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C3.1: EMPLOYER'S SCOPE

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1 Description of the services

1.1 Executive overview

Introduction

Kusile Power Station structures are designed to last the station's life. These structures will be subjected to various exposure conditions during station operations and subsequent deterioration and ageing is expected. According to the Occupational Health and Safety Act 85 of 1993, the owner of infrastructure has a duty to ensure that Civil Structures remain serviceable throughout their occupancy and utilisation. This is ensured by carrying out annual statutory inspections and regular inspections to determine the condition and also state any remedial work which may be required, or to follow up with a more stringent site inspection and laboratory tests (if necessary). Following each inspection, the condition of civil and structural assets must be reported and recorded.

Furthermore, immediate design changes may be required on existing structures in order to meet new structural demands. To do this, a professional engineering team must be available on an as and when required basis.

During scope or project execution, it is necessary for construction supervision to be conducted by a Professional Civil Engineer. This contract will also provide this service.

The survey professional services will also be required for the purposes of structural integrity and assessment, and operational/maintenance monitoring of all civil infrastructures at Kusile Power Station. The services will include survey services for design and construction activities on as and when required basis.

A suitably qualified Contractor is required to perform the aforesaid works on various critical or major civil and structural assets. The civil and structural assets are a critical part of the Station and must annually be inspected to render them safe for continued use.

Supporting Clauses

Scope

This document provides Scope of Work for the Management of Civil Structures at Kusile Power Station.

Purpose

To indicate the scope of work to be executed by the successful bidder for the Management of Civil Structures at Kusile Power Station. The scope includes conducting investigations, designs and developing technical specifications required for Civil Engineering related work at Kusile Power Station.

The scope will also include Land Surveying Professional Services for Structural Assessments, Operational/Maintenance Monitoring, and Construction Activities at Kusile Power Station.

The aforesaid "conduct investigations", shall include visual inspection and detailed inspection (i.e., non-destructive tests, destructive test, lab tests, etc.).

Applicability

This document applies to Kusile Power Station only.

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 sections.

Normative

[1] ISO 9001 Quality Management Systems

- [2] All work shall be conducted in accordance with the requirements of the Occupational Health and Safety Act (Act 85 of 1993) as amended.
- [3] Eskom Health, Environment and Quality (SHEQ) Policy 32-727
- [4] 240-107981296 Constructability Assessment Guideline
- [5] 240-55864504 Belt Conveyor Structural Steelwork and Welding Specification
- [6] 240-77801161 Inspection of Boiler Structural Supports – Conventional Fossil Fuel Fired Power Stations
- [7] 240-56364535 Architectural Design and Green Building Compliance Standard
- [8] 240-56364537 Design of Steel Structures Standard
- [9] 240-56364545 Structural Design and Engineering Standard
- [10] 240-144332407 Standard for Eskom Power Stations Concrete Remedial Work
- [11] 240-144576061 Structural Design CoE Work Instruction
- [12] 240-144590786 Geotechnical Engineering CoE Works Instruction
- [13] 240-57127955 Geotechnical and Foundation Design Standard
- [14] 240-98349953 Check sheet for Geotechnical Investigations
- [15] 240-53114002 Engineering Change Management Procedure
- [16] 240-144574575 Road and Railway Design Works Instruction
- [17] 240-84418186 Road Specification Manual
- [18] 240-85549846 Standard for design of Drainage and Sewerage Infrastructure
- [19] 240-142483465 Guidelines on Maintenance and Rehabilitation of Roads
- [20] TradeStuff Surveys 08 September 2021

Informative

- [21] 240-99527377 Inspection manual for Civil Works at Eskom's Power Stations
- [22] 240-53113685 Design Review Procedure
- [23] 240-53113953 Manage Engineering Accountability Procedure
- [24] 240-53114026 Project Engineering Change Management Procedure
- [25] 240-85549846 Standard for design of Drainage and Sewerage Infrastructure
- [26] 32-421 - Eskom Life Saving Rules
- [27] 36-681 - Eskom Plant Safety Regulations

Definitions

1.2 Interpretation and terminology

The following abbreviations are used in this Scope:

Abbreviation	Explanation
BOQ	Bill of Quantities
CAD	Computer Aided Drawing
DEA	Department of Environmental Affairs
ECSA	Engineering Council of South Africa
GPR	Ground Penetration Radar
Gx	Generation
NEC	New Engineering Contract

OHS	Occupational Health and Safety
SANS	South African National Standards
SoW	Scope of Work
WGS	World Geodetic system
QC	Quality Control
QCP	Quality Control Plan

Roles and Responsibilities

Contractor

- Execute the defined scope according to contractual agreements.
- Develop a methodology on how the works described in the scope of work will be executed.
- Takes full professional accountability and liability for the works as described in the scope of work.
- The Contractor shall comply with the Employer's Environmental, Health and Safety standards, policies, and procedures.
- The Contractor shall provide resources that are required to execute this scope and any changes to the crew must be negotiated and agreed upon with the Employer.
- The Contractor shall provide equipment and tools required for the works.
- Contractor vehicles to comply with Eskom Vehicle Standards and Procedures.
- The Contractor will be required to perform its responsibilities in line with the Employer's working calendar. The Contractor shall be readily available on request of the Auxiliary Engineering to perform professional services work.
- The Contractor shall adhere to all rules and regulations prescribed by the Employer which will be made clear during safety induction.

Employer

- Review and accepts the Contractor's method statement procedure, QCP and ITP.
- Provide Engineering and Maintenance support for information required by the Contractor.
- Inform and issues the Contractor with updated operating and maintenance manuals.
- Is present for all applicable points of the ITP.
- Reviews all submissions made by the Contractor.

Process for Monitoring

Not Applicable

Related/Supporting Documents

Not Applicable

2 Specification and description of the services

Scope of Works

Plant description

Kusile Power Station structures are designed to last the station's life. To ensure that structures last for the duration of the station life, adequate maintenance and operational monitoring is required. These structures will be subjected to various exposure conditions during station operations and subsequent deterioration and ageing is expected. Periodic inspections of these structures are required to render the structures safe for continued use. The station also comprises of many civil infrastructures, the below list mentions a few of the critical structures.

- Chimneys (West and East) & Associated Structures, i.e., ducts and structural steelwork
- Silo's (Coal and Fly Ash Silos)
- ACC Columns & Associated Structures, i.e., structural steelwork

- Boiler House
- Turbine House
- All Conveyor structures (Coal, Ash, and Gypsum conveyors)
- Transfer Houses (Coal, Ash, and Gypsum)
- Water Treatment Plant Structures
- Sewerage Treatment Plant Structures
- Auxiliary Bay and Boiler Structures
- Coal plant Structures
- Ash plant Structures (PJFF support structures)
- Steam Turbine Hall
- ACC Auxiliary Building
- ACCCT Building
- H₂/CO₂ Gas Storage Building
- Auxiliary Cooling Structures
- Substation Buildings
- General Buildings incl. Security Building
- Process Buildings
- Storage Buildings and Workshops
- Admin Buildings
- Dams
- Ash Dumps
- Stormwater drainage systems
- Station Roads



Figure 1: Kusile Power Station from Google Maps

Scope of Work for Civil Engineering Professional Services

The Employer (Eskom) contracts with the Contractor for a period of 5 years to take the professional responsibility for the Civil Structures at Kusile Power Station. The Contractor shall provide professional engineering services including but not limited to providing design solutions for structures and support the Employer's drive in sustaining and improving the performance and life expectancy of the Employer's assets. Furthermore, the Contractor is to carry out all scheduled inspections as recommended by the Employer in line with the recommendations of the Occupational Health and Safety Act 85 of 1993.

The Contractor is to assist an Eskom appointed Employer's Agent to ensure that Others (appointed Contractors, mainly construction Contractors) comply with their respective contracts and no

unnecessary compensation events are incurred by the Employer during the execution of construction projects for the designs completed by the Contractor.

- The Contractor conducts investigations and inspections on the Power Station infrastructure with the Employers representative as scheduled in the Civil and Maintenance Strategy for Kusile Power Station. Upon completion, the Contractor submits a detailed report highlighting the condition of the asset inspected with recommendations for remedial work. All findings shall be as per Eskom's condition monitoring categories, refer the Civil Manual [21] and section 3.2.2.

The items/structures to be inspected on a yearly basis are listed, but not limited to, in section 3.1

- The Contractor together with the Employer's representative conducts civil and structural engineering investigations, concept designs and detailed designs. A design report with all design calculations, a bill of quantities and works information for all problems brought forward by the Contractor in respect of the Power Stations requirements and where necessary are to be provided for acceptance by Generation Engineering. Further, the Contractor shall provide geotechnical investigation for the civil and structural designs.

- The Contractor shall ensure that the execution of repair works within the power plant is planned such that safety of all personnel is not compromised. He/she shall advise where tasks shall be carried out only when the Units are offline and assist the Employer's Agent plan accordingly.

- The Contractor shall identify and provide mitigation measures for risks associated with the infrastructure on site including all structures.

- The Contractor shall assist Others (appointed Contractors, mainly construction Contractors) by Eskom to ensure that all Civil Engineering contracts are carried out to comply with the specifications, procedures, good maintenance practices and quality in accordance with the requirements of the specific contract.

- The Contractor shall identify all waste-full and unsafe practices and co-ordinate and implement cost saving suggestions with Others (appointed Contractors, mainly construction Contractors).

- The Contractor shall advise the Employer with any changes in government regulation and legislation with regards to all Civil Infrastructural requirements as listed in this contract.

- The Contractor is to assist any Candidate Engineers of the Employer to acquire their ECSA Professional Registration within the contract period. Training is to be completed through problem solving of all issues solved during the contract period where the engineer may be required to be seconded to the facilities of the Consultant for a period of time.

- All documents developed during the period of this contract relating to Kusile Power Station will belong to the Employer.

Detailed structural inspection.

Inspection activities for the structures shall include, but not limited to:

a) Visual Inspections

b) Laboratory Tests (i.e., extent of attack on structural elements).

c) Non-destructive testing may include, but is not limited to:

i). 3D scan or shape survey using a laser scan.

ii). Video inspections

iii). Electromagnetic cover meter

iv). Digi-Schmidt Hammer test

d) Destructive testing may include, but is not limited to:

v). Concrete core samples (test will be as determined in the Task Order)

vi). Chemical tests

vii). Carbonation depth tests

Reporting

The Contractor must inform the Employer of any issues identified during the engineering inspections. A report must be compiled by the Contractor on the matters raised during the inspection. The content of the written report must confirm what is pointed out in the inspection and if necessary, discussed with the Plant Engineer. A signed and dated copy of the report must then be submitted to the Employer. The report must be signed by a Professional Engineer/Technologist.

Inspection reports must detail amongst others the following:

- a) The date of the inspection, name and affiliation of the Contractor.
- b) Name of Plant Engineer personnel present during the inspection.
- c) The assets inspected (accurate location to be provided).
- d) Photographic records of the inspections showing the condition of the assets.
- e) Provide remedial and/or monitoring recommendations for the findings.
- f) Table 1 and Table 2 from the Inspection Manual for Civil Works at Eskom's Power Stations [21] shall be used to classify the condition of findings (i.e., condition of assets).
- g) Trending of findings (i.e., condition of asset) to be included in subsequent inspection reports.
- h) Evaluation of the Employer's operating and maintenance programme.

Table 1: Condition Categories

Category	Description	% Original Strength	Typical Action	Remedial
1	The plant assets are in excellent/new condition or have slight evidence of surface deterioration, but to an extent that there is no reduction in strength.	100	None Required	
2	The plant assets have some deterioration, to an extent that there is slight reduction in strength. Safe use of the plant assets is assured.	95-100	Repaint, tighten bolts, other minor work	
3	The plant assets show deterioration, to an extent that there is some reduction in strength. There is some compromise to safe use of the plant assets. Repair must receive attention in maintenance scheduling.	75-95	Repair, repaint, tighten bolts, other minor work	
4	The plant assets show severe deterioration, to an extent that there is a major reduction in strength. Safe use of the plant is severely compromised and/or continued use of the plant asset will result	50-75	Repair or replace components	

	in Environmental contraventions. Urgent attention must be given to repair.		
5	The plant assets show severe deterioration, to an extent that they have little useful residual strength. Safe use of the plant is impossible and/or continued use of the plant asset will result in Environmental contraventions. Urgent attention must be given to repair.	< 50	Repair or replacement of components required urgently

Table 2: Prioritisation of Elements

Priority	Description
X	Where a plant asset or portion thereof cannot be used for its intended purpose in its current condition, but may not be required to be used for some time, it must be recorded as Priority X.
A.	All members in condition category 5, any primary structural members in conditions category 4, and any other members where the deterioration leads to risk to personnel safety must be recorded as Priority A. Repair or replacement of the structural members, or other recommended work, requires urgent, immediate action.
B.	All secondary or tertiary members in condition category 4, and any other structural members requiring repair or replacement in the short term must be recorded as Priority B. Repair or replacement of the structural members, or other recommended work, should be scheduled as soon as possible, but not later than one year from date of this report.
C.	Repair of the structural members, or other recommended work, will be required within the next three years.

Materials and Equipment required to be included in the Works.

The Contractor is responsible for providing their employees with facilities and all equipment and materials required for the scope covered in this document. Any equipment must be registered before entry onto the site.

Modifications and Deficiencies

The Contractor shall inform the Employer of any deficiencies identified in the plant that may affect plant performance. The Contractor shall also advise on changes or modifications should these be necessitated. Should modifications be carried out in the plant, the Contractor shall notify the Employer.

The design of civil, structural, and building works and the specification of the materials and erection methods shall be carried out and verified by the Engineer. All designs, drawings and specifications shall be reviewed by the responsible Engineer before these are submitted to the Employer for acceptance.

All civil and structural designs shall conform to the requirements of all applicable codes of practice, Standards, Specification and Regulations

Photographs on site

Taking photographs of the site and distribution or publishing thereof is prohibited. Non-compliance to this requirement may lead to a disciplinary action.

3.3 Scope of Work for Land Survey Professional Services

Description of Works

The Contractor will be required to perform and report on the following:

- a) Topographical surveys
 - b) Verification surveys on Contractor's survey work
 - c) Design verification surveys for Auxiliary Engineering
 - d) Volumetric verification surveys for costing and payment purposes
 - e) Settlement of station foundations
 - f) The extension and maintaining of the survey control network.
 - g) Survey data processing for establishing as-built conditions
 - h) Maintaining standardized survey processes and systems
 - i) Monitoring and reporting on settlement of at-risk works
 - j) Checking of co-ordinates and levels of the benchmarks
 - k) As built survey of service and utilities that is electrical, mechanical, structures, pavements, and roads.
 - l) Wide variety of requests including as-built verifications, verifications on new designs and drawings as well as clashes where engineering integration is required.
 - m) Wide variety of requests including environmental spillage reports, surveys to support construction progress reports and surveys to support Kusile Site Services.
- Existing historic electronic information will be provided to the Contractor at tender award, which shall be reviewed and used as a bases for further works where relevant.
- n) Routine monitoring, see below for some areas which require routine monitoring:
 - Demin Water Tanks,
 - Diesel Generator Building,
 - Water Treatment Lab,
 - Workshop and Stores Building and
 - Dam Water Levels
 - Ash Dump
 - Coal Stockpile
 - Limestone Stockpile
 - Foundation for structures identified to experience settlement

Typical as and when required requests from the various departments will be as follows, but not limited to:

- a. Coal Management, Operations and Maintenance – Measure water levels at dams all over site on a weekly basis to assist with water management and control.
- b. Kusile Generation Engineering – Wide variety of requests including as-built verifications, verifications on new designs (including plant modifications) and drawings as well as clashes where engineering integration is required.
- c. Environmental – Wide variety of requests including environmental spillage reports.
- d. Coal Management, Operations and Maintenance – Volumetric surveys reports

e. Monitoring and reporting on settlement of at-risk works

Survey work will be executed once a Survey Request form comprising of a list of Tasks to be performed is completed by the requester (system engineering) and approved by the Auxiliary Manager. The Employer will issue a Contractor as and when required with an agreed Task Order consisting of but not limited to the following:

- 1) Task Schedule with detailed description of the work in the Task
- 2) Price list of items in the Task Schedule
- 3) Starting and completion dates for the Tasks
- 4) Total of the Prices for the Tasks

Scope of Work

The scope of work includes the network development, expansion, and monitoring maintenance of the reference control beacon system on which all site measurements for all Others (Contractors) are based. This is a critical service since the accuracy of all measurements at site (from foundation layouts and imbeds to equipment positioning) depends on these control beacons as an additional scope to general surveys. This includes:

- Preparation of survey plans, topographic and detail surveys
- Checking of co-ordinates and levels of the benchmarks
- Monitoring of services and utilities that includes structures, foundations, dams, ash dumps, stockpiles roads, underground services (sewer and stormwater pipes), mechanical and electrical.
- LIDAR survey of terrain model of the area of Ash Dumps
- Bathymetric of survey dams and sumps
- Survey verification for designs, construction, and as-built drawings/condition.

The accuracy deemed by Alstom and Hitachi is $\pm 2\text{mm}$. This resulted in the setting up of a complex system of beacons with an accuracy of below 2mm utilizing very high precision equipment. Each beacon must be checked and compared with each other in a statistical model. The associated beacons require a constant check to verify Contractors' queries as well as monitoring service from the Contractor to ensure the accuracy of measurement.

Equipment Requirements

The following is required from the Contractor.

- The appointed Contractor equips the surveying team with the following listed suitable surveying equipment to perform their surveying duties for the duration of the Contract:
 - 1) Prismless Total Stations Full Time x 1 (accuracy of 1mm or less)
 - 2) Electronic Level x 1 (System Reading to 4 decimal places)
 - 3) RTK GPS Base and Rover x 1
 - 4) Model Maker 15 or later with at least one dongle on site.
 - 5) Laptop and 1 external hard drive
- The Contractor shall be responsible to ensure all equipment is maintained and calibrated in accordance with the equipment manufacture's recommendations and requirements.

Submission Specifications

The submission for executed works shall include the following.

Control Beacon Network

Verification of existing control beacons network survey including the setting out of new additional beacons. It will consist of network data collation, iterative calculation; generate results, interpretation of results as well as recommendations.

All high precision survey work shall be completed in conformance to normal professional mapping and surveying standards.

Deliverables

The following deliverables are required:

- Control beacons measured data.
- Control beacons calculations spread sheet.
- Results interpretation and professional report.

- Additional control beacons installation and verification
- Production of topographical data
- As and when required and requested to do field survey checks/verification of contractors works (for an example, anchor bolts)
- Skills and knowledge transfer
- Exercise due diligence surveys to resolve survey conflicts.

Report

Submitted drawings and information shall conform to the Employer's requirements as directed by the Plant/System Engineer. The following units of measurement shall be adopted:

- Linear measurements shall be in meters.
- Vertical measurements shall be in meters.

Electronic copies

- One copy of digital data in 2D CAD MicroStation DGN format (edited drawing for plotting). Including any surface triangulation supplied in 3D.
- One copy of digital data in 3D CAD MicroStation DGN format (3rd points and line work).
- One comma delimited file (*.csv) of survey pick up in point, Easting, Northing, RL, Filed Code Format.
- One copy of CAD and final plot in PDF format.
- All CAD externally referenced files will be submitted separately and combined where possible. Include any Cad plot files and shape files *.SHX files used.
- Orthorectified images in both ECW and GeoTiff with a pixel resolution of 0.10m

LIDAR survey specification

- Produce contours as per Eskom LIDAR Specification
 - o Original & final Images Pixel size 10 cm,
 - o 3 Ground points/m2 average.
 - o Horizontal Accuracy 10 cm, Vertical Accuracy 7 cm.
 - o Digital colour orthophotos in.ecw format, non-image background area to be white. Images to be tiled and as one single image. North vertically up.
 - o Classification of laser points to ground and above ground classes.
 - o Lidar points to be supplied in ASCII (-Y -X Z) format. ASCII points to be tiled and as one file. Lidar points to be thinned for DTM.
 - o 0.5 m Contouring of ground model to be supplied in MicroStation V8.dgn format.
- Creation of a Digital orthophoto and DTM from 1:700 Colour aerial photography of the Kusile Ash Dump. Area to be provided by the plan/system Engineer. The cost includes flying, scanning, photo control, aerial triangulation and manually observed DTM points (to an accuracy of approximately 0.25 metres in height) and final file creations, including 3 set of A0 laminated prints.
- Indicate the coordinates for the area to be surveyed.

Ground Control Establishment

The Coordinate system to be used must be in Lo 29 or WSG 84 for control points.

NB: Survey work will be executed once a Survey Request form is completed by the requester and approved by the Auxiliary Engineering Manager and the Engineering Manager.

2.1 Stage 1 Preparation

The appointed Consultant provides design assurance of the Professional Services Contract of management of civil works and takes full accountability and professional liability for design changes. The Consultant takes full responsibility and accountability as the NEC Consultant NEC3 PSC and as detailed herein.

The Contractor is to assist an Eskom appointed Employer's Agent to ensure that Others (appointed Contractors, mainly construction Contractors) comply with their respective contracts and no unnecessary compensation events are incurred by the Employer during the execution of construction projects for the designs completed by the Contractor.

- The Contractor conducts investigations and inspections on the Power Station infrastructure with the Employers representative as scheduled in the Civil and Maintenance Strategy for Kusile Power Station. Upon completion, the Contractor submits a detailed report highlighting the condition of the asset inspected with recommendations for remedial work. All findings shall be as per Eskom's condition monitoring categories, refer the Civil Manual [21] and section 3.2.2.

The items/structures to be inspected on a yearly basis are listed, but not limited

- The Contractor together with the Employer's representative conducts civil and structural engineering investigations, concept designs and detailed designs. A design report with all design calculations, a bill of quantities and works information for all problems brought forward by the Contractor in respect of the Power Stations requirements and where necessary are to be provided for acceptance by Generation Engineering. Further, the Contractor shall provide geotechnical investigation for the civil and structural designs.
- The Contractor shall ensure that the execution of repair works within the power plant is planned such that safety of all personnel is not compromised. He/she shall advise where tasks shall be carried out only when the Units are offline and assist the Employer's Agent plan accordingly.
- The Contractor shall identify and provide mitigation measures for risks associated with the infrastructure on site including all structures.
- The Contractor shall assist Others (appointed Contractors, mainly construction Contractors) by Eskom to ensure that all Civil Engineering contracts are carried out to comply with the specifications, procedures, good maintenance practices and quality in accordance with the requirements of the specific contract.
- The Contractor shall identify all waste-full and unsafe practices and co-ordinate and implement cost saving suggestions with Others (appointed Contractors, mainly construction Contractors).
- The Contractor shall advise the Employer with any changes in government regulation and legislation with regards to all Civil Infrastructural requirements as listed in this contract.
- The Contractor is to assist any Candidate Engineers of the Employer to acquire their ECSA Professional Registration within the contract period. Training is to be completed through problem solving of all issues solved during the contract period where the engineer may be required to be seconded to the facilities of the Consultant for a period of time.
- All documents developed during the period of this contract relating to Kusile Power Station will belong to the Employer.

Detailed structural inspection.

Inspection activities for the structures shall include, but not limited to:

- a) Visual Inspections
- b) Laboratory Tests (i.e., extent of attack on structural elements).
- c) Non-destructive testing may include, but is not limited to:
 - i). 3D scan or shape survey using a laser scan.
 - ii). Video inspections
 - iii). Electromagnetic cover meter
 - iv). Digi-Schmidt Hammer test
- d) Destructive testing may include, but is not limited to:
- vi) Concrete core samples (test will be as determined in the Task Order)

- vi). Chemical tests
- vii). Carbonation depth tests

Reporting

The Contractor must inform the Employer of any issues identified during the engineering inspections. A report must be compiled by the Contractor on the matters raised during the inspection. The content of the written report must confirm what is pointed out in the inspection and if necessary, discussed with the Plant Engineer. A signed and dated copy of the report must then be submitted to the Employer. The report must be signed by a Professional Engineer/Technologist. Inspection reports must detail amongst others the following:

- a) The date of the inspection, name and affiliation of the Contractor.
- b) Name of Plant Engineer personnel present during the inspection.
- c) The assets inspected (accurate location to be provided).
- d) Photographic records of the inspections showing the condition of the assets.
- e) Provide remedial and/or monitoring recommendations for the findings.
- f) Table 1 and Table 2 from the Inspection Manual for Civil Works at Eskom's Power Stations [21] shall be used to classify the condition of findings (i.e., condition of assets).
- g) Trending of findings (i.e., condition of asset) to be included in subsequent inspection reports.
- h) Evaluation of the Employer's operating and maintenance programme.

Periodic inspections of these structures are required to render the structures safe for continued use. The station also comprises of many civil infrastructures, the below list mentions a few of the critical structures. Project deliverables must include the following:

Chimneys (West and East) & Associated Structures, i.e., ducts and structural steelwork

- Silo's (Coal and Fly Ash Silos)
- ACC Columns & Associated Structures, i.e., structural steelwork
- Boiler House
- Turbine House
- All Conveyor structures (Coal, Ash, and Gypsum conveyors)
- Transfer Houses (Coal, Ash, and Gypsum)
- Water Treatment Plant Structures
- Sewerage Treatment Plant Structures
- Auxiliary Bay and Boiler Structures
- Coal plant Structures
- Ash plant Structures (PJFF support structures)
- Steam Turbine Hall
- ACC Auxiliary Building
- ACCCT Building
- H₂/CO₂ Gas Storage Building
- Auxiliary Cooling Structures
- Substation Buildings
- General Buildings incl. Security Building
- Process Buildings
- Storage Buildings and Workshops
- Admin Buildings
- Dams
- Ash Dumps
- Stormwater drainage systems
- Station Roads

2.2 Stage 2 Concept

The Consultant is required produce two preferred options that adequately address the Civil and structural design requirements. The chosen design concept report must cater for all units at Kusile power station. The Consultant must establish a complete design, i.e., to produce all the component specifications, engineering drawings and other design documentation for procurement, fabrication, installation, construction and commissioning.

2.3 Stage 3: Design development

The Consultant is required to perform a due diligence review of two selected options, the design (incl. investigative reports) for the Civil structures including all supporting infrastructure

This assessment is performed by means of a comprehensive review of the following receivables:

- 1) All related design reports.
- 2) Investigation reports
- 3) DWS technical advisory notes.
- 4) Design drawings (detailed design report);
- 5) Bills of Quantities.
- 6) Works Information and Specifications.
- 7) Operating and Maintenance Manuals.
- 8) Construction Quality Assurance Plans.
- 9) DWS checklists.

2.4 Stage 4: Production information

Refer to the Scope of work, designs for each drawing will be provided as per request.

2.5 Stage 5: Manufacture, Installation and Construction Information:

Not Applicable

2.6 Stage 6: Post Practical Completion

The Consultant to address any outstanding design issues and feedback and assisting with familiarising Project users with the design works.

3 Constraints on how the *Consultant* Provides the Services.

3.1 Management meetings

Regular meetings of a general nature may be convened and chaired by the *Employer's Agent* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Project Kick-off Meeting	3 days Contract Award	Kusile Power Station	Employer, Contractor and Others
SHEQ Requirements Clarification Meeting	3 days after Kick – off meeting	Kusile Power Station	Employer, Contractor and Others
Execution Progress Meeting	Daily	Kusile Power Station	Employer, Contractor and Others
Overall contract progress and feedback	Weekly on Thursdays	Kusile Power Station	Employer and Contractor

Risk register and compensation events	Daily	Kusile Power Station	Employer, Contractor and Others
Other	as and when required		Employer, Contractor and Others

Meetings of a specialist nature may be convened as specified elsewhere in this Scope or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *services*. Records of these meetings shall be submitted to the *Employer's Agent* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.

3.2 *Consultant's key persons*

The Consultant is to provide an organogram showing the following as a minimum:

- Consultant company management organogram including key personnel contact details
- Consultant project team organogram indicate the lines of authority and contact details
-

3.3 *Provision of bonds and guarantees*

Not Applicable

3.4 *Documentation control and retention*

3.4.1 *Identification and communication*

Communication

All contractual communication between the Employer's Agent and Consultant to be in a document format according to PSC3 attached to emails and not a message in the email itself.

Each communication letter is to indicate the type of notification in the subject and the period of reply thereof.

Other Key personnel (if any) for official communication between the Employer and the Consultant will be agreed upon in writing at the Kick-off Meeting.

Documentation

Document Identification and relevant report templates to be issued by Employer's Agent after contract award.

Documentation Requirements

The following is required from the Contractor:

- Submit proposal on how he/she intends to conduct the works for approval by the Employer.
- Submit a work schedule/programme for the works.
- Submit all required reports as per the contractual agreements once works are completed.

The Contractor shall submit all relevant and necessary documentation requested by the Employer and both electronic and hard copy versions of all required documentation.

To ensure clear communication and effective management of records, all documentation related to this project shall adhere to the following protocol:

- Document Identification: Each document shall carry a unique alphanumeric identifier. This code will indicate the document source, recipient, and communication number, making the document easily traceable.
- Document Format: All contractual communications must be in the form of properly compiled letters or forms attached to emails. Messages within the body of an email will not be considered formal communication. Documents should be formatted as PDFs unless otherwise specified.
- Document Routing: Specific routing requirements must be adhered to. All contractual documents must be issued directly to the relevant party as stipulated in the ECC. The project manager will ensure the documentation is appropriately disseminated and acknowledged.
- Record Keeping: All communications must be logged in a communication register maintained by the Contractor. The register will document the date, source, recipient, communication number, and a brief summary of the document content.
- Revision Control: Any changes or revisions to the documents should be clearly marked and issued with a new revision number. All previous versions should be archived for reference.
- Confidentiality: All documents should be treated as confidential and should not be shared outside the project team without appropriate authorization.

3.4.2 Retention of documents

Clause 13.6 states that the Consultant retains copies of drawings, specifications, reports and other documents which record the services in one (1) electronic copy and one (1) hardcopy. The time period for which the Consultant is to retain such documents is the period for retention stated in the Contract Data.

3.5 Records and forecasting of expenses

Refer to clause 21.4 (Option E) no additional requirements

3.6 Records and forecasting of the Time Charge

Not Applicable

3.7 Invoicing and payment

The following details shall be shown on or attached to each Invoice to show how the amount due has been assessed:

[List them]

The *Consultant* shall address the tax invoice to invoiceseskomlocal@eskom.co.za and include on it the following information:

- Name and address of the *Consultant* and the *Employer's Agent*;
- The contract number and title;
- *Consultant's* VAT registration number;
- The *Employer's* VAT registration number 4740101508;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- (add other as required)

3.8 Contract change management

Standard PSC3 forms to be used for communication for contract change between the Employer's Agent and Consultant.

3.9 Inclusions in the programme

The Consultant submits a revised programme to the Employer for acceptance within the period for reply after the Employer has instructed him to,

3.10 Quality management

3.10.1 System requirements

The Consultant shall comply with the system requirements contained in Annexure A to this Scope

3.10.2 Information in the quality plan

The Consultant shall comply with the system requirements contained in Annexure A to this Scope

3.11 The Parties use of material provided by the *Consultant*

3.11.1 *Employer's* purpose for the material

Clause 70.1 states that the *Employer* has the right to use the material provided by the *Consultant* for the purpose stated in the Scope.

3.11.2 Restrictions on the *Consultant's* use of the material for other work

The Consultant's is restricted the use of material provided by him for any other third party.

3.11.3 Transfer of rights if Option X 9 applies

There is no exception from X9.

The Consultant provide to the Employer the legal documents which transfer these rights to the Employer. The Consultant to submit an applicable format of transfer notification.

The Consultant shall not challenge or assist any other party challenging at any time the validity or ownership of any of the intellectual property rights relating to the material created and developed for this contract.

3.12 Management of work done by Task Order

Not Applicable

3.13 Health and safety

A Safety, Health, Environment and Quality (SHEQ) specification is Kusile Power Station's minimum requirements detailing also constraints, which are required to be met for the specific contract and for the duration of the contract period by the Contractor.

The Contractor is expected to develop a SHEQ plan which meets these requirements as well as relevant and other legal and other requirements applicable to the issued scope of work.

Kusile Power Station in no way assumes the contractor's legal responsibilities. The contractor is and remains accountable for the quality and the execution of his/her health and safety programme for his/her employees and appointed contractor employees.

This SHEQ specification reflects minimum requirements and should not be construed as all encompassing. The Contractor shall comply with (SHEQ) requirements contained in Annexure A of this Works Information.

The Contractor shall comply with the health and safety requirements contained in Annexure A to this Works Information.

3.14 Procurement

3.14.1 BBBEE and preferencing scheme

Specify constraints which *Consultant* must comply with after contract award in regard to any Broad Based Black Economic Empowerment (B-BBEE) or preferencing scheme measures.

3.14.2 Other constraints

Not Applicable

3.14.3 Preferred subconsultants

PSC3 does not make use of nominated sub consultants but the Employer may list which sub consultants or suppliers the Consultant is required to enter into subcontracts with. This is usually only required where very specialist services need to be obtained from a particular supplier or group of suppliers in order to comply with operational standards.

3.14.4 Subcontract documentation, and assessment of subcontract tenders

Not Applicable

3.14.5 Limitations on subcontracting

Not Applicable

3.14.6 Attendance on Subconsultants

Not Applicable

3.15 Correction of Defects

No additions or exclusions from clause 41.2

3.16 Working on the *Employer's* property

- Applicable plant permits are required prior to plant access.
- Reflectors to be always worn onsite for clear visibility
- Detailed activities schedule including date and time and updates are required for plant access.
- Toilet facilities are available within the Power Station boundaries.
- Potable water supply.
- Medical services are available at the medical centre in case of emergency and expenses incurred are for the Consultant's account.
- Employer's entry and security control, permits, and site regulations are to be adhered to.
- The Consultant complies with the access and controls procedures issued by Kusile Power Station.
- The Consultant shall obtain copies of such requirement from the Employer's Agent

3.16.1 People restrictions, hours of work, conduct and records

People Restriction

People are restricted to the Affected Property only

Hours of Work

The Consultant is restricted to hours only applicable to site access from 07h00 to 16h15. Any other remote work can be carried out remotely after these hours.

The Consultant keeps records of his people working on the Employer's property. The Employer's Agent shall have access to these records at any time.

Conduct

The Consultant and his employees are required to always maintain professional and ethical conduct, which upholds the Eskom Values to the highest standard.

Should the Consultant's employees be found to contravene the Eskom Values, Life Saving Rules and /or any of the aforementioned regulations, the Consultant must institute disciplinary action, which may include removal from site, until the disciplinary process is concluded.

3.17 Cooperating with and obtaining acceptance of Others

This sub-paragraph could be used to deal with two issues.

- 1) The cross reference from core clause 23.1 about cooperation generally as well as details about Others with whom the *Consultant* may be required to work. See clause 11.2(7) for the definition of Others.
- 2) Requirements for liaison with and acceptance from statutory authorities or inspection agencies.

3.18 Things provided by the Employer

- Water
- Ablution Facilities
- Electricity

3.19 Cataloguing requirements by the Consultant

Technical Information for each proposed equipment to be handed over by the Consultant as part of technical reports for cataloguing by the Employer.

4 List of drawings

4.1 Drawings issued by the Employer

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

The drawings will be provided as per request since its different structures.

Drawing number	Revision	Title