 Eskom National Transmission Company South Africa TM	Scope of Work	ENGINEERING
---	----------------------	--------------------

Title: **TECHNICAL SCOPE OF WORK
FOR THE DESIGN AND
CONSTRUCTION OF SYSTEM
OPERATING CONTROL (SOC)
BUILDING AT EMKHIWENI.**

Document Identifier: **EMK24P02-SE-D89**

Alternative Reference N/A
Number:

Area of Applicability: **National Transmission
Company South Africa**




Functional Area: **Engineering**

Revision: **0**

Total Pages: **16**

Next Review Date: **N/A**

Disclosure **Controlled Disclosure**
Classification:

Compiled by	Functional Responsibility	Authorized by
 S. Sibiyi Snr. Advisor: Architecture Substation Engineering Date: 25-11-2025	 B. Hajee Chief Engineer: Civil Substation Engineering Date: 03/12/2025	 A Maneli Manager: Civil Substation Engineering Date: 04 - 12 - 2025

Content

Page

1. Introduction.....	3
2. Supporting Clauses	3
2.1 Scope of services to be rendered by Consultant.....	3
2.1.1 Develop a detailed design and construction scope of work.....	3
2.1.2 Perform design stages 1 & 2	3
2.1.3 Compile tender pack for the appointment of the EPC Contractor & conduct evaluations	4
2.1.4 Act as Principal agent and Supervise design/construction stages 3 to 6.....	5
2.1.5 Purpose	5
2.1.6 Applicability	5
2.1.7 Effective date.....	5
2.2 Normative/Informative References	5
2.2.1 Normative.....	6
2.2.2 Informative.....	6
2.3 Definitions	7
2.4 Abbreviations	8
2.5 Roles and Responsibilities	8
2.6 Process for Monitoring.....	10
2.7 Related/Supporting Documents	10
3. GENERAL SHEQ REQUIREMENTS	10
4. OVERVIEW OF THE CONSULTAN'S SCOPE	11
4.1 Location of the building.....	11
4.2 Overview of Consultant's design scope	11
4.2.1 Procedure for submission and acceptance of Consultant's design	12
4.2.2 General design requirements – all works	12
5. ENGINEERING DESIGN AND MATERIALS STANDARDS.....	13
6. building functional requirements and architectural finishes	13
7. Systems designs	13
8. documentation requirements	13
8.1 Drawing requirements	13
8.2 General arrangement drawings	14
9. Design handover documentation	14
10. Civil and Structrual design Skills Transfer.....	15
11. Acceptance.....	15
12. Revisions.....	15
13. Development Team	15

CONTROLLED DISCLOSURE

14. Acknowledgements 15

1. INTRODUCTION

This technical scope of work details the minimum requirements for the design and construction of the National Key Point (NKP) System Operating Control (SOC) building to be constructed on site: Rietfontein 314 JS, Portion 14, Mpumalanga.

For this project the Employer intends issuing an open market enquiry to appoint Consultant/s to render designs and supervise construction of the above-mentioned SOC building, the scope is detailed in section 2 below.

2. SUPPORTING CLAUSES

2.1 Scope of services to be rendered by Consultant

This document serves to provide minimum information to the Consultant for the scope of works, these include but not limited to:

2.1.1 Develop a detailed design and construction scope of work

There is a Stakeholder Requirements Document (SRD) and accommodation schedule in place:

Document: **EMK24P02-SE-E50** - SRD for Design and Construction of SOC Building at eMkhiweni.

The SRD document and accommodation schedule details minimum requirements of the function of the building, the Consultant shall assess the documents and existing site, do research on all design deliverables, conduct NTCSA's Stakeholder engagement, advise NTCSA and compile a detailed scope of work for design and construction of the building.

2.1.2 Perform design stages 1 & 2

Stage 1 – Inception

- a) Assist in developing a clear brief
- b) Advise on rights, constraints, consents and approvals
- c) Advise on other consultants and services required
- d) Determine availability of data, drawings and plans relating to the project – NTCSA will provide existing drawings but the Consultant will have to verify them
- e) Provide necessary information within the agreed scope project to the other consultants
- f) Assist in developing a project programme for NTCSA's approval

Stage 2 – Concept and viability

- a) Agree the documentation programme
- b) Prepare concept design based on Client's brief
- c) Consult with the other Consultants and incorporate their input

CONTROLLED DISCLOSURE

- d) Clarify and confirm the project space norms to optimise functional and operational efficiency in terms of scale and relationship of area
- e) Select general construction materials and intended finishes
- f) Prepare and submit spatial development plan for NTCSA's approval
- g) Review anticipated costs of the project

2.1.3 Compile tender pack for the appointment of the EPC Contractor & conduct evaluations

The Consultant shall compile a detailed tender pack for the appointment of the Engineering, Procurement & Construction (EPC) Contractor who will be required to render design stages 3 – 6 under supervision of the Consultant, the 4 stages to be rendered by the EPC Contractor are detailed below:

Stage 3 – Design development

- a) Incorporate Client's detailed requirements into the building design
- b) Incorporate and co-ordinate the other Consultant's design into building design
- c) Prepare design development drawings (including draft technical) and outline specifications
- d) Review design, costing and programme with the other Consultant's
- e) Confirm the scope and complexity
- f) Review the design, construction system, materials and components with the NTCSA's Engineering team
- g) Incorporate all services and the work of Consultants

Stage 4 – Documentation

- a) Obtain Client's authority to prepare detailed construction drawings for their acceptance
- b) Co-ordinate services and prepare necessary co-ordination drawings
- c) Provide construction drawings – these must have a clear stamp of "CONSTRUCTION DRAWING"
- d) Complete all the construction pack documentation

Stage 5 – Contract Administration & Inspection

- a) Manage the preparation and agreement of the Health and Contract administration
- b) Handover the site to the EPC Contractor
- c) Issue contract documentation
- d) Initiate and/or check sub-contract design documentation as appropriate
- e) Inspect the works for conformity to the contract documentation

CONTROLLED DISCLOSURE

- f) Administer and perform the duties and obligations assigned as the principal agent
- g) Receive, comment and approve interim payment valuations
- h) Witness and review all tests and mock-ups carried out both on and off site
- i) Check and approve subcontract shop drawings for design intent
- j) Update and issue the drawings register

Stage 6 – Close Out

- a) Inspect and verify rectification of defects
- b) Receive, comment and approve relevant payment valuations and completion certificates
- c) Prepare and/or procure as-built drawings and documentation
- d) Issue the works completion certificate

The Consultant shall conduct tender evaluations and provide evaluation report to NTCSA to appoint a suitable EPC Contractor.

2.1.4 Act as Principal agent and Supervise design/construction stages 3 to 6

The Consultant shall act as a Principal agent from stage 1 to 6 and supervise design development, documentation, contract administration & inspection and close out on behalf on NTCSA.

The Consultant shall prepare a presentation after completion of each stage for NTCSA's technical design reviews, no stage may commence without NTCSA's acceptance.

2.1.5 Purpose

The purpose of this document is to outline the technical scope of work for the design and construction of the SOC building at eMkhiweni.

2.1.6 Applicability

This document is applicable to the design and construction of the SOC building at eMkhiweni project only.

2.1.7 Effective date

This document shall be effective after the authorization date.

2.2 Normative/Informative References

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

CONTROLLED DISCLOSURE

2.2.1 Normative

- [1] Occupational Health and Safety Act (Act 85 of 1993) with associated Regulations
- [2] 200-35208 - Environmental Management Plan
- [3] National Environmental Management Act, 1998 (Act 107 of 1998)
- [4] National Environmental Management Waste Act, 2008 (Act 59 of 2008)
- [5] National Water Act, 1998 (Act 36 of 1998)
- [6] Government Notice 704, National Water Act 1998
- [7] The Environmental Conservation Act (Act No 73 of 1989)
- [8] South African National Standards (SANS), relevant and applicable
- [9] National Building Regulations and Building Standards Act No. 103 Of 1977
- [10] 240-53113685 - Design review procedure
- [11] 240-114967625 Operating Regulations for High Voltage Systems
- [12] 240-606480018 Terms of reference for Design Review Teams Presiding over Transmission and Distribution Infrastructure Designs in Eskom

2.2.2 Informative

- [13] ISO 9001 Quality Management Systems
- [14] ISO 14001:2015 Environmental Management Systems
- [15] Occupational Health and Safety Management Systems Requirements (OHSAS 18001)
- [16] 200-46362 - Site Inspections Procedure
- [17] 200-15406 - Issue Takeover Certificate
- [18] 32-421 - Eskom Life Saving Rules
- [19] PWI 200 – 5664: Engineering Change Management Work Instruction
- [20] 240-103414344 - Summary of corporate identity manual
- [21] Policy ESK PB AAQ 3 - Interior Specifications for Eskom

CONTROLLED DISCLOSURE

2.3 Definitions

Definition	Description
Consultant	Employer who performs construction work.
Control Centre	A place from which an organization, activity, mechanism, system, etc., is centrally monitored, regulated, and directed, or in which operational devices and controls are housed.
Control Room	Core functional entity, and its associated physical structure, where operators are stationed to carry out centralized control, monitoring and administrative responsibilities.
Employer	National Transmission Company of South Africa, Simmerpan head office complex or representative
Operational Zone	The assigned areas in which an operator has an assigned function and can exercise authority.
PSIM	A category of software that is designed to integrate multiple unconnected security applications, enable automation of workflows and processes, and to provide control over devices through a unified user experience.
System	An integrated set of constituent pieces that are combined in an operational or support environment to accomplish a defined objective. These pieces include people, hardware, software, firmware,

CONTROLLED DISCLOSURE

2.4 Abbreviations

Abbreviation	Explanation
AC	Alternating Current
BMS	Building Management System
COC	Certificate of Compliance
DC	Direct Current
EP	Emergency Procedure
HVAC	Heating Ventilation and Air Conditioning
PSIM	Physical Security Information Management
SANS	South African National Standard
NKP	National Key Point
UPS	Uninterrupted Power Supply
SHEQ	Safety, Health, Environment and Quality
IT	Information Technology
TX/Tx	Transmission
EPC	Engineering, Procurement and Construction
SOC	System Operating Control

2.5 Roles and Responsibilities

Person	Technical Responsibility
Consultant	The <i>Consultant</i> shall be responsible for the duties as defined in section 4 “overview of the Consultant’s design and construction scope” as well as section 7, “Duties of the <i>Consultant</i> ” of the Construction Regulations and all duties as defined by Contract data.
Engineering Design Work Lead (EDWL)	He/she co-ordinates the design work provided by the discipline Design Engineering roles and integrates this work into a final integrated design product. He/she is the custodian of the requirements set and the interface register between packages and part of his/her role is to maintain this information. He remains responsible for the integrity of the engineering product and is accountable for the overall management of interfaces and delivery of an integrated product.

CONTROLLED DISCLOSURE

Lead Discipline Engineer (LDE)	The role of the Lead Discipline Engineering role is to manage the technical integrity of the design and be accountable for the management of the interfaces within their specific engineering domain
Consultant's Designer	Refer to Construction Regulations section 6 "Duties of the Designer". For Civil and Structural engineering and Electrical engineering applications the duties of the designer, as defined in the Construction Regulations, shall be assigned to the Professional Engineer\Technologist.
Architect	The Architect is responsible for the conceptual and detailed design of the building, the specification of finishes and the submission of plans for acceptance to local council, ensuring compliance with <i>Employer's</i> planning requirements and national building regulations.
Project manager	The <i>Project manager</i> is the delegated authority from the <i>Employer</i> representing the <i>Employer</i> to manage the defined scope of work. The <i>Project manager</i> coordinates the execution of the Works to achieve the required cost, schedule, and quality objectives. The <i>Project manager</i> is Eskom's representative(s) that officially communicates with the <i>Consultant</i>
Quality Management	Quality ensures <i>Consultants</i> build plant according to contractual specifications, and user requirements and codes. Quality is the custodian of the Quality Management System and quality records and facilitates the work of the Approved Inspection Authority (AIA). The Quality Function's responsibility is to ensure <i>Consultants</i> have a sound quality system in place. Quality checks these systems on behalf of the <i>Employer</i> .

CONTROLLED DISCLOSURE

2.6 Process for Monitoring

None

2.7 Related/Supporting Documents

- a) EMK24P02-SE-E50 - SRD for Design and Construction of SOC Building at eMkhiweni.
- b) Accommodation schedule – to be used for information only.

3. GENERAL SHEQ REQUIREMENTS

For SHEQ requirements please refer to the below documents:

- a) 240-166910358 Rev 1 - Health and safety specification
- b) 202211_OH&S Tender Returnable Documents for EPC & EPCM & Owner's Engineer_TPDMAN-FM-204_Rev2
- c) 202211_ (Form A) Tender Contract SHEQS Requirements for EPCM & or Owner's Engineer_TPDMAN-FM-197_Rev2

CONTROLLED DISCLOSURE

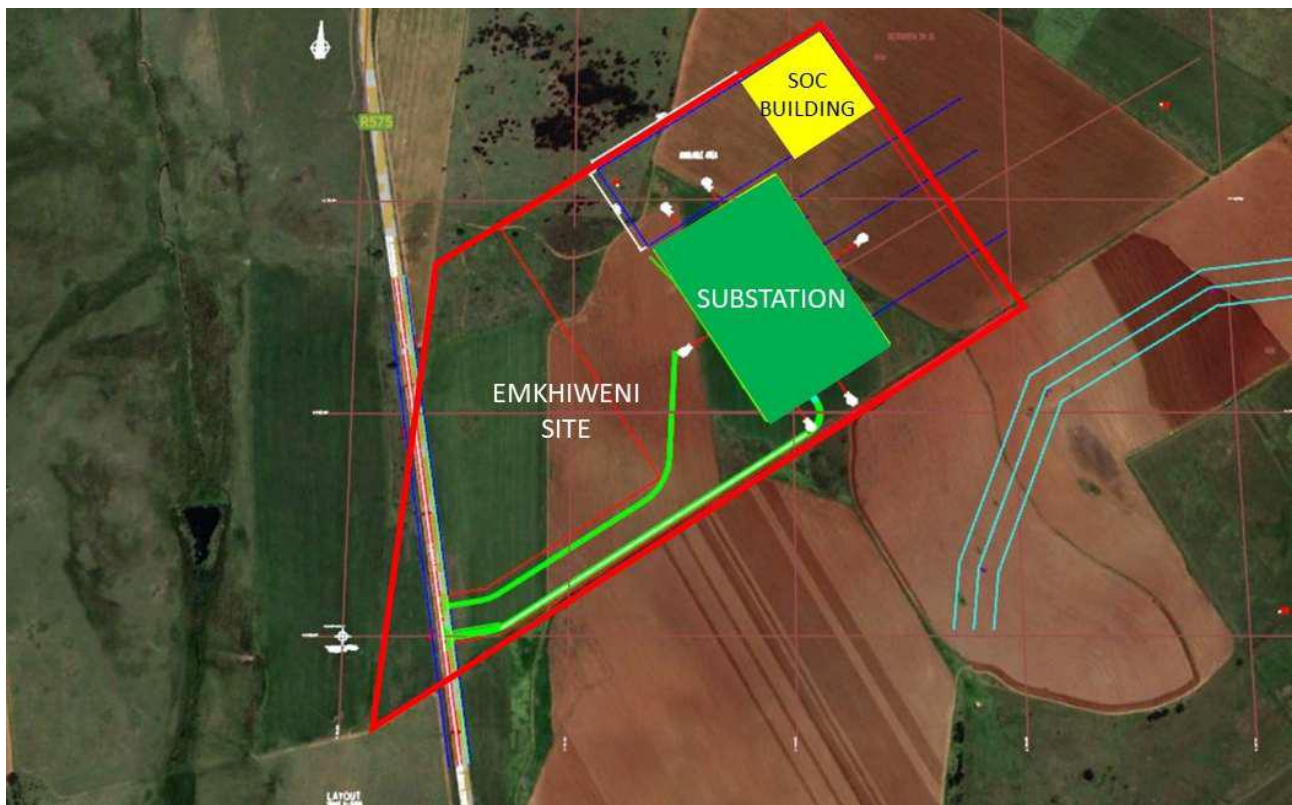
When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system. No part of this document may be reproduced in any manner or form by third parties without the written consent of National Transmission Company South Africa SOC Ltd Reg No 2021/539129/30

4. OVERVIEW OF THE CONSULTAN'S SCOPE

- a) The scope of work for the project entails engineering and architectural design stages 1 to 6.
- b) The Consultant shall consider green building and biophilic design principles taking into consideration the blast proof design requirements.
- c) The building shall be ergonomically designed and supplied in accordance with the detailed scope of work to be compiled by the Consultant.

4.1 Location of the building

The SOC is to be constructed adjacent to the proposed eMkhiweni substation,



Site - Rietfontein 314 JS, Portion 14, Mpumalanga.

Figure 1: Site aerial view

4.2 Overview of Consultant's design scope

- a) All civil and structural elements (architectural design, civil design, electrical design, mechanical design, fire and internal drainage).

CONTROLLED DISCLOSURE

- b) All areas including control rooms, server rooms, administrative/office areas, boardrooms, computer centre/rooms, locker rooms, workshops & storages, kitchens, ablutions facilities and, all other areas for supportive services and equipment as indicated in this document.
- c) HVAC system with structural supports.
- d) Electrical supply and distribution (incl. earthing, lighting and small power)
- e) Potable water system.
- f) Active and passive fire protection.
- g) Fire detection system.
- h) Access Control.
- i) Blast protection building design.
- j) Design integration to ensure functionality of the building and services.
- k) Dual access unit (card and biometric access system).
- l) Telecommunications

4.2.1 Procedure for submission and acceptance of Consultant's design

- a) The design review process, as outlined in the design review procedure - **240-53113685**, shall be followed for the review and acceptance of all the design documents submitted by the Consultant.
- b) Interim design reviews shall be performed on a regular basis, as and when required, to ensure End-of-Phase design objectives are achieved accurately and timeously. End-of-Phase design reviews shall be performed at key milestones during the project design life cycle. Key milestones, as defined by the Consultant, shall be agreed between the Project manager and the Consultants designers, taking into consideration the stages of design reviews as per the design review procedure.
- c) The Consultant shall account for **21** calendar days review period for design drawings and design reports for each submission. Each submission can be reviewed 3 times only if first and second submissions were rejected.
- d) For all design changes the Project Engineering Change Procedure – **240-53114026** shall be used for implementation of these changes.

4.2.2 General design requirements – all works

- a) All design work shall be compliant with, including but not limited to, the Employer's standards, specifications and other relevant codes listed under section 2.2 of this document.

CONTROLLED DISCLOSURE

- b) All design work shall be compliant with, including but not limited to, relevant and applicable standards, codes of practice, regulations, and legislative requirements.

5. ENGINEERING DESIGN AND MATERIALS STANDARDS

Minimum engineering design and materials standards are detailed in sections 4 and 5 of the document EMK24P02-SE-E50 - SRD for Design and Construction of SOC Building at eMkhiweni.

6. BUILDING FUNCTIONAL REQUIREMENTS AND ARCHITECTURAL FINISHES

Minimum functional requirements are detailed in section 6 of the document EMK24P02-SE-E50 - SRD for Design and Construction of SOC Building at eMkhiweni.

7. SYSTEMS DESIGNS

Minimum systems design requirements are detailed in section 7 of the document EMK24P02-SE-E50 - SRD for Design and Construction of SOC Building at eMkhiweni.

8. DOCUMENTATION REQUIREMENTS

8.1 Drawing requirements

- a) The creation and control of all Engineering Drawings shall be in accordance with the latest revision of Engineering Drawing Standard 240-86973501.
- b) All required drawings shall be prepared in accordance with the requirements as specified in the Engineering Drawing Office and Engineering Drawing Standard 240-86973501.
- c) A drawing register which records the drawing's information shall be maintained by the Consultant.
- d) All Design change management shall be performed in accordance with the latest revision of the Transmission Engineering Change Management Procedure and the Project manager shall ensure that Consultant is provided with latest revisions of this procedure.
- e) Documents and drawings shall indicate the Employer's drawing number as allocated by the Employer. The Consultant may have his own internal document or drawing number on the document or drawing, but where reference is made among documents or drawings, the Employer's number shall be used.
- f) All drawings shall indicate purpose for issuing (Issued for Information or Construction) as applicable and signed off by the professional registered Engineer/Architect.
- g) All design related documentation shall be dated and signed off by the professional registered Engineer/Architect.
- h) The Consultant shall supply Eskom with 3x hard copies of the drawings and electronic copies for all revisions in the design phase, construction phase and as built.

CONTROLLED DISCLOSURE

8.2 General arrangement drawings

General Arrangement drawings shall be completely dimensioned, showing as a minimum, the following:

- a) Arrangement of equipment offered.
- b) Plan, front view, and other elevation views.
- c) Required clearances for opening doors and for removing components.
- d) Conduit or cable entrance locations for bottom entrance.
- e) Cable racking layouts.
- f) Incoming and Outgoing cable termination positions.
- g) Earthing connections.
- h) Floor layout/equipment layout
- i) Floor slot arrangement
- j) All structural arrangements drawing
- k) Fire layout drawing
- l) Furniture layout

9. DESIGN HANDOVER DOCUMENTATION

Design handover documentation shall include but is not limited to the following:

- a) Native/CAD drawing files and pdf
- b) Operating manuals on all the trades, arrange at least 4 training sessions
- c) Hard copies and soft copies
- d) Computer design models for all designs
- e) Fenestration calculation reports
- f) Architectural design reports
- g) Structural/building design calculation reports which shall include the following:
 - 1. Design philosophy providing
 - 2. Evidence of 50-year design life consideration
 - 3. Evidence that value engineering was considered in the selection of structural system, elements, and materials
 - 4. Summary of structural analysis results
 - 5. Summary of structural member design calculations
 - 6. Civil design calculation reports.
 - 7. Other technical/handover documents not listed above.

CONTROLLED DISCLOSURE

10. CIVIL AND STRUCTURAL DESIGN SKILLS TRANSFER

- a) The *Consultant's* designer is required to provide skills transfer for at least 3 civil engineers from the *Employer's* team. The *Consultant's* designer makes available the design tools, and office space as required to include the *Employer's* engineers in their design activities. The *Consultant's* senior design engineer is required to provide supervision and guidance to the *Employer's* engineers for the duration of contract. The logistical aspects will be confirmed after appointment.
- b) The design engineer will be responsible to assist the Eskom civil engineers to meet ECSA outcomes for professional registration. The program for meeting the outcomes will be discussed and agreed upon between the parties (Design engineer and Eskom civil engineers) before contract award.

11. ACCEPTANCE

This document has been seen and accepted by:

Name	Designation
Lungi Mdletshe	Manager – Infrastructure projects
Andile Maneli	Middle Manager - Civil
Bilal Hajee	Chief Engineer - Civil

12. REVISIONS

Date	Rev.	Compiler	Remarks
25 November 2025	0	S. Sibiya	Issued for Owner's Engineer Appointment

13. DEVELOPMENT TEAM

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

- Sibonelo Sibiya

14. ACKNOWLEDGEMENTS

Not applicable

CONTROLLED DISCLOSURE