personnel to support initial operation of the facility etc. The Contractor notes that all systems shall be fully operational and fit for use at the time of take over.

7.2.7 Access given by the Employer for correction of Defects

Access to the works, after take over, for the correction of defects is provided in accordance with the contract. Where the works are in operation, the Contractor complies with the Employer's operational and safety procedures as well as coordinates access with the Employer. The Contractor notes that access may be subject to restricted working hours, supervision requirements etc. The Contractor submits method statements, where required, before accessing operational areas for defect rectification or other.

7.2.8 Performance tests after Completion

The Contractor carries out performance tests after completion to demonstrate that the works meet the specified performance requirements. These may include, but are not limited to:

- Performance of mechanical, electrical and control systems
- Drainage performance of playing fields and surfaces etc

The Contractor submits performance test procedures for acceptance prior to testing. The Contractor provides all equipment and personnel required for testing. All records and results are submitted by the Contractor. The Contractor notes that if the works do not meet the required performance, the Contractor corrects the defects and repeats the tests, at their own cost.

7.2.9 Training and technology transfer

Refer to section 4.6

CONTROLLED DISCLOSURE

7.2.10 Operational maintenance after Completion

The Contractor carries out operational maintenance of the works after Completion and before the defects date/period. This includes routine maintenance activities necessary to ensure continued operation of the facility i.e. servicing of mechanical, C&I and electrical equipment, including sports surfaces, as well as lubrication, adjustments and minor servicing tasks etc. The Contractor undertakes operational maintenance for a period of one year (1) post completion. The Contractor also submits maintenance records and reports to the Project Manager during this period.

8 Plant and Materials standards and workmanship

8.1 Materials and Workmanship

All plant and materials used in the works are new, unused and free from defects or damage and suitable for their intended purpose. Materials intended for permanent incorporation into the works are not used for temporary purposes. The Contractor ensures that all work complies with the scope, is executed in accordance with the manufacturer's written instructions and recommendations and is carried out using good industry practice. The Contractor notes that acceptance by the Employer or Project Manager does not relieve the Contractor of its responsibility to provide the works.

8.2 Investigation, survey and site clearance

The Contractor shall carry out all site preparation necessary for the execution of the Works, including the clearing of vegetation, removal of obstructions and disposal of all unsuitable materials not forming part of the permanent works. All activities shall comply with the latest revisions of the SANS 1200 series, SANS 2001 BE1 and the Employer's standard for the Execution of Site Preparation and Earthworks. The Contractor shall be fully responsible for the handling, management and disposal of all waste generated within the construction area. All surplus excavated material and unsuitable material shall be transported to and disposed of at an approved spoil site designated for this purpose. Hazardous waste shall be identified, handled, transported, and disposed of in accordance with applicable legislation at a registered waste disposal facility, subject to prior approval by the Employer.

9 Other

9.1 Special Tools Requirements

The Contractor to identify and submit to the Employer a priced list of all special tools required for the operation and maintenance of equipment components. These shall include the following but not be limited to:

- OEM specific tools/devices
- Tools required for ongoing maintenance of the equipment

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10 Project Deliverables

The Contractor shall be responsible for the complete handover of all works executed under this contract. The Contractor shall prepare, compile and submit all required handover documentation for review and acceptance by the Employer's Representative. Handover documentation shall be submitted in both hard copy and electronic format. The handover documentation shall include the following but not limited to:

Design Documentation

- Design reports for the entire works, signed by professionally registered engineers
- Design calculations and supporting analyses
- Design review records and approvals
- Approved for Construction drawings
- Shop drawings
- Fabrication drawings
- Installation drawings
- Record drawings
- Final As-Built drawings reflecting the works as constructed
- Schedules, diagrams and associated drawing registers
- Statutory approvals and certifications etc

Survey and Setting-Out Documentation

- Survey reports and records
- Setting-out documentation
- Final as-built survey information

Construction Quality Documentation

- Approved Construction and Installation Method Statements
- Quality Control Plans (QCPs)
- Inspection and Test Plans (ITPs)
- Inspection records and checklists
- Non-Conformance Reports (NCRs) and close-out records

CONTROLLED DISCLOSURE

- Corrective action records etc.
- Material or Product data sheets

Investigation Reports

- Materials investigation reports
- Site inspection reports
- Any other investigations undertaken during the execution of the works

Testing and Inspection Documentation

- Construction inspection records
- Factory Acceptance Test (FAT) records
- Site Acceptance Test (SAT) records
- Testing and commissioning records
- Pressure testing records
- Performance testing records
- Calibration records and certificates
- Any other testing and inspection documentation required by the contract

Welding and Fabrication Documentation

Where applicable:

- Welding Procedure Specifications (WPS)
- Procedure Qualification Records (PQR)
- Welder Qualification Certificates and Records
- Welding inspection reports
- Non-Destructive Testing (NDT) reports and certificates
- Fabrication quality records and traceability documentation etc.

Operation and Maintenance Documentation

- Operation and Maintenance (O&M) manuals i.e. manufacturer's operating instructions, maintenance schedules and procedures

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- Equipment schedules and asset registers
- Spare parts schedules
- Warranty and guarantee documentation.

Training Documentation

- Training manuals and training material
- Training attendance records
- Training competency records etc

Completion and Handover Documentation

- Commissioning completion certificates
- Fire system completion certificates (As per SANS 10139 requirements)
- Practical Completion documentation
- Defects and snag lists and close-out records
- Final Completion documentation
- Handover certificates
- Engineering certificates and Certificates of Compliance (CoC), where applicable
- Any other records required to demonstrate compliance with the Contract

The Contractor shall ensure that all project deliverables are submitted in an indexed format, with a document register clearly identifying document numbers, revisions, dates and approval status. The Employer may reject incomplete or inaccurate submissions and require resubmission at no additional cost to the Employer.

11 Acceptance

This document has been seen and accepted by:

Date	Rev.	Compiler	Remarks
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July 2026	1	.	New document
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13 Development Team

14 Acknowledgements

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