Eskom	TECHNICAL SPECIFICATION	Generation

Title: **Kusile Landscaping – Technical Specification**

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Date: 05/06/2023

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1. INTRODUCTION

This technical specification covers the works for the Kusile Landscaping Project and provides information on the systems to be implemented on the project site. This document is to be read in conjunction with the Kusile Power Station Landscaping Architectural Design Proposal (Section 2.1.3 – 366-360523). This document refers to landscaping scope. Phase 1 includes the canteen, fire station, medical and administration building. The scope for the remaining phase of landscaping is to include the main security entrance upgrade, workshop & stores, and temporary canteen area. This specification is inclusive of all the works, however, should be implemented in the two separate phases described above. There are other areas where a sitting area with shaded cover should be made available at offices in the power station (Described in Section 3.2.2.2)

2. SUPPORTING CLAUSE

This document covers the applicable work to be done, as well as the technical requirements and specifications regarding the work.

2.1.1 Purpose

The aim of this document is to outline the Works Information for the Kusile Landscaping Project and the scope of activities required from the appointed *Contractor* for the execution of the project.

2.1.2 Applicability

This document applies to Kusile Power Station.

2.1.3 Normative References

[1] ISO 9001 : Quality Management Systems

[2] ISO 1007 : Guidelines for Configuration Management

[3] 240-54179170 : Technical Documentation Classification and Designation Standard

[4] 240-109607332 : Plant Labelling Standard

[5] 240-73143217 : AKZ Plant Codification Standard.

[6] 240- 76992014 : Technical Document and Record Management Work Instruction

[7] 240-66920003 : Documentation Management Review & Handover Procedure for Gx Coal Projects.

[8] 240-65459834 : Project Documentation Deliverable Requirement Specification

[9] 240-53114026 : Project Engineering Change Management Procedure

[10] 366-360523 : Kusile Power Station Landscaping Design

2.1.4 Informative

2.2 ABREVIATIONS

Abbreviation	Description
BOQ	Bill of Quantities
CM	Configuration Management

CoE	Centre of Excellence
DCS	Distributed Control System
DRC	Design Review Committee
DRT	Design Review Team
EDWL	Engineering Design Work Lead
EMP	Environmental Management Plan
LDE	Lead Discipline Engineer
LPS	Low Pressure Services
PEC	Professional Engineering Certificate
PCM	Process Control Manual
PS	Power Station
SANS	South African National Standard
VDSS	Vendor Document Submission Schedule

2.2.1 Disclosure Classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.3 ROLES AND RESPONSIBILITIES

This section provides a discussion on the roles and responsibilities relating to the implementation of the document.

a. Engineering Design Work Lead (EDWL)

i. The EDWL will ensure that this document captures all of the requirements stated by the Client (Eskom Projects) as well as the requirements from all the multidisciplinary stakeholders. The EDWL should also ensure that all the requirements are integrated. The EDWL is responsible for the integrated technical delivery of the project.

ii. The EDWL will ensure that governance is followed during the design process leading to construction. This will include facilitation and ensuring continuous management of the requirements for Plant Design.

b. Lead Discipline Engineer (LDE)

i. The LDE is responsible for the technical scope and requirements of their individual discipline. It is the responsibility of the LDEs to ensure that the disciplines requirements, stated in the URS/ROC, as well as any additional requirements are addressed in this document.

ii. The LDE will ensure that the work required for the designs are carried out in terms of the requirements stated in this document and that the correct procedures and governance processes are adhered to.

c. Configuration Practitioner

The Configuration Practitioner will be accountable for ensuring that the engineering documentation, engineering systems and databases are correctly configured. In addition the Configuration Practitioner will ensure that all engineering information is correctly captured and maintained.

d. The Site Representative

The site representative will collaborate between Engineering and Site to ensure that the information and data used during design are according to the client's requirements.

e. Owners Engineer (Eskom Generation Engineering)

Eskom Engineering will be responsible for the review of design documentation issued by the Design Authority to ensure that the design satisfies the stakeholder requirements and provide general technical oversight on the design.

f. Environmental Stakeholder

Ensure that this document contains all the environmental requirements have been captured in this document.

g. Architect Engineer

The Architect Engineer shall review the design documentation issued by the design Authority to ensure that the design:

h. Satisfies the stakeholder requirements (i.e. validations of design deliverables against stakeholder requirements)

i. Is integrated by identifying all interfaces with other packages/systems/assets and ensuring that these interfaces are catered for

j. Ensure unforeseen risks are identified and addressed/challenged with the Design Authority

k. Ensure general technical oversight is provided over the design.

l. Design Authority, The design Authority shall produce design documentation and ensure that

m. The design satisfies the design requirements

n. The design adheres to all relevant design standards, procedures and guidelines

o. The design is suitable and correct (calculations, philosophy, functionality etc.)

p. The design is integrated by identifying all interfaces with other packages/systems/assets and ensuring that these interfaces are catered for

2.4 PROCESS FOR MONITORING

The primary process that shall be used for monitoring the application of this proposal document is the Design Review Procedure (240-53113685), which entails assuring that the design achieves the requirements set out in this document. This shall apply throughout the Project Life Cycle Model (PLCM). In addition, the Process Control Manuals (PCM) also applies to the above-mentioned monitoring process.

2.5 RELATED OR SUPPORTING DOCUMENTS

Not Applicable.

3. DESCRIPTION OF THE *WORKS*

3.1 *EMPLOYER'S* OBJECTIVES

The aim of the Kusile landscape Design is to merge environmental and human benefits offered by the landscape:

- Creating aesthetically pleasing and ergonomically viable human spaces, while the local biodiversity is supported and the rehabilitation process is facilitated.

- The Kusile landscape design is founded in the best practice of creating and restoring healthy relationships between development and the (often heavily impacted) environment.
- The utilisation of locally indigenous planting, planning for movement, fostering a sense of place through design elements and applying a holistic approach.

3.2 SCOPE OF THE WORK

The scope of *work* describes the major activities and plant and material that falls within the scope of the *Contractor*. It is the responsibility of the *Contractor* to ensure that all the activities are carried out and all equipment, plant and material is supplied to complete the *works* in every respect.

The *Contractor* is responsible for provision/design and construction of the assigned works including the construction of the various elements of work, the supply of materials, transport to site, unloading from road or rail, storage on site, site quality control and management, testing, finishing and maintenance of vegetation for twelve months thereafter to the satisfaction of the Project Manager. All design works are to be signed off by an ECSA professionally registered engineer. Professional engineering certificate will also be required.

The *works* comprises the following:

a) Detail Design

b) Manufacture and procurement

c) Delivery to and offloading at site

d) Installation

e) Corrosion protection (Surface that may require protection example, pipes)

g) Interfacing with existing plant

j) Documentation as specified

k) Quality management for all activities

l) Safety and plant signage

- All plant, material and equipment is required to be designed for operation in a power plant environment with a minimum requirement for maintenance and operator intervention.
- It is not the intention of this scope of *work* to describe in detail all the activities the *Contractor* is required to carry out, nor to describe in detail everything to be supplied by the Contractor.
- The *Contractor* provides the whole of the works as defined in section 3.2 of the *Works Information* except where explicitly stated as otherwise.
- The *Contractor's* design is required to be approved by an ECSA professionally registered engineer.
- The *Contractor's* design is required to be accepted before any site work begins.

The scope of work includes the following:

- Planting of vegetation and maintenance twelve months thereafter.
- Installation of street furniture & paving.
- Irrigation system installation.

- Areas of focus
  - Permanent Canteen
  - 2000-Seater Canteen
  - Upgrade of the main security entrance
  - Administration Building
  - Fire Station
  - Medical
  - Workshop and stores

Figure 1: Landscaping Areas of Concern

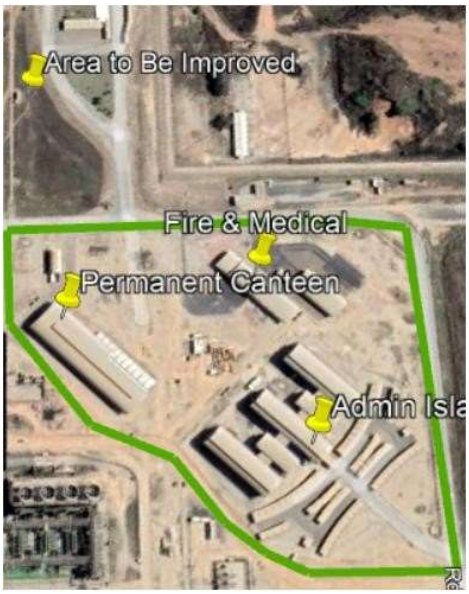

Figure 2: Landscaping Priority Area

The contractor should take cognisance of area to be prioritized which will be the following;

- Permanent Canteen
- Administration Building
- Fire & Medical
- Upgrade of security area at the main security building

3.2.1 Landscape Architectural Design

Refer to Concept design: Kusile Power Station Landscaping Design report (366-360523) for full layout and details of the landscape design. The design includes the landscape features, holistic design, pedestrian circulation, and entrance upgrade. The associated flora Featured Species, including the prosed Selection of Trees Shrub and Groundcover.

3.2.1.1 Materials & Street Furniture

3.2.1.1.1 Street Furniture

The Kusile street furniture requires a clean, neat and accommodating aesthetic language. To offset the industrial conditions surrounding, to compliment the architecture without imitation and to provide comfortable and beautiful seating throughout the landscape. Refer to Concept design: Kusile Power Station Landscaping Design report (366-360523) for additional details.

The following areas are demarcated for specifically a bench/seating area with a cover over the bench for office personnel:

- Coal Stockyard Offices
- Limestone Control Building
- Radio Tower Office
- Station Services Building

- Substation South
- Water Treatment Plant Lab
- Ash Dump Workshop
- Ex Ge Stores

The bench variations displayed in Figure 2 is a typical example of what is required. This configuration is to be placed in hard areas (courtyards and walkways) and soft areas (lawns and gardens) the benches will lend elegance and scale to the landscape beyond.

A typical example of this can be seen below.

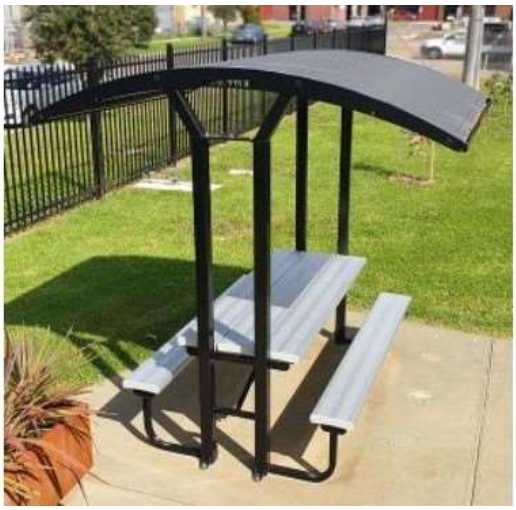

Figure 3: Bench with overhead cover

3.2.1.1.2 Bins

The necessity to separate waste at source is expressed in the landscape with litter bins that encourage users to be aware of their consumer habits. These eco-lids, to be manufactured in association with a local enterprise, fit the dimension of a standard outdoor application bin. Refer to Concept design: Kusile Power Station Landscaping Design report (366-360523) for additional details.

3.2.1.1.3 Paving Palette

The paving palette is a mixture of hues that take their cue from the immediate environment. The pavers are of a warm colour and provide a muted palette around which the planting will blend into the greater landscape. The paving palette will be chosen for durability and affordability.
Permeable paving is used where possible to mitigate the effects of storm water runoff on the surrounding landscape and infrastructure. Gravel is chosen that is not the standard grey course fare, but rather a more accommodating range of colour and texture.

Refer to Concept design: Kusile Power Station Landscaping Design report (366-360523) for full layout and details of the landscape proposal design. The design includes the landscape features, holistic design, pedestrian circulation, and entrance upgrade.

3.2.2 Civil

The civil design and implementation *works* are to include but not limited to the following:

3.2.2.1 General

- The *Contractor* shall carry out all excavations, filling, backfilling, and all other earthworks required from material encountered.
- The *Works* shall be executed accurately to the dimensions, levels, lines and profiles as indicated on the drawings (which will be signed off by a professionally registered engineer) or as directed by the Engineer.
- The *Contractor* shall reconstruct to the proper level and profile any filled areas which settle or spread during the execution of the work.
- The *Contractor* shall ensure the drainage system ties into the existing drainage system for the area
- All civil designs are to be signed off by an ECSA professionally registered engineer.

3.2.2.2 Layerworks

Layerworks for areas to be designed and constructed in according to the relevant South African and Eskom codes and standards (SANS 1200 series).

3.2.2.3 Concrete

All Structural concrete complies with the requirements of 203-770 Kusile Power Station Specification for Structural Concrete; where this specification is limited the *Contractor* uses the latest edition of SANS 1200. The *Contractor* sources concrete from recognised batching facilities.

3.2.2.4 Drainage considerations

Drainage for the area to be integrated and tie into existing drainage systems.

S38 Series (Site Services)

3.2.3 Low Pressure Systems

The *Contractor* shall design, procure, install, flush and commission an irrigation system for the canteen, fire station, medical and administration building, workshop & stores and temporary canteen area. •All civil designs are to be signed off by an ECSA professionally registered engineer. The *Employer* shall furnish the designs and drawings for the connection to the Employers existing pipe and the routing to the valve box GAF-101 (Refer to drawing P146838-0UXC-S3345). The *Contractor* shall perform the designs from this location as indicated on the drawings for the remainder of the irrigation system. The Contractor shall perform calculations to appropriately size the pipe and sprinkler nozzles for the canteen, fire station, medical and administration building, workshop & stores and temporary canteen area

All above grade piping shall be galvanised to SANS 62. Below grade piping shall be HDPE piping according to SANS 4427.

The Contractor shall connect to the Employer's existing pipe as indicated on P146838-0GAF-M1660F. the *contractor* shall connect an isolation valve and a 3" strainer with 150-micron filter. The *Contractor* shall

route the pipe as indicated in the Employer's drawings P146838-0UXC-S3345 and P146838-0UXC-S3344D.

The raw water system has the following parameters:

- Operating Pressure: 7.5 bar
- Operating Temp: 34°C
- Design Pressure: 12 bar
- Design Temp: 42°C

The *Contractor* shall design the sprinkler system using a minimum pressure of 5 bar.

The irrigation works comprise of the design and supply, installation, and commissioning of a Rain Bird (or similar approved) automatic irrigation system in the areas as shown. Included in the work is the installation of sprinklers, SANS HDPE and Galvanized steel pipelines, solenoid control valves, irrigation controllers, and the supply of as built drawings and an Operating and Maintenance manual of the Irrigation system.

The irrigation reticulation system will consist of HDPE PE100 Class 8 pipelines. The pipeline feeding from the reticulation to the spray n o z z l e s shall be LDPE Class 6 pipe. the *contractor* shall ensure the design pressure for any component in the irrigation system is appropriately rated for the water pressure it can be exposed too. The *Contractor* shall incorporate a mechanical pressure reducing valve or a pressure relief valve in the design to ensure any pipe or components that can experience higher pressures will be protected.

The irrigation system shall be designed to irrigate individual areas separately. This should be programmed into the controller and with the use of solenoid control valves, to separate the areas for irrigation. The irrigation system will operate automatically by sending a pulse to the solenoid valve to open the station/s that has been programmed into the controller. The irrigation system shall not be required to communicate with Kusile DCS.

Once the garden is established all irrigation in the veldgrass areas will be operation on temporary as-and-when needed basis.

No additional license will be necessary to irrigate the landscape with raw water. Kusile is licensed to use 12 million m_3 of water per year. According to Kusile's water balance, the total water consumption with average rainfall is 31 982 m_3/day. This calculates to 11.673 million m_3 per year. The maximum volume of water the landscaping project will need during the establishment phase and post-establishment phase is 201.1 m_3/day and 46.19 m_3/day respectively and adding these volumes to the water balance does not result in Kusile exceeding its allowable water use amount. The *Contractor* shall ensure the design complies with this water usage requirements.

The *Contractor* shall procure and install a 65NB turbine flow meter to account for water balance in their design. The flow meter should have an accuracy of at least 5% and shall display the flow rate and totalised flow. The *contractor* shall find a suitable location for the flow meter downstream of the valve in valve box GAF-101. The flow meter shall not be buried and can be above grade or in a buried concrete box. The flow meter location must consider the OEMs installation requirements. The flow meter shall have local display only and shall not require electrical or control signals.

3.2.4 Electrical

Should there be a need for lighting and small power, the *contractor* shall design and construct in accordance with relevant Eskom and national standards, such designs will be subjected to review and acceptance by the Employer.

The minimum required for electrical works shall comply with the following standards:

- ✓ 240-55714363: Coal Fired Power Stations Lighting and Small Power Installation Standard
- ✓ 240-131806419: Trench and Excavation Work Instruction

The cable route excavations along the road (HML 24, 32, 34, 35, 36) has been completed, but the HMLs have not been constructed yet. The rest of the HMLs and their cable routing within the building's vicinity are outstanding. Therefore, there will be a need for a shared access with the landscaping *contractor* in order for P20A *contractor* to finish the remaining scope of work. There are cable trenches as well around the area, some for minisub cables and others housing HML cables, these will have to be taken into consideration if the landscaping will include the use of heavy vehicles.

The associated high mast lights that are installed in the surrounding area are detailed in the drawings below:

- Electrical E26** series – cable routing & HML locations
- Civil S33** series – HML vs site underground site services

4. DESIGN REVIEW PROCESS

The *Contractor* attends Design review meetings as laid out in the *Employer's* design review procedure document attached in Appendix C.

The *Contractor* remains responsible for the correct interpretation and implementation of the design at all times.

Reviews of the systems design are to be done in accordance with the *Employer's* Design Review Procedure 474-1325.

The *Contractor* is to refer conflicts in the relevant standards to the *Employer* for discussion and resolution. The *Contractor* may suggest alternative standards but may only apply them after obtaining written permission from the *Employer*.

5. APPLICABLE STANDARDS

The following standards are applicable

SANS Number	Standard
SANS 1200 Series	Civil Engineering Construction
240-105020315	Standard for Low Pressure Valves
240-123801640	Standard for Low Pressure Pipelines
240-55714363	Coal Fired Power Stations Lighting and Small Power Installation Standard
240-56356396	Earthing and Lightning Protection Standard
240-131806419	Trench and Excavation Work Instruction

6. DOCUMENT MANAGEMENT

The documentation requirements cover the various engineering stages, from the design stage through fabrication, installation, testing and commissioning and most importantly for the operating, maintenance, and training stage of the project. The *Contractor* ensures that the Technical Documents and Records Management Work Instruction (240-76992014) is used for any documentation requirements.

The *Contractor* is responsible for the compilation and the supply of the documentation during the various project stages and to provide the documentation programme to link with the milestone dates. Documentation and drawings are programmed for delivery to meet the milestone dates and in accordance with the agreed VDSS.

6.1 DOCUMENT IDENTIFICATION

The *Contractor* ensures that a document has the following minimum attribute on the cover page:

- Title of the document
- Document Unique Identification number (Eskom number)
- *Contractor* Document number, if applicable
- Document status
- Revision number
- Document Type
- Document security level
- Document revision table/history
- Page number on the footer
- Document Author/Authoriser/
- Document Originator *Contractor*

The following additional attributes are important for technical documents:

- Package/System name, sub-system if applicable
- Unit/s number
- *Contractor* name
- *Contractor* number
- Plant Identification Codes

6.1.1 Format and Layout of Documents

For consistency it is important that all documents used within a specific domain follow the same layout, style and formatting standard.

6.1.2 Layout and Typography

Every document should comply with the following font specifications:

- Font Colour: Black
- Main Headings Font Type: Arial, Bold, Capital Letters
- Main Heading Font Size: 12pt
- Sub Headings Font Type: Arial, Bold, Title Case
- Sub Headings Font Size: 11pt
- Body Font Type: Arial, Sentence Case i.e., only the first letter of the first word is a capital letter.
- Body Text Font size: 11pt
- Line Spacing: 1.5 line spacing
- Margins: standard
- Alignment: full justification to be used
- Paragraphing: one line skip between paragraphs
- Pagination: centred page numbers (about 0.5 inches from bottom)
- Indentations: standard tab for all paragraphs (about 0.4 to 0.5 inches)

6.1.3 Document Headers

The header should include the project name, document title, document number, revision number and page number.

6.1.4 Naming of files

The *Contractor* to comply with the Eskom standard for naming documentation files. The standard is as follows:

For documents that have approval date and signature

- (YYYYMMDD_DocType_DocumentTitle_UniqueIdentifier_Revision.FileExtention)

For documents that do not necessarily require the ‘Approved Date’ and ‘Revision & Versioning’, use the date of update

- (YYYYMMDD_DocType_DocumentTitle_UniqueIdentifier_Revision.FileExtention)

All further requirements will be according to IEC 61355 – 1:2008 (Edition) Classification and designation of documents for plants, systems and equipment – Part 1: Rules and classification tables.

6.1.5 Document Submission

The *Contractor* engineering program to allow a minimum of 21 days for mailing, processing, and review of drawings and data by *Employer*. The *Contractor* is responsible for the compilation and the supply of all the documentation required during the various project stages and to provide the documentation programmed to link with the milestone dates. Documentation and drawings are programmed for delivery to meet the

milestone dates and in accordance with the agreed VDSS as per Appendix D . The VDSS is revisable, and changes shall be discussed and agreed upon by all parties and properlydocumented.

Contractor documents submittals are provided in accordance with the Vendor Document Submittal Schedule (VDSS) which is included in Appendix D. The VDSS to indicate the format of documents to be submitted. The *Employer* is responsible for the management of the schedule i.e. to create a document register that shall be used to track submission progress of documentation by the *Contractor* as per the committed dates on the VDSS.

Contractor documents all documentation that will be sent to the *Employer* in the Master Document List (MDL) as provided by the *Employer* in A All documentation, including reports, manuals, etc. is in the English language.

If the *Contractor* makes further changes to the equipment and materials shown on submittals that have been reviewed by the *Employer*, the changes will be clearly marked on the submittal by the *Contractor* and the submittal process will be repeated. If changes are made by *Contractor* after delivery to the Plant, as-built drawings indicating the changes would be prepared by *Contractor* and submitted to *Employer* for review. Any resubmittal of information to clearly identify the revisions by footnote or by a form of back-circle, with revision block update, as appropriate.

6.1.6 Transmittals

All document exchange to be done using formal Transmittals. The following is the minimum information required for sending transmittals:

- Title of the document
- Reason for issuing/submission
- Transmittal Number
- Transmittal Name
- Transmittal Description
- Contract Number:
- Package Number
- Transmittal purpose
- 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
- Number of copies
- Format/medium submitted (e.g. paper, External Drives, etc.)
- Sender signature
- Recipient signature, once submitted, to acknowledge receipt

If a transmittal is in response to an Eskom communication via transmittal, the Eskom Transmittal Number will be referenced in the transmittal response and will be provided in addition to the meta-data required in 10.1.7.
The *Contractor* to follow a structured and standard definition for Transmittal Descriptions, i.e. subject line convention of **YYYYMMDD – <Contract & Package Number> – <Vendor> – <Short Description> – <Sender Initials>.**
The *Contractor* to follow a structured method of communication as defined within Communication Interface Memorandum (CIM) for any correspondence
The *Contractor* to follow a structured and standard definition for email subjects i.e. **a** subject line convention of **YYYYMMDD – < Package File Number> – > – <Email Subject line>.**
The *Contractor* to select the purpose for transmittal in line with the standard Eskom Selection Criteria:

- Issued for Approval
- Issued for Award
- Issued for Basic Design
- Issued for Commissioning
- Issued for Concept Design
- Issued for Consideration
- Issued for Construction
- Issued for Detail Design
- Issued for Document Review
- Issued for Handover
- Issued for Information
- Issued for Installation
- Issued for Manufacturing
- Issued for Procurement
- Issued for Review
- Issued for Tender

Issuing of documents with different transmittal purposes is to be done separately and not combined into one transmittal. This would ensure fast and efficient processing of incoming and outgoing transmittals and information exchange.

Electronic technical data submittals are processed using the Eskom Document Control email address (KusileDocControl@eskom.co.za) and Zendto, a Web-based file transfer service. If *Contractor* does not already have Zendto transmittal capability, information is available at https://zendto.eskom.co.za/. (The Uniform Resource Locator [URL] to be used for electronic file submittals will be made available upon Contract award.)

In case of email submission, the Contractor should note that if a single file to be transmitted is over 20MB in size, then the document shall be uploaded on Zendto portal.

Notification to *Employer* that submittals have been posted to Zendto should be in accordance with the correspondence requirements of this Contract. *For the Zendto submission, a transmittal record must be submitted to the project email document control address information and notify the Employer of such submission.*

The hard copy prints are to be submitted to the address indicated for Technical Documents in the Supplementary Terms and Conditions of this Contract. The following number of prints is submitted unless otherwise indicated in the Schedule of Submittals:

Submittal Description	**Copies Required**
Performance Curves	2
Design Data	2
Test and Inspection Data	2
Drawings	2

The *Contractor* submits documentation to the *Employer* as well as the Project's Documentation Centre in the following media:

- Electronic copies can be submitted to Eskom Documentation Centre through generic email address agreed to by the project. Electronic copies large for email will be delivered on external drives/USBs, large file transfer protocol and/or hard drives to the Project Documentation Centre. A notification email, with the transmittal note attached, shall be sent to the project generic email address. The *Employer* will be copied on the email as well.
- Hard copies would be submitted to the *Employer* accompanied by the Transmittal Note.

6.1.7 Drawings

The creation, issuing and control of all Engineering Drawings will be in accordance to the latest revision of 240-86973501 (Engineering Drawing Standards – Common Requirements) to be supplied as part of the enquiry documents. All drawings must be issued to Eskom in both native CADD format and PDF format as per 240-86973501 (Engineering Drawing Standards – Common Requirements).

Drawings shall be in sufficient detail to indicate the kind, size, arrangement, component weight, breakdown for shipment, and operation of component materials and devices; the external connections, anchorages, and supports required; the dimensions needed for installation and correlation with other materials and equipment; and the information specifically requested in the Schedule of Submittals.

Contractor to fully complete and certify drawings for compliance with the Contract requirements. Drawings to have title block entries that clearly indicate the drawing is certified.

Each submitted drawing to be project unique and clearly marked with the name of the project, unit designation, *Employer*'s Contract title, *Employer*'s Contract file number, project equipment or structure

nomenclature, component identification numbers, and *Employer*'s name. Equipment, instrumentation, and other components requiring Engineer-assigned identification tag numbers must be clearly identified on the drawings. If standard drawings are submitted, the applicable equipment and devices furnished for the project would be clearly marked.

Transmittal letters to identify which Schedule of Submittals item (by item number) is satisfied by each drawing or group of drawings. The transmittal letter to include the manufacturer's drawing number, revision number, and title for each drawing attached. Each drawing title to be unique and be descriptive of the specific drawing content. Transmittal letters for resubmitted drawings to include the *Employer*'s drawing numbers.

The *Contractor* includes the *Employer*'s drawing number in the drawing title block. This requirement only applies to design drawings developed by the *Contractor* and his Subcontractors. It does not apply to drawings developed by manufacturers for equipment and material such as valves, instruments, etc. Drawing numbers will be assigned by the *Employer* as drawings are developed.

The project name to be listed on all drawings, including manufacturers' drawings. Tag numbers and equipment names to be listed on all manufacturers' drawings. A separate sheet may be attached to the submittal if needed to adequately list all tag numbers associated with the drawings such as valves or instruments which may have numerous tag numbers associated with it.

The language of all documentation would be in the English language. The units of measure to be metric.

The *Contractor* retains project design calculations and information for the entire life cycle of the plant and provides these to the *Employer* on prior written notice at any time notwithstanding the expiry or termination of the contract.

6.1.8 Drawing Submittal

All documents and records management will be performed according to Project/Plant Specific Documents and Records Process. Any uncertainty regarding this should be clarified with the *Employer*. The *Contractor* to comply with all minimum document metadata as specified in Technical Documentation Classification and Designation Standard (240-54179170).

The *Contractor* is to use Smartplant Owner Operator (SPO) for documents and records management. The *Contractor* is to submit electronic copies of the documents using a fully secure web-based solution providing carefully controlled access to appropriate project information for authorized personnel. All electronic design data and documents shall be in such a form which will enable importing such data, documents and drawings, including 3-dimensional drawings, seamlessly into the Intergraph SPF (Smart Plant Foundation) system. Hard copy submittals will only be required for the IOM Manuals and final as-built submittals.

Transmittal letters would be provided with each document submittal. The transmittal letter to include the *Contractor* drawing number, revision number, and title for each drawing attached. Each drawing title is to be unique and descriptive of the specific drawing content.

Catalog pages are not acceptable, except as drawings for standard non engineered products and when the catalog pages provide all dimensional data, all external termination data, and mounting data. The catalog page to be submitted with a typed cover page clearly indicating the name of the project, unit designation, specification title, specification number, component identification numbers, model number, *Contractor* drawing number, and *Employer*'s name. Drawings to be submitted with all numerical values in metric units.

6.1.9 Information Requirements

The *Employer* requires drawings, documentation, plans, information and data (collectively "Information") from the *Contractor* for two fundamental purposes; namely for the management and execution of the Contract and for the operation, maintenance and support of the *Works* during its entire operational phase until disposal and decommissioning.

The *Contractor* to, during the progress of and upon completion of the *Works*, supply the Information required in terms of the Contract and all such Information as may usually be supplied in connection with similar *Works*, including, whether or not specified in the Contract, all Information necessary or useful for:

1. Design reviews and the interface management of the *Works* with the Project *works*;
2. Quality assurance and control; and
3. The operation, maintenance, support, inspection, integrity management, training and technical optimization of the *Works*, over the lifecycle thereof.

The scope of supply of Information from the *Contractor* to include drawings, documents, lists and data according to the types defined in Table below:

Table: **Typical Document Requirement List**	
Document Group	**Description of document type (includes information data sets)**
General	Equipment specifications & data sheets Drawings and data for all equipment and material Installation, Operation, and Maintenance (IOM) Manuals Spare parts list Factory Acceptance Test (FAT) report
Quality Assurance	Quality assurance manual Quality control plans Quality control reports Weld summary index Material traceability certificates Manufacturing test reports Manufacturing Non-Conformance Reports (NCR's)
Civils & Structures	Site Layout Structural drawings (If any) Architectural drawings Drainage drawings Foundation drawings (If any) Structural support drawings Access Platform/Walkway Drawings Design Report
Construction	Transportability study/report (including heavy haul study) Site management plan (QA, Safety, Environmental etc.) Construction schedule Construction test records (hydrotest, concrete strength, etc.) Constructability report

Table: **Typical Document Requirement List**	
Document Group	**Description of document type (includes information data sets)**
Commissioning	Commissioning schedule Test & Evaluation Master Plan (TEMP) Commissioning procedures Commissioning database Performance test procedure Performance test reports Field test reports and certificates
Operations	Operating procedures Plant operational documentation Plant tech specs Incident & upset mitigation procedures Operating scenarios (for C&I control purposes)
Logistic Support	Maintenance concept Plant maintenance documentation ISI plan/program Spare parts assessment Plant RAM analysis Equipment access and removal paths assessment Fault finding diagrams
Safety & Protection	Waste management plan
Design Analyses	Reliability model and analysis Transient / Transition Analysis Flow dynamics analysis Thermo-hydraulic analysis Pipe Stress Analysis Maintainability analysis HAZOP analysis

In addition to the official documentation submittals, the Contractor is to provide additional information for review and design coordination as requested by the Employer from time to time.

The Contractor to use the Employer's SmartPlant Environment and all design tools as the delivery mechanism for all project data and document deliverables. The EDMS and design tools will be provided

to the Contractor pre-configured based on Employer's data handover requirements. Any project data and document deliverables not generated from design tools provided by the Employer shall be supplied in a format specified by the Employer.

The *Employer* reviews the *Contractor*'s submitted documents. The *Contractor* ensures adherence to the contract and that a technically sound design approach is incorporated. Specific information required from the *Contractor* during tender phase and as part of the *Works* is as set-out in the VDSS, in Appendix D. Each document submitted to the *Employer* requires a transmittal note (refer to *Employer*'s template 240-71448626 for minimum metadata requirements) from the *Contractor*. The *Contractor* includes interpretation of results in every report compiled. All project documents shall be submitted to the *Employer* in accordance with Project / Plant Specific Technical Documents and Records Management Work Instruction (240-76992014). The *Contractor* is required to submit documents in electronic and hard copies and both copies must be delivered to the *Employer* with a transmittal note.

6.1.10 Documentation Recording

The *Contractor* develops, document and maintain the Master Document List (MDL) with all the required metadata which will be submitted to the *Employer* in the monthly basis for tracking purposes irrespective of whether there are updates or not. The MDL to include a list of drawings and documents and shall contain the following minimum information for each document:

- Date of submission
- Transmittal number
- Transmittal title
- Document description

I. Document number (both *Contractor* and *Employer*)

- Document Type
- Revision number
- Document Approval Status
- Document Authorisation Status (i.e. Accepted With Comments, Not Accepted with Comments, Accepted)
- Transmittal Reason for Issue

In addition, the *Contractor* to adhere to the following standards:

- Project / Plant Specific Technical Documents and Records Management Procedure (240-53114186).
- SmartPlant for Owner Operators (SPO) Documentation Metadata Standard (240-58552870)
- SmartPlant Data Take-On Standard (240-107305502)

6.1.11 Documentation Requirements

All documents supplied by the *Contractor* are subject to *Employer's* approval. For consistency, it is important that all documents used within the project follow the same layout, style and formatting as described in the Technical Documents and Records Management Work Instruction (240-76992014). Documents such as QCP's, Method Statements and other documents impacting the work are approved by the *Employer* at least 3 working days prior to commencement of the *Works*.

Each revision of a document or drawing is accompanied with a list of the comments made by the *Employer* on the previous revision if applicable and the response/corrective action taken by the *Contractor*. Changes are recorded in a revision table contained in each drawing/document.

Documents and drawings to indicate the *Employer*'s number as allocated by the *Employer*. The *Contractor* may have his own internal document or drawing number on the document or drawing, but where reference is made among documents, the *Employer*'s number is used as the reference number.

The *Contractor* compiles a complete data book for all work done during manufacturing, construction and commission containing the following as a minimum if applicable:

- Scope of work
- Approved "As built" drawings
- Design calculations
- Approved QCP / ITP
- Inspection reports
- Pipe ovality reports if applicable
- As built drawings (isometric drawings and P&IDs)
- Material summary that gives full traceability between components used, drawings and material certificates
- All material certificates for pipes, fittings and all components used.
- Pressure test certificate and the calibration certificates of the gauges used.
- Pressure test procedures
- The manufacturer's/repairer's certificate as defined in PER.
- All CAR's and corrective actions
- Operating Philosophy including all alarm and trip values
- Parts catalogue
- Maintenance manual
- Storage, packing and transportation instructions

7. CONFIGURATION MANAGEMENT

The *Contractor* supplies a comprehensive configuration management program according to ISO 10007 (2nd Edition) to ensure that plant structures, components and computer software conform to approved design requirements. However, a project specific Configuration Management Plan document shall be developed and be aligned to ISO 10007. In addition, the *Works* as-built physical and functional characteristics shall be accurately reflected in selected documents and databases, including those for design, procurement, construction, operation, testing and training. The configuration program shall be applicable for use throughout all phases of the project life cycle, including management of spare parts, replacement parts and product upgrades, and shall form part of deliverables for hand-over to the *Employer* for use during the operation and maintenance phases of the plant.

7.1 PLANT IDENTIFICATION

7.1.1 Plant Coding

Plant Coding is undertaken by the *Employer*, and as such the *Contractor* make available of the following documentation to code:

- Mechanical
- general arrangements (GA)
- Piping and Instrumentation Diagrams (P&IDs)
- interface list
- process flow diagrams (PFDs)
- Electrical
- single line diagrams
- electrical board general arrangements (GA)
- cable schedule
- C&I
- C&I architecture drawings
- C&I Cubicle GA
- cable block diagrams
- remote control station lists
- cable schedules

The *Employer* only code the KKS code defining Documentation listed above. The *Employer* assign a coding practitioner who shall interact with the *Contractor* in coding the plant as listed above. It may be required that the person be based at the *Contractor*'s offices full time. The *Contractor* is then required to include allocated codes to all other designs and related documentation. It is also the responsibility of the *Contractor* to consistently apply the KKS codes throughout the rest of the technical documentation which includes, but not limited to:

- load schedules
- board parts lists
- cable block diagram
- termination diagram
- drive & actuator schedules
- instrument schedules
- alarm lists, loop diagrams
- signal lists

- schematic diagrams
- termination diagrams
- Logic diagrams, etc.

The *Contractor* ensures that all documentation is coded (as per the codes assigned by the Practitioner) prior submission to *Employer* for review.

7.1.2 Plant Codification

The KKS system is used by the *Contractor* for classifying and designating both plant and their associated documents. All technical documentation as per "Technical documentation classification and designation standard – 240-54179170" shall contain a KKS code as part of the documentation identification relevant to the plant equipment. All plant (Process, electrical, C&I, CBMS, and Civil) are coded to KKS breakdown level 3. The KKS code shall contain break down level 1, break down level 2 and breakdown level 3. Omission of any break down level shall not be permitted. The system shall be applied from the concept stage until project closeout. The rules specified in the VGB guidelines are used but all rules specified in the *Employer's* documents would take precedence.

Detailed nameplate or label list with the service legends and including the KKS Code shall be prepared by the *Contractor* and submitted to the *Employer* for review and comment before commencing manufacture of the labels. All maintainable plant equipment and components shall be labelled including pipework.

The rules for applying the KKS and the KKS codes are contained in the Eskom Standard 240-93576498 and in the publication KKS power plant classification (B105e) 5th Edition 2003 published by Verlag VGB PowerTech Service GmbH (Essen), and the KKS Applications: Guideline and explanations A, B1-4 (B106e).

The *Contractor* shall use Eskom –specific interpretations of the KKS standards, which will be reviewed and agreed on after Contract Award. The following variations relating to 240-93576498 are noted.

- Breakdown level 3 component code -> not used in P&ID's and PFUP's, only used by control hardware supplier
- Breakdown level 0: will be shown as a general remark on the P&ID not on the individual KKS number
- F0-level is not used; FN level is free -> no general decoding system

The *Contractor* codes all plant within scope of supply according to the KKS Classification System to Breakdown Level 3 where possible. The relevant KKS codes thus allocated shall appear on all plant related documentation, drawings, lists and correspondence.

The *Contractor* is responsible for ensuring the accuracy, completeness and consistency of the designations in all documents. This applies both to designations within documents (plant designations) and of Documents (documents designations). The *Contractor* submits these for the *Employer*'s approval.

A list of the KKS designations allocated shall be drawn up by the *Contractor* for each scope of delivery. Methods of KKS designation, list formulation and submission format shall be proposed by the *Contractor* and agreed by the *Employer*.

As soon as the contract is place, the *Contractor* provides the *Employer* with the following: -

- Outline drawings or diagrams showing the Contractor reference
- Coding for systems and equipment.

- In respect of items procured by the Contractor from another
- Manufacture or vendor, the Contractor shall provide the name of
- The actual manufacturer and his coded drawing or reference
- Numbers and relevant technical data for identification purposes.

7.1.3 Plant Labelling

1. New labels are provided for all plant, material and equipment provided as part of the *Works*. It is the responsibility of the *Contractor* to manufacture and install labels according to station based labelling standard. The *Employer* provides the labelling standard.
2. All labels are made from anodised aluminium and are pop riveted in place.
3. Coding and labelling of components inside electrical and C&I panels shall be done by the *Contractor*.
4. The Coding practitioner facilitate the base-lining of all equipment lists from the *Contractor*, and only baseline equipment lists shall be used as a basis for the production of labels.
5. The abbreviations are in accordance with the Kusile's abbreviation standard, 240-109607332 – Eskom Plant Labelling Abbreviation Standard.

8. DESIGN REVIEWS AND CHANGE MANAGEMENT

8.1 DESIGN REVIEWS

The *Employer* reviews the *Contractor*s submitted documents and ensures adherence to the *Works* and that a technically sound design approach is incorporated. Specific information required from the vendors during tender phase is set-out in the Vendor Document Submittal Schedule (Appendix D).

After a contract is established, the *Contractor* proceeds in the detail design phase. Each document requires a transmittal note from the vendor. *Employer*s review cycle is in-line with NEC contract requirements and is finalised during contract negotiations with the *Contractor*.

The *Contractor* is the Design Authority as defined in the Design Review Procedure (240-53113685). The *Contractor* is responsible for following this design procedure and conducts all the design reviews as specified in this procedure. The *Contractor* is responsible for conducting the following design reviews:

1. Design Freeze Review
2. System Integrated Design Review
3. Pre-Commissioning Review
4. Acceptance testing Review
5. Handover Review

The *Contractor* conducts design reviews as per the *Employer's* official design review procedure. *Contractor* further takes note of the *Employer*s Design Review Procedure (240-53113685) and participates in all design reviews as specified by the *Employer*. The *Employer* may "Accepted"; "Accept with Comments" or "Rejected". If required, the *Contractor* makes the necessary revisions on the documentation and ensures acceptance is obtained from *Employer*. The *Contractor* includes these design reviews as part of the schedule and suggests appropriate timing for such reviews.

8.2 CHANGE MANAGEMENT

All Design change management are performed in accordance to the latest revision of the Eskom Project Change Management Procedure (240-53114026) and the Kusile Engineering Change Management Work Instruction (240-132735850). The *Employer* ensures that *Contractor* is provided with latest revisions of this procedure. Any uncertainty regarding this procedure should be clarified with the *Employer* and clarification updates should be reflected in updated versions of this procedure.

9. HANDOVER

Apart from any statutory data packages required, the *Contractor* also compiles and supplies a data package of the relevant drawings, test certificates etc. to the *Employer* for acceptance.

- Concrete 7 day and 28 day cube test results
- Slump test results
- Concrete mix designs including all required test results e.g. aggregate test results
- Pile Integrity Test Results (if required)
- Pile Load Test Results (if required)
- Foundation Certificate
- Welding procedure specifications
- Welder qualifications
- Non-destructive weld test results
- Weld test certificates
- Steel grade certificates
- Bolt grade certificates
- Hydrostatic tests of the pipe and tank
- Pre-concrete and post concrete surveys
- As-built data and drawings of the completed *Works* upon handover. As-built drawings are submitted in PDF and DWG formats 14 days after construction is completed.
- Structural Certificate signed by the *Contractor*'s Professionally Registered Engineer confirming that structure has been constructed in accordance with the design

Detailed handover requirements are as per the requirements defined in the Kusile Project "240-128515850 - Documentation Handover Specification". As a minimum the *Contractor* provides the *Employer* with the back-ups and information to completely replicate the *Contractor*'s SmartPlant instance on the *Employer*'s environment. Any uncertainty regarding this process should be clarified with the *Employer*.

SPEL and SPI Data are captured as defined by the both the Electrical and Control & Instrumentation Centre of Excellence, respectively, during contracting phase. All terminations shall be captured as per the *Employer*'s data template.

In the course of this training the *Contractor* shall provide though training in the use of the instruction manuals, drawings, diagnostic features and equipment for operation and maintenance of the plant. All required training manuals, operator manuals and maintenance manuals shall be provided as part of the training deliverables.

10. VENDOR DOCUMENT SUBMITTAL SCHEDULE

The *Contractor* submits a VDSS (vendor document submittal schedule) that details the dates on which documents (which includes but is not limited to) are submitted to the *Employer*;

- System descriptions
- Operating and control philosophies
- As built information (Drawings, documentation),
- Manuals,
- Specifications and technical schedules,
- Design calculations,
- Method statements,
- Construction schedule,
- Contractor's requirements from the Employer
- QCPs and ITPs.
- Testing and commissioning procedures
- Commissioning records. Certificates of compliance

These documents are made available to the *Employer* for his review and acceptance.

The *Contractor* returns as part of his bid document the following information:

1.	Proposed Project Specific detailed organizational chart and CVs for key personnel (Site Agents, Engineers, Foremen, Planners, etc.) with a proven track record.
2.	Project Specific Health, Safety and Environmental Management Plan and System in relation to scope of work and meeting the requirements set out in the SHE specifications.
3.	Document outlining the process to meet SHE and associated legal requirements, including Eskom EMP (Environmental Management Plan) and ROD (Record of Decision).
4.	Proof of Compliance to Eskom Standard Contract Quality Requirements 39-60.

5.	Provide at least three testimonial(s) or Completion Certificate(S) as proof for projects undertaken. Testimonial(s) or completion certificates shall contain the following information for evaluation purposes: 1) Name of company where project was executed 2) Project Description 3) Construction period 4) Contract value 5) Contact person Summary of the above information in table format
6.	Method statements for the Plant and Installation Services in compliance with *Employer's* Quality, Health & Safety and Environmental requirements SHE methodology for the company.
7.	Programme in either Primavera or MS Project to level 2 (same level as in the indicative programme provided in the *Employer's* Requirements) demonstrating understanding of the design, construction, and handover to be performed as well as the ability to meet key milestone dates.
8.	Method statements for the design, construction, and handover – Specific to the construction methodology, each major activity and reference to the high level programme mentioned in point 6 above.

11. AUTHORISATION

Name & Surname	Designation
Nadia Hoosen	Civil Engineer
Thabani Mdlalosi	Lead Design Engineer (Civil)
Pat Nguni	Civil Engineering Manager
Deshan Naidu	LPS Engineer

12. REVISIONS

Date	Rev.	Compiler	Remarks
June 2022	0.1	N Hoosen	First draft for comments.
July 2022	1.0	N Hoosen	Final document
October 2022	2.0	N Hoosen	Final (Phase 1 and 2)
June 2023	3.0	N Hoosen	Final (Added Seating Requirements)

13. DEVELOPMENT TEAM

The following people were involved in the development of this document:

- Nadia Hoosen
- Deshan Naidu
- Vusi Lubisi
- Richie Sibiya

14. LIST OF APPENDICES

- Appendix A – Drawing List
- Appendix B – S33 Series (HML vs site underground site services)
- Appendix C – S38 Series (Site Services – site plan)
- Appendix D – Vendor document submittal schedule template
- Appendix E – Master Document List Template
- Appendix F – Document requirements after final handover

APPENDIX A: DRAWING LIST

Document Number	Rev.	Document Title	Remarks
P146838-0GAF-M1660F	2	Raw Water Supply Valve Box GAF – 09 Piping Details	
P146838-0UXC-S3344D	14	Terrace Underground Facilities – Site Plan Area 44	
P146838-0GAF-M2660A	10	Piping & Instrument Diagram Raw Water Supply	
P146838-0UXC-S3345	7	Terrace Underground Facilities Sit Plan Area 45	
P146838-0UXC-S3963	34	Terrace Underground Facilities Site Valve Pits	
P146838-0UXC-S5460	0	Pipe Support – Foundations Support Pedestals Plans	
P146838-0UXC-S5480	14	Pipe Support – Foundations Plans & Sections	
P146838-0UXC-S9480A	5	Pipe Support – Reinf Steel Plans & Sections	
P146838-0UXB-E2603A	0	Site Electrical Roadway & Area Lighting Circuiting	
P1466838-0UXB-E2603	2	Site Electrical Roadway & Area Lighting	
P146838-0UXB-E2603D	1	Site Electrical Roadway & Area Lighting Circuiting	
P146838-0UXB-E2603C	1	Site Electrical Roadway & Area Lighting Circuiting	
P146838-0UXB-E2603B – 3HML 24_25_32	2	Site Electrical Roadway & Area Lighting Circuiting	
P146838-0UXB-E2603E	1	Site Electrical Roadway & Area Lighting Circuiting	
P146838-0UXC-S3318	7	Terrace Underground Facilities – Site Plan Area 18	
P146838-0UXC-S3327	11	Terrace Underground Facilities – Site Plan Area 27	
P146838-0UXC-S3328	5	Terrace Underground Facilities – Site Plan Area 28	

APPENDIX B: S33 SERIES

- S33 Series (HML vs site underground site services)

APPENDIX C: S38 SERIES

- S38 Series (Site Services – site plan)

APPENDIX D: VENDOR DOCUMENT SUBMITTAL SCHEDULE TEMPLATE

VENDOR DOCUMENT SUBMITTAL SCHEDULE													
ITEM	SUBMITTAL ITEMS	CALANDER DAYS	PROJECT STAGES										
			PROCUREMENT SPECIFICATION FOR SUB*CONTRACTORS*	CONTRACT AWARD	ORDER	DESIGN FREEZE	MANUFACTURING AND ASSEMBLY	FACTORY ACCEPTANCE TESTING (FAT)	FACTORY RELEASE	DELIVERY	INSTALLATION	SITE ACCEPTANCE TESTING (SAT)	SYSTEM HANDOVER

APPENDIX E – MASTER DOCUMENT LIST TEMPLATE

Kusile Power Station									
DRAWINGS AND SPECIFICATION SCHEDULE									
Doc Code	Rev.	Cust. Doc No.	Title	Action	Actual date	Client receipt	Client Doc	Client	Document status

APPENDIX F – DOCUMENT REQUIREMENTS AFTER FINAL HANDOVER

Dossier Chapter	Dossier Sub-Chapter	Dossier Sub-Sub Chapter	Documents for Final Handover
Engineering Documentation	1.6	1.6	Risk Assessments
	1.7	1.7	Non-Conformance Management
Final System Design Package	2C	2.38	Functional Descriptions (Control)
	2A	2.39	Alarm Response Procedures
	2C	2.40	Control System Functional Specification/Design

Dossier Chapter	Dossier Sub-Chapter	Dossier Sub-Sub Chapter	Documents for Final Handover
	2B, 2C, 2D, 2E, 2F	2.41	Design Philosophy
	2A	2.42	Material, Mass & Energy Balance Diagrams
	2C	2.43	Control System IT Architecture
	2C	2.44	Plant Protection Logics
	2B	2.45	Safety Studies
	2B	2.47	Plant System/Process Description
			Technical Tender Evaluation Reports
			Functional Descriptions (Control)
Operating and Maintenance Documentation	3.6	3.6	Maintenance Instructions
	3.7	3.7	Operating Instructions
	3.8	3.8	Commissioning/Shutdown Procedures
	3.9	3.9	Storage and Handling Instructions
	3.10	3.10	Installation, Operating & Maintenance Manuals (IOM's)
	3.11	3.11	Datasheets and Product Brochures
	3.12	3.12	Licences & Approvals (Regulatory, Statutory)
Commissioning Documentation	4.1	4.1	Commissioning Procedure / Manual
	4.2	4.2	Handover Certificate
	4.3	4.3	Commissioning Certificate
Project Execution	Mechanical	5.1.1	*Contractor* Application for Eskom's Inspection of the *Works* /Part of the *Works*

Dossier Chapter	Dossier Sub-Chapter	Dossier Sub-Sub Chapter	Documents for Final Handover
		5.1.2	Data Pack (e.g. Material Certificates, Qualifications, NDE and Welding Documentation, Isometric Drawings, Cutting Instructions, Factory Design Review Reports, C&I Loop checks, etc.)
		5.1.3	Partial/final Inspection certificate
		5.1.4	Defects Notification Certificate/Clearance
		5.1.5	Safety and Housekeeping Certificate
		5.1.6	Safety Clearance Certificate
		5.1.7	Completion Certificate
		5.1.8	Defects Certificate
		5.1.9	Take over Certificate
		5.1.10	Specific Requirements
		5.1.11	KKS and Labelling Certificate
	C&I	**5.2.1**	*Contractor* Application for Eskom's Inspection of the *Works* /Part of the *Works*
		5.2.2	Data Pack (e.g. Material Certificates, Qualifications, NDE and Welding Documentation, Isometric Drawings, Cutting Instructions, Factory Design Review Reports, C&I Loop checks, etc.)
		5.2.3	Partial/final Inspection certificate
		5.2.4	Defects Notification Certificate/Clearance
		5.2.5	Safety and Housekeeping Certificate
		5.2.6	Safety Clearance Certificate

Dossier Chapter	Dossier Sub-Chapter	Dossier Sub-Sub Chapter	Documents for Final Handover
		5.2.7	Completion Certificate
		5.2.8	Defects Certificate
		5.2.9	Take over Certificate
		5.2.10	Specific Requirements
		5.2.11	KKS and Labelling Certificate
	Electrical	**5.3.1**	*Contractor* Application for Eskom's Inspection of the *Works* /Part of the *Works*
		5.3.2	Data Pack (e.g. Material Certificates, Qualifications, NDE and Welding Documentation, Isometric Drawings, Cutting Instructions, Factory Design Review Reports, C&I Loop checks, etc.)
		5.3.3	Partial/final Inspection certificate
		5.3.4	Defects Notification Certificate/Clearance
		5.3.5	Safety and Housekeeping Certificate
		5.3.6	Safety Clearance Certificate
		5.3.7	Completion Certificate
		5.3.8	Defects Certificate
		5.3.9	Take over Certificate
		5.3.10	Specific Requirements
		5.3.11	KKS and Labelling Certificate
	Civil	**5.4.1**	*Contractor* Application for Eskom's Inspection of the *Works* /Part of the *Works*
		5.4.2	Data Pack (e.g. Material Certificates, Qualifications, NDE and Welding Documentation, Isometric Drawings, Cutting Instructions, Factory Design Review

Dossier Chapter	Dossier Sub-Chapter	Dossier Sub-Sub Chapter	Documents for Final Handover
			Reports, C&I Loop checks, etc.)
		5.4.3	Partial/final Inspection certificate
		5.4.4	Defects Notification Certificate/Clearance
		5.4.5	Safety and Housekeeping Certificate
		5.4.6	Safety Clearance Certificate
		5.4.7	Completion Certificate
		5.4.8	Defects Certificate
		5.4.9	Take over Certificate
		5.4.10	Specific Requirements
		5.4.11	KKS and Labelling Certificate
Test and Statutory Certificates	**6.1**	**6.1**	Factory Acceptance Test (FAT)
	6.2	**6.2**	Site Acceptance Test (SAT)
	6.3	**6.3**	Inspection Test Procedures (ITP's)
	6.4	**6.4**	QCP's / QIP's (signed off)
	6.5	**6.5**	COC (Domestic Circuits)
	6.6	**6.6**	Electrical Tests - Motors
	6.7	**6.7**	Calibration Certificate
	6.8	**6.8**	Erection Check Sheet
	6.9	**6.9**	Protection and Optimising Test Certificates
	6.10	**6.10**	Fire Protection Certificate
	6.11	**6.11**	Other Safety Valves, Ventilation, Boiler Statutory Tests, Transformer Impact Recording, Boiler Registration Certificate, Type Test Certificates)
	6.12	**6.12**	Synchronisation Tests
	6.13	**6.13**	Grid Code Compliance Certificate

Dossier Chapter	Dossier Sub-Chapter	Dossier Sub-Sub Chapter	Documents for Final Handover
	6.14	**6.14**	Defect List
Safety Requirements	**7.1**	**7.1**	Safety Signs, Labels and Colour Coding
	7.2	**7.2**	Demarcation of Hazardous Area (Certificate & Reports)
	7.3	**7.3**	Lighting
	7.4	**7.4**	Safety and Housekeeping Certificate
Guarantees & Warrantees	**8.1**	**8.1**	Related Extract from SOW of *Works* Information Indicating Plant area / Component
	8.2	**8.2**	Certificate from Supplier indicating validity of the guarantee / Warrantees Period
		9	**Special Tool List**
		10	**Insurance Cover (90 Days Notification Period)**
Plant out of Normal Status Approved	**11.1**	**11.1**	Approved Out of Normal Status
	11.2	**11.2**	Out of Normal Status (Pending Approval)
Training	**Competency Declarations**	**12.1**	Training Manual
		12.2	Proof of Training
		12.3.1	Plant Safety Regulations
		12.3.2	High Voltage (HV) Regulations
		12.3.3	PFFR
		12.3.4	Other
Provisional Hand over Certificate	13.1	13.1	Provisional
	13.2	13.2	Pending Approval

Dossier Chapter	Dossier Sub-Chapter	Dossier Sub-Sub Chapter	Documents for Final Handover
	13.3	13.3	Approved
Final Hand over Certificate	14.1	14.1	Provisional
	14.2	14.2	Pending Approval
	14.3	14.3	Approved
Other	15.1	15.1	Factory Acceptance Tests • Signed Protocol Release Report
	15.2	15.2	Shipment and Transportation - • Transportation test results • Transportation PQP
	15.3	15.3	Other Documentation and Reports • Design assumptions • Trade-offs
	15.4	15.4	Design Software • Software listing • Load Flows • Fault studies • Cable Routing software • CAD software data files • Simulations
	15.5	15.5	Correspondences • Engineering Instructions (EI's)