

	<p style="text-align: center;">Scope of Work</p>	<p style="text-align: center;">Technology</p>
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Title: Medupi Power Station Scope of Work for the Appointment of a Design Consultant to Perform Construction monitoring to ensure design intent is achieved during construction and Take Design Accountability for Buildings and Services	Unique Identifier: Alternative Reference Number: Area of Applicability: Documentation Type: Revision: Total Pages: Next Review Date: Disclosure Classification:	348-9912685 N/A Engineering Scope of Works 3 34 As required CONTROLLED DISCLOSURE
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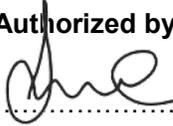

Avesh Haricharan
Civil Engineer

Date: 21/10/2021

Functional Responsibility:


Willie Beetge
Senior Civil Engineer :
Medupi Project

Date: 21/10/2021

Authorized by:


Jabulani Mkhathshwa
**Engineering Manager: Medupi
Power Station**

Date: 2021/11/05

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1. INTRODUCTION

Eskom's Medupi Power Station is a coal fire power station and a National Key Point situated near Lephalale in Limpopo Province. Medupi Power Station is located at Y: 56334.69 X: 2622791.55 WGS84.

For the operation and controlling of the power station, various structures and associated systems were required on site to support production requirements. This ranges from industrial and office buildings, tunnels and trenches and storage facilities.

The *Employer*, Eskom SOC, had entered into a professional engineering services contract with a Design *Consultant* (original appointed Designer) for Architectural and Civil and Structural Engineering works for some of the required structures and associated systems. This included design, construction monitoring, professional certification, technical assurance of construction works, and provision of end of construction documentation i.e. as built documentation and Professional Engineering Certificates (PEC's). Refer to Table 2.1 for a full list of structures and associated systems

The construction completion and construction close out documentations for some of the works designed by a previously appointed Design *Consultant* has not been complete due to various delays. Consequent to the delays, the professional engineering services contract between the *Employer* and a previously appointed Design *Consultant* has since ended, however with remaining scope still to be completed including construction monitoring and professional certification.

Therefore, construction monitoring services by suitably qualified and experienced professional engineer, design *Consultant*, is still required in general to ensure, amongst other things, construction of the works is in accordance with the approved design, issue Professional Engineering Certification and submit as-built records for all works (already constructed as well as works still to be constructed). For all structures/systems that are forming part of this scope of work, as listed in Table 2.1, the professional service provider (registered professional) has to review and if necessary make changes to the original design in order to accept full professional accountability of the indicated structures/systems.

For the construction works that are already complete, the professional service provider/s shall provide a compliance testing regime and or investigative reports by a specialist and or review existing data books to obtain technical assurance to be in a position to take over responsibility and certify the already constructed works.

All rights to drawings and documents provided by the original professional services provider and original main Contractor belong to the *Employer*. Documents may therefore be reviewed and altered if deemed necessary, only for the purpose contemplated in this SOW.

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For these works, the *Employer* has resolved to issue an open tender invitation to interested parties to provide the professional service detailed in the Scope of works.

Note: All engineering professionals shall execute their services in accordance with the ECSA Code of Conduct and professionals who will render architectural services shall execute their services in accordance with architectural profession act No. 44 of 2000.

Design *Consultants* interested to tender for the works shall:

- a. Take over design responsibility and accountability for works listed in this scope (uncertified structures) and assume the role of designer as defined in Construction Regulations. Review and where necessary make changes to the original design in order to accept full professional accountability for the design work done. The Design *Consultant* should note that construction works to the majority of the listed works are at an advanced state and should any changes to the original design deemed necessary it should occur within the limits of already constructed works. Where design and drawing changes are required the Design Change Procedure, as defined in Medupi Project Engineering Change management works instruction 200-5664 ^[38], has to be followed.
- b. Provide design assurance and design verification on existing designs and construction works. (Including an architectural design report, where required). Design assurance shall include design modification and construction monitoring within the Civil, Architectural and Structural domain, to ensure the buildings experience no ingress of surface water or other water ingress that could result in flooding of basements i.e.) Preventions of water increase to cease potential flooding. The actual construction of the modifications are not the responsibility of the *Consultant*.
- c. Provide construction monitoring of ongoing Civil and Structural works.
- d. In the case of already constructed works/parts of works that are inaccessible, negotiate, where necessary, with the original designer and obtain construction monitoring declaration certificates from the original appointed professional. These typically include geotechnical works, inaccessible concrete works and inaccessible building services that were part of the original appointed professional's scope. All available, completed and incomplete construction records (data books) will be made available. The Design *Consultant* has to, where required, make provision and include all associated costs in negotiating with original designer to obtain construction monitoring certificates where required.
- e. Carry out sufficient inspections at appropriate times of the construction work in order to ensure compliance with their design, to ensure design assumptions are valid and that work being executed in accordance with appropriate construction techniques.
- f. Provide the *Employer* with responses to queries from the construction contractor

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- g. Assists with design and construction integration with others
- h. Final site inspection on completion of the works prior to issuing a completion certificate.
- i. Review and acceptance of construction data books.
- j. Where necessary provide the construction Contractor with input and make recommendations to resolve construction defects.
- k. Provide as built documentation for various structures. (as-built drawings must comply with SANS 10400,)
- l. Issue Professional Engineering Certificates, by an ECSA registered Engineer or Technologist with relevant experience and qualifications in their specific fields of expertise.
- m. Provide onsite resources

1.1 LEGISLATIVE CONSIDERATIONS

Bidders shall ensure that their submission is prepared in consideration with all relevant National Regulations. Specific consideration shall be given to the following documents in the preparation of methodologies, selection of professional team members and registered professionals nominated to issue professional certification:

- Construction Regulations
- ECSA Code of Conduct for Registered Persons: Engineering Professions Act, 2000 (Act No. 46 of 2000)

NB: approval of construction drawings by the local council is not a requirement.

1.2 SCOPE

This document covers the scope of work for the appointment of a *Consultant* to perform professional engineering services for construction monitoring for a maximum period of 14 months, or until completion of the works, to ensure design intent is achieved, design verification and development of construction completion reports, assessing design changes and issuing of Professional Engineering Certificates for Medupi Power Station.

1.2.1 Purpose

The aim of this document is to appoint a design *Consultant* with Architectural and Civil and Structural engineering experience to accept professional responsibility for the rational civil and structural design work, ensure design intent be achieved during construction of works in progress, ensure design intent was achieved on already constructed (un-certified) structures and issuing of Professional Engineering Certificates.

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1.2.2 Applicability

This document applies to Eskom Medupi Power Station.

1.3 NORMATIVE/INFORMATIVE REFERENCES

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

1.3.1 Normative

- [1] ISO 9001 Quality Management Systems.
- [2] 84CIVL053: Medupi Power Station Specification for Structural Concrete, Rev 3
- [3] 200-24289 (Ssz_45-17), Medupi Power Station Corrosion Protection Specification
- [4] 200-6166 Eskom backfill specification
- [5] SSZ 200-207219 Medupi Power Station Safety, Health and Environmental Specification
- [6] 240-56364545, Structural Design and Engineering standard
- [7] 240-53113685, Design Review Procedure
- [8] SANS 1200, Standardised specification for civil engineering construction
- [9] National Environmental Management Act, 1998 (Act 107 of 1998)
- [10] National Environmental Management Waste Act, 2008 (Act 59 of 2008)
- [11] National Water Act, 1998 (Act 36 of 1998)
- [12] Government Notice 704, National Water Act 1998
- [13] The Environmental Conservation Act (Act No 73 of 1989);
- [14] Occupational Health and Safety Act, (Act No. 85 of 1993)
- [15] SANS 10108 – The Classification of Hazardous Locations and Selection of Equipment for Use in Such Locations
- [16] 240-56536505 - Hazardous Location Standard
- [17] 240-56364535 – Architectural Design and Green Building Compliance Manual
- [18] 240-106628253 - Standard for Welding Requirement on Eskom plant
- [19] 240-54937450 - Fire Protection & Life Safety Design Standard
- [20] 240-84418186 - Road Specification Manual
- [21] 240-85549846 - Standard for Design of Drainage and Sewerage Infrastructure
- [22] 240-57127955 - Geotechnical and Foundation Engineering Standard
- [23] SANS 10400 - All Parts National Building regulations
- [24] SANS 121 - Hot dip galvanized coatings on fabricated iron and steel articles
- [25] SANS 101003 - 2004 Noise level
- [26] SANS 0108-1974 Classification of hazardous locations

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- [27] SANS 10160-4 - Basis of structural design and actions for buildings and industrial structures Part 4: Seismic actions and general requirements for buildings
- [28] EN 1998-1 : Eurocode 8: Design of structures for earthquake resistance – Part 1:General rules, seismic actions and rules for buildings
- [29] PAM/244/001 Management of Maintenance Waste to Minimise Environmental Impact
- [30] 32-245 - Eskom Waste Management Standard
- [31] 32-421 - Eskom Life Saving Rules
- [32] 36-681 - Eskom Plant Safety Regulations
- [33] 240-86973501 - Engineering Drawing Standards
- [34] ISO 10007 Guidelines for Configuration Management
- [35] KKS Key Part – Fossil power station (NPSZ 45-45) – 200-18202
- [36] The application of KKS plant coding (NMP 45-7) – 200-4190
- [37] VGB-B 106 E Part B2-KKS Application Commentaries Part B2_Civil Engineering
- [38] 200-5664 Medupi Project Engineering Change management works instruction

1.3.2 Informative

- [39] 200-35208 - Environmental Management Plan
- [40] 200-15406 Issuing of takeover certificate
- [41] 200-53810 Documentation Handover List
- [42] 200-16817 Excavation permit
- [43] 200- 162027 Record of Decision (ROD) for the Medupi Project ref no.12/12/20/695
- [44] 200-73971 Medupi EMS Scope and Manual
- [45] 200-46362 Site Quality Assurance, Control and verification work instruction
- [46] 240-60490979 - OHS Operational Plan
- [47] 200-1679 - Project Quality Plan
- [48] 240-49230111 - Hazard and Operability Analysis (HAZOP) Guideline
- [49] 200-45965 Manufacturing Inspection & Testing Work Instruction

1.4 DEFINITIONS

1.4.1 Disclosure Classification

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

1.5 ABBREVIATIONS

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Abbreviation	Description
ACC	Air Cooled Condenser
BoP	Balance of Plant
CAD	Computer-Aided Drawing
CM	Configuration management
CPP	Condensate Polishing Plant
CSY	Coal Stock Yard
ECSA	Engineering Council of South Africa
EDWL	Engineering Design Work Lead
IT and Comms	Information Technology and Telecommunications
KKS	Kraftwerk-Kennzeichensystem
LDE	Lead Discipline Engineer
MDL	Master Document List
N/A	Not applicable
PEC	Professional Engineering Certificate
S/S	Substation
SACNASP	South African council for Natural Scientific Professionals
SANS	South African National Standards
SoW	Scope of Work
SSB	Station Services Building
U	Unit
VDSS	Vendor Documentation Submission Schedule
WS	Workshop
WTP	Water Treatment Plan

1.6 ROLES AND RESPONSIBILITIES

It is the responsibility of Medupi Power Stations Engineering department to ensure that the content of this scope document is executed accordingly.

1.7 PROCESS FOR MONITORING

The Eskom Design Review Procedure, 240-53113685 shall be the governance document used to conduct reviews of the design verification produced by the design *Consultant*.

1.8 RELATED/SUPPORTING DOCUMENTS

N/A

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2. SCOPE OF WORK

The extent of the professional engineering services encompasses the scope of work as detailed below. Full list of building tabulated in Table 2.1 below.

All structures/systems shall adhere to a 50 year design life.

Table 2.1: Structures/systems designed by a previously appointed Design Consultant

No.	Structure/System	No.	Structure/System	No.	Structure/System
1	CPP Building U6	23	Compressor House South	45	WTP Main Clarifier
2	CPP Building U5	24	WS and Stores	46	WTP Tank Farm Retaining Walls
3	CPP Building U4	25	Access Control	47	Trench 8, 9, 9A, 9B and WTP resin trench
4	CPP Building U3	26	Admin building	48	Trench 18A, 18B, 18C, 18D, 18E, 19, 19A, 19B, 20, 20A, 21
5	CPP Building U2	27	Admin Building Car Ports	49	Tunnel 23
6	CPP Building U1	28	Canteen	50	Trench 34
7	ACC S/S U6	29	Compressor House North	51	Trench 35A
8	ACC S/S U5	30	Steam Clean And Refuse	52	Trench 33, 33B, 34A, 34, 35, 37, 40
9	ACC S/S U4	31	Fire/Medical	53	Trench 38, 45A
10	ACC S/S U3	32	Tunnels and Trench 30 & 31a	54	Trench 39 and 39B
11	ACC S/S U2	33	IT and Comms	55	Trench 39A
12	ACC S/S U1	34	BoP Spare Service Transformer Plinth	56	Trench 41 & 42
13	Station Services Building	35	Ablution (Heavy Duty)	57	Tunnel 44,44a,44b,46a,46b,38b 38B
14	CSY South S/S	36	Landscaping	58	Tunnel Box - Unit 6
15	Compressor House S/S South	37	Service Transformer Units 1 to 6	59	Tunnel Box - Unit 5
16	Ash Dump S/S	38	Auxbay Unit 1	60	Tunnel Box - Unit 4
17	CSY North S/S	39	WTP S/S	61	Tunnel Box - Unit 3
18	Coal Plant S/S	40	Ammonia Tank	62	Tunnel Box - Unit 2
19	Access Control Area Services	41	WTP Tank farm Apron slab	63	Tunnel Box - Unit 1
20	Facilities S/S	42	Water Treatment Plant (including PSA and Blower Room)	64	CSY North S/S draw box
21	Admin Island Services And Roads	43	Caustic & Sulphuric Acid Tanks	65	Ash Dump Workshop
22	Compressor House S/S North	44	Chlorination Building	66	Ash Conveyor S/S

2.1 AVAILABILITY OF CONTRACTORS

- a) The construction contracts for the above structures/systems had been awarded to various Contractors,
- b) Table 2.1.1 tabulates the different construction contractors packages that exists/existed for the works

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- c) To determine which package Contractor is responsible for related system/building, refer to activity schedule

Table 2.1.1: Availability of Contractors

Package Contractor	Available /Not Available
Package 8	Available
Package 22/34b	Not Available
Package 35A	Not Available
Package 35B	Not Available
Package 35C	Not Available
Package 37	Available

2.1 GENERAL PROFESSION ENGINEERING SERVICES SCOPE INCLUDES THE FOLLOWING

2.1.1 Review and assumption of Professional Liability of existing designs:

- a) Refer to Table 2.4.1 for available design reports for structures relevant to the scope
- b) The professional service provider shall assume the role of the Designer in accordance to, Construction Regulations, Occupational Health and Safety Act, 1993, for all structures relevant to the scope of works as seen in Table 2.1 above.
- c) The *Consultant* reviews architectural, civil and structural drawings and incorporates comments received from all stakeholders during construction.
- d) Existing design documentation for all uncertified structures shall be reviewed by the Designer and changed, if necessary. The Designer shall accept professional responsibility for design work of all structures not certified. All changes must be reviewed and accepted by the *Employer*. Already constructed work shall be taken into consideration when reviewing existing design documentation.

The *Consultant* shall provide design verification for all uncertified structures.

This shall be provided in the following formats:

- A design review report
- Corrective Action report if required
- Design Acceptance Letter

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- e) Ad Hoc design changes for numerous buildings and system on site due to site integration, missing scope and field conditions, design changes are required on an ad-hoc basis. The *Consultant* is required to provide design support on all changes that affect the designs as listed in Table 2.1. These design changes relate to works that are currently under construction and to works that where construction have not commenced. The Eskom specification for Structural Concrete, 84CIVL053 ^[2] must be adhered to by the *Consultant* for civil and structural design changes.
- f) Where compliance testing of already constructed works is deemed necessary, based on section 3.2 (j) of ECSA's Rules of Conduct for Registered Persons, by the professional service provider (Designer); compliance testing shall be the responsibility of the professional service provider via any specialists or other accredited\approved bodies. The professional service provider shall arrange, perform, oversee the required compliance tests and provide the *Employer* with a report indicating its acceptance and\or recommendation for remedial works to rectify the existing works, if necessary. Compliance tests shall be allowed for as a provisional sum. Refer to section 2.2 and 2.3 for more on compliance testing.

2.1.2 Construction Monitoring

- a) The professional service provider shall provide construction monitoring on the works by providing suitably qualified and experienced, full time ECSA/ SACNASP registered professional/s or competent site engineering representative/s. The aforementioned resources are to be based at Medupi Power Station for the duration of the works or as deemed necessary and agreed between the *Consultant* and the *Employer*.
- b) Construction monitoring on the works under construction shall be in accordance to the provision of normal and additional services as per "Guideline Scope of Services and Tariff of Fees for Persons Registered in terms of the Engineering Profession Act 2000", for construction monitoring of the execution of the works. Construction monitoring includes but not limited to:
 - 1) Review each important work procedure and construction material and other technical submissions such as construction method statements, survey approvals, inspection and test plans and quality control and quality assurance plans.

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- 2) Attending site meetings and maintain adequate presence on the construction site to review samples of works and important completed work prior to enclosure or on completion as appropriate. Inspection activities during manufacturing shall be managed according to the Medupi Manufacturing Inspection and Testing Procedure ^[48], and Medupi Site Quality Assurance, Control and Verification work instruction ^[44].
- 3) Day to day quality control of the works and construction supervision is not required by the *Employer*.
- 4) Provide the construction team with technical support and interpretation of the plans and specification when required and check the construction team's civil works and structures for conformity with design requirements and specifications and ensures that design intent is achieved during construction. Technical support including resolving design related technical queries, construction material reviews and acceptance for compliance to specification, review and acceptance of as-built surveys and input into Medupi Change Management documentation including Engineering change notifications and engineering response to technical quires.
- 5) General inspection of material and equipment for compliance with the design documentation for adherence to National and International standards.
- 6) Provides the construction team with updated design documentation (drawings and specifications) where changes are required, to ensure integration with existing works and where design changes are required due to unforeseen site conditions.
- 7) Prepares and provides, on completion of the works, the *Employer* with As-Built drawings and a final (updated) design report signed by the ECSA Registered Professional Engineer.
- 8) Review incomplete construction data books, refer to section 2.3
- 9) Review and accept construction defect repair method statements, review and provide input to defect investigation reports presented by the construction Contractor and where necessary make recommendations for further testing and investigation to the Contractor to address open defects. The objective of this activity is to enable the Contractor to effectively address, investigate and repair open defects and for the *Consultant* to ensure design intent is achieved.
- 10) Certifies the works as complete and ensures that design intent was achieved during construction by issuing a completion certificate (PEC) in terms of the Construction Regulations, 2014, Occupational Health and Safety Act, 1993 and SANS 10400 when the works is deemed safe for commissioning.

2.1.3 Construction Declaration certificates

- a. The Designer shall ensure that the national regulations and 3.2 (j) of ECSA's Rules of Conduct for Registered Persons are not violated in the professional service they are providing. Therefore, in the case of already constructed works/parts of works that are inaccessible, the *Employer* shall provide all available construction records, and where necessary the Designer shall negotiate with the original appointed Designer and obtain construction monitoring declaration certificates from the original appointed designer. These typically include geotechnical works, inaccessible concrete works and inaccessible building services that were part of the original appointed professional's scope.
- b. In the case that the Designer/*Consultant* is unable to obtain construction monitoring declaration certificates from the original appointed designer, or not in a position to accept declaration certificates from the original appointed designer, the Designer/*Consultant* shall:
 1. Make recommendations to the *Employer* for further testing and investigation. The *Employer* shall review the provided recommendations. The *Employer* and *Consultant* shall reasonably negotiate an agreement on a testing and investigation regime. The testing and investigation shall then be performed by the *Consultant*, refer to section 2.2
 2. In the case where it is reasonably impractical to perform compliance testing, the *Consultant* is to provide the *Employer* with suitable risk assessment and risk mitigation measures for potential risk that may occur. The objective of this activity is once the recommended risk mitigation measures are implemented by the *Employer*, the *Employer* shall have reasonable assurance the structure is safe for use.

2.1.4 Estimated works to be complete on structures/systems

- a. Table 2.1.4 tabulates estimated outstanding works, but not exhaustive, to be done on each structure prior to the designer providing a PEC. Some structures have existing PECs, however modifications to the building have been performed, but not signed off due to the *Employer's* contract ending with the previously appointed design *Consultant*.

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Table 2.1.4: Estimated works to be complete on structures

No.	Structure	PEC No.	Highlight of Outstanding items to be resolved prior to building certification
1	ACC S/S U6	200-225901	<ol style="list-style-type: none"> 1.Design approval for roof modification to combat roof leak and modifications done by C&I Contractor (i.e. core drills in the floor Switchgear slab) requires review and approval. 2.All other discipline (HVAC, ELECTRICAL, FIRE) modifications such as P&IDs, shop drawings, pipe routing ,motor and lighting changes made require review and approval from Designer 3.As built and calculation reports require review and updating, potential door modifications/replacements may be required which will also include inspection and approval of doors that have controlled access. The door schedules will therefore require updates and approval from Designer 4.All modifications to be professionally certified to ensure building integrity is not compromised
2	ACC S/S U5	No PEC issued	<ol style="list-style-type: none"> 1.General inspection and certification of the building is required 2.Modifications by C&I Contractor will need review and approval (i.e. core drills in the floor Switchgear slab) 3. All other discipline (HVAC, ELECTRICAL,FIRE) modifications on P&IDs, shop drawings, pipe routing ,motor and lighting changes made require review and approval from Designer 4.As built and calculation reports may require review. Potential door modifications/replacements may be required which will also include inspection and approval of doors that have controlled access. The door schedules will therefore require updates and approval from Designer. 5.Databook review (Architectural, Civil & Structural and Geotechnical) 6.Final inspections to be completed by Designer, with defects to be raised, reviewed and signed off.
3	ACC S/S U4	348-9918032	<ol style="list-style-type: none"> 1. Final inspection of building to be complete 2. Modifications by C&I Contractor will need review and approval (i.e. core drills in the floor Switchgear slab) 3. All other discipline (HVAC, ELECTRICAL,FIRE) modifications on P&IDs, shop drawings, pipe routing ,motor and lighting changes made require review and approval from Designer 4. As built and calculation reports may require review. Potential door modifications/replacements may be required which will also include inspection and approval of doors that have controlled access. The door schedules will therefore require updates and approval from Designer. 5. Databook review (Architectural, Civil & Structural and Geotechnical) 6. Works related ICV chamber cores and building modifications for fire piping/sprinklers to be reviewed and approved by Designer

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**Medupi Power Station Scope of Work for the Appointment of
Design Consultant to Perform Professional Engineering
Services on Miscellaneous Infrastructures**

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4	ACC S/S U3, ACC S/S U2, ACC S/S U1,	No PEC issued	<ol style="list-style-type: none"> 1. Final inspection of the building to be complete 2. Modifications by C&I Contractor will need review and approval (i.e. core drills in the floor Switchgear slab) 3. All other discipline (HVAC, ELECTRICAL,FIRE) modifications on P&IDs, shop drawings, pipe routing ,motor and lighting changes made require review and approval from Designer 4. As built and calculation reports may require review. Potential door modifications/replacements may be required which will also include inspection and approval of doors that have controlled access. The door schedules will therefore require updates and approval from Designer. 5. Databook review (Architectural, Civil & Structural and Geotechnical) 6. Sign off and approval of Defects raised as per existing snag list 7. Floor slab cracks repairs raised via NCR/NODs to be closed out and signed off by Designer 8. Works related ICV chamber cores and building modifications for fire piping/sprinklers to be reviewed and approved by Designer
5	CPP Building U6	348-967670	<ol style="list-style-type: none"> 1. General inspection of the building to be complete 2. Modifications by C&I Contractor will need review and approval (i.e. core drills in the floor Switchgear slab) 3. All other discipline (HVAC, ELECTRICAL,FIRE) modifications on P&IDs, shop drawings, pipe routing ,motor and lighting changes made require review and approval from Designer 4. As built and calculation reports may require review. Potential door modifications/replacements may be required which will also include inspection and approval of doors that have controlled access. The door schedules will therefore require updates and approval from Designer. 5. Databook review (Architectural, Civil & Structural and Geotechnical) 6. Sign off and approval of Defects raised as per existing snag list 7. Specific floor coating and Grouting to be approved
6	CPP Building U5, U4, U3, U2, U1	No PEC issued	<ol style="list-style-type: none"> 1. Final Inspection of completed building to be complete 2. Modifications by C&I Contractor will need review and approval (i.e. core drills in the floor Switchgear slab) 3. All other discipline modifications made (HVAC, ELECTRICAL,FIRE) that require review and approval from Designer 4. As built and calculation reports require review, potential modification and approval. 5. Databook review (Architectural, Civil & Structural and Geotechnical) 6. Sign off and approval of Defects raised as per final inspection 7. Specific floor coating and Grouting to be approved and certified by Designer.
7	Station Services Building	200-225350	<ol style="list-style-type: none"> 1. Apron slabs have cracks. Contractor in the process of fixing the cracks and complete the scope of the apron slabs. RFI-BOP-252. 2. <i>Consultant</i> to review and certify crack repairs

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8	CSY South S/S, Compressor house S/S South, Ash Dump S/S, CSY North S/S, Coal Plant S/S, Compressor House S/S North, Ash Conveyor S/S	200-225685, 348-907257, 200-225457, 200-225484, 200-225683, 200-134150	<ol style="list-style-type: none"> 1. Transformer sumps outside of the building is currently being completed. Designer to conduct physical inspection of the works required as per ITN requests. 2. Data book reviews and final certification of the completed works. 3. Rehabilitation and drainage of the area to be reviewed and approved by <i>Consultant</i> 4. No existing PEC for Compressor House S/S North. 5. Preventions of water ingress to cease potential flooding
9	Access Control Area Services	No PEC issued	<ol style="list-style-type: none"> 1. Stormwater Drainage line open NOD 1004669 2. Earthworks and concrete Data book reviews for services to be complete 3. <i>Consultant</i> to issue a PEC after completing design verification
10	Facilities S/S	No PEC issued	<ol style="list-style-type: none"> 1. Concrete results are missing from data books, Concession 074 on concrete data requested from the Contractor. Designer needs to review concrete databooks and content of the concession to determine if the data books can be accepted. If works cannot be accepted, compliance testing regime to be approved and tests data to be reviewed to ensure a PEC for the works can be provided.
11	Admin Island Services And Roads	No PEC issued	<ol style="list-style-type: none"> 1. Surveys of the roads not completed and not approved. Concession 096 open, the final survey completed by the Contractor highlighted some areas not within tolerance levels compared to the design levels. Designer needs to review road works databooks and content of the concession to determine if the data books can be accepted and provide a PEC for the works. 2. Concrete results missing for edge beams concessions 079, 080, 081 and 082 open. Designer needs to review concrete databooks and content of the concession to determine if the data books can be accepted and provide a PEC for the works. 3. Other sections of the roads under construction. The Databooks will have to be reviewed for completeness and issue PEC. 4. Suspicious or fraudulent QVR were found during data book review, NOD1004979 and Concession 100 open. 5. Sewer pipeline completed and buried. Contractor did not complete all necessary tests to enable acceptance of works prior to handing the works over to the client. During databook review some of the records appeared to have fake signatures approving tests that had not been conducted. Designer needs to review sewer line databooks and content of the concession to determine if the data books can be accepted and provide a PEC for the works.
12	Compressor House South	No PEC issued	<ol style="list-style-type: none"> 1. Concrete and earthworks Data book reviews outstanding for services. 2. <i>Consultant</i> to issue a PEC after completing design verification

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13	WS and Stores Ash Dump Workshop	No PEC issued	<ol style="list-style-type: none"> 1. Sound wall not constructed; construction Contractor has been allocated but the overall PEC will have to be issued 2. Carpets to be replaced with tiles, 3. Toilets have a low water supply 4. Wall not constructed as per design concession 063 open. To be addressed. 5. <i>Consultant</i> to issue a PEC after completing design verification 6. Preventions of water ingress to cease potential flooding
14	Access Control	No PEC issued	<ol style="list-style-type: none"> 1. Concrete and earthworks data book to be reviewed and approval. 2. Potential roof leakage to be investigated 3. <i>Consultant</i> to issue a PEC after completing design verification
15	Admin building	348- 99917400	<ol style="list-style-type: none"> 1. Glare from the windows excessive, designer indicated that building not used as per design. 2. Windows were not sealed according to design; moisture enters the building when it rains. 3. Floors were damaged by others. 4. Door handles damaged by others. 5. <i>Consultant</i> to assess the issues and provide recommendation and certification of additional works.
16	Admin Building Car Ports	No PEC issued	<ol style="list-style-type: none"> 1. Refer to Admin Island Services and Roads
17	Canteen	No PEC issued	<ol style="list-style-type: none"> 1. Floors had defects and Contractor indicated that it was damaged by others 2. Ceiling had defects and Contractor indicated that it was damaged by others. C&I was working on the ceiling 3. Concrete results missing from data books, concession 073 open. Designer to review concrete databooks and content of the concession to determine if the data books can be accepted and provide a PEC for the works.
18	Compressor House North	No PEC issued	<ol style="list-style-type: none"> 1. Concrete results missing from data books, concession 072 open. Designer needs to review concrete databooks and content of the concession to determine if the data books can be accepted and provide a PEC for the works. 2. Walls were damaged by others NOD 1004786 open. The main civil Contractor gave access to other Contractors to other works this led to several holes being open and not sealed off. Racking cantilever arms pulling out of supports. The designer needs to evaluate damage and provide way forward to sign off walls as complete. 3. <i>Consultant</i> to issue a PEC after completing design verification 4. Preventions of water ingress to cease potential flooding
19	Steam Clean And Refuse	348-936001	<ol style="list-style-type: none"> 1. Gates need to be installed and works inspected and signed off
20	Fire/Medical	348-72684	<ol style="list-style-type: none"> 1. ROD modification to be accessed for completeness.

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21	Tunnels and Trench 30 & 31a	No PEC issued	<ol style="list-style-type: none"> 1. Masonry/reinforced concrete inlet structure data books to be reviewed 2. <i>Consultant</i> to issue a PEC after completing design verification
22	IT and Comms	200-224646	<ol style="list-style-type: none"> 1. Subsequent to issuing of the PEC by a previously appointed Design Consultant, modifications were required to fit battery cabinets. The designs for the modifications were completed by a previously appointed Design consultant The construction Contractor has not yet commenced execution of the modifications and 4 RFI's were raised by the by the construction Contractor. The RFIs included: <ol style="list-style-type: none"> a. Location of fences b. Extension of aprons c. Relocation of doors (including the beam-over details or lintels) and louvres d. Correction on clashes of doors with installed cable racking e. Missing drywalling details f. Floor finishes and preparations 2. Certification of the modification works is required, upon completion of works
23	BoP Spare Service Transformer Plinth	No PEC issued	<ol style="list-style-type: none"> 1. Construction of the plinth is ongoing currently 2. Review of Data books and certification of works are required. 3. <i>Consultant</i> to issue a PEC after completing design verification
24	Ablution (Heavy Duty)	No PEC issued	<ol style="list-style-type: none"> 1. Databook review and final inspection by designer. 2. Reviews completed by Contractor. Snag list for defects has been developed and must be accepted by designer. 3. Architectural modifications to be reviewed and accepted 4. <i>Consultant</i> to issue a PEC after completing design verification
25	Landscaping	No PEC issued	<ol style="list-style-type: none"> 1. Databook review, design change review, final inspection by design authority is required 2. Minor construction outstanding, paved walkways, completion of cut off drains and irrigation network, installation of final plants/trees and street furniture is incomplete by the. To be complete by the construction Contractor and certified by the <i>Consultant</i>. 3. Architectural, Civil and Structural modifications to be reviewed and accepted. 4. <i>Consultant</i> to issue a PEC after completing design verification.
26	Service Transformer Units 1 to 6	No PEC issued	<ol style="list-style-type: none"> 1. Structural Stability certificate issued by original designer 2. Unit 4 service transformer area may requires modification on steel platform to resolve clash with fire pipe Two (2) DGN files missing 3. <i>Consultant</i> to issue a PEC after completing design verification
27	Auxbay Unit 1	N/A	<ol style="list-style-type: none"> 1. Architectural drawings need to be updated to As-built status, Note: Structural design, external walls and structural certification is part of a separate contract. 2. Architectural design report to be confirmed

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			3. One (1) DGN file missing
28	WTP S/S	No PEC issued	1. The previously appointed designer had issued stability Certificate. 2. Data books to be reviewed 3. <i>Consultant</i> to issue a PEC after completing design verification
29	Ammonia Tank	No PEC issued	1. Databooks to be reviewed 2. As-built drawings to be complete 3. <i>Consultant</i> to issue a PEC after completing design verification
30	WTP Tank farm Apron slab	No PEC issued	1. The previously appointed designer had issued stability Certificate 2. Crack repairs not completed 3. <i>Consultant</i> to issue a PEC after completing design verification
31	Water Treatment Plant (including PSA and Blower Room)	348-361633	1. PEC includes the Blower Room and PSA Building. Modifications to the PSA Building are currently ongoing. The consultant is to review design and accept any rational modifications including review of PSA data books. 2. <i>Consultant</i> to issue a PEC after completing design verification
32	Caustic & Sulphuric Acid Tanks	No PEC issued	1. Structure had been re-constructed according to latest approved construction drawings, however completed after originally appointed <i>Consultant</i> contract ended. 2. <i>Consultant</i> to review data books 3. <i>Consultant</i> to issue a PEC after completing design verification
33	Chlorination Building	No PEC issued	1. Data books to be reviewed 2. <i>Consultant</i> to issue a PEC after completing design verification 3. As-built drawings to be completed
34	WTP Main Clarifier	348-9919350	1. The certification of the defective repair has not be complete. 2. <i>Consultant</i> to issue an updated PEC after completing design verification.
35	WTP Tank Farm Retaining Walls	No PEC issued	1. Concrete databooks to be reviewed and approved. 2. <i>Consultant</i> to issue a PEC after completing design verification
36	Tunnel Box - Unit 6, 2, 1, Tunnel 23, CSY North S/S draw box, Trench 8, 9, 9A, 9B, 39, 39A and 39B, WTP resin trench	No PEC issued	1. Databooks to be reviewed. 2. <i>Consultant</i> to issue a PEC after completing design verification 3. As-built drawings to be completed 4. Tunnel boxes for Unit 1 still to be built
37	Trench 18A, 18B, 18C, 18D, 18E, 19, 19A, 19B, 20, 20A, 21, 34, 35A, 33, 33B, 34A, 34 ,	No PEC issued	1. <i>Consultant</i> to review and accept Data books 2. <i>Consultant</i> to issue a PEC after completing design verification 3. As-built drawings to be completed 4. Tunnel box for Unit 4 still to be built

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35, 37, 40, 38, 45A, 41 & 42 Tunnel 44,44a,44b,46a,4 6b,38b 38B Tunnel Box - Unit 5, 4, 3		
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2.2 FINAL ENGINEERING CERTIFICATION AND ADDITIONAL COMPLIANCE TESTING REQUIRED FOR CERTIFICATION

- a) In accordance to ECSA code of conduct clause 3.2(j) registered person must ensure that any work approved or certified by them, has been reviewed or inspected to the extent necessary to confirm the correctness of the approval or certification.
- b) Where no PEC's exist, the *Consultant* shall provide a PEC by performing due diligence compliance checks on the works or available data.
- c) For already constructed structures and elements of structures, the *Consultant* shall be responsible for performing any compliance testing (non-destructive and destructive tests (concrete coring)) and or providing investigative reports by a specialist which may be required to ensure construction work was done in accordance with the design. The Consultant's compliance testing regime must be provided to the Employer for acceptance prior to execution.
- d) The *Consultant* shall also be responsible to ensure that design intent is achieved during the reinstatement of the works to its original state after destructive testing. The *Consultant* shall provide the *Employer* with a specification and repair methodology for review and acceptance. Once the Employer has provided the aforementioned acceptance, the *Consultant* shall make good any destructive testing performed and provide a PEC.
- e) A provisional sum for compliance testing shall be provided by the Consultant

2.3 DATA BOOKS

- a. The Designer shall progressively review and approve data books for already constructed works and new construction works. All data books are to be reviewed on Medupi site as indicated by the *Employer*.
- b. *The Consultant* professional Geotechnical Engineer or professional Engineering Geologist be part of the Contractor's working group to address historic missing geotechnical data. The Geotechnical engineer/geologist shall provide technical assurance on all compliance testing that

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may be required to address historic missing geotechnical data, and to review and approve all geotechnical data books.

- c. Table 2.4.1 tabulates the number of existing Quality control data booked for already constructed works. These books are to be reviewed and approved by the *Consultant*.
- Each type of data book is at varying level of completeness (refer to table 2.4.1 for data book completion). Where information is missing in data books, available Construction Contractor shall provide alternative testing regime, which must be discussed with the Designer. The objective of this activity is to ensure the Contractor is able to closeout outstanding data book items and obtain the necessary data book approval from the *Consultant*.
 - The Designer shall review the proposed testing regime for alternative testing and provide acceptance of such testing. All data obtained from the testing must be reviewed by the Designer to ensure that the works are in accordance to project specifications and or be in a position to deem a structure fit for purpose whilst not compromising structural integrity and durability.
- d. A electronic data base of Quality Assurance records such as-
- Concrete Mix Designs,
 - Concrete Material Testing as per document no. 84CIVL053^[2],
 - Concrete Reinforcement,
 - Method Statements,
 - Technical enquires on design ,
 - Non-conformance records,
 - Notice of defects and process controls corrective actions reports,

will be made available to the *Consultant* on request for review. Where information cannot be made available, the Construction Contractor shall provide alternative testing regime, which must be discussed with the *Consultant*. The *Consultant* shall review the proposed testing regime for alternative testing and provide acceptance of such testing. All data obtained from the testing must be reviewed by the *Consultant* to ensure that the works are in accordance to project specifications and or be in a position to deem a structure fit for purpose whilst not compromising structural integrity and durability.

- e. For works where the construction Contractor is not available to provide missing documents, the *Consultant* is to propose testing regime for alternative testing to the *Employer* for acceptance. Once the testing regime is accepted by the *Employer*, the *Consultant* is to execute the testing. All data obtained from the testing must be reviewed by the *Consultant* to ensure that the works are

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in accordance to project specifications and or be in a position to deem a structure fit for purpose whilst not compromising structural integrity and durability. The cost of the testing must be provided as a provisional sum. For the reinstatement of any destructive testing refer to section 2.2 d.

- f. Consultant to provide monthly progress reports on data book reviews.

2.4 AS BUILTS, GENERAL ARRANGEMENT DRAWINGS AND NATIVE FILES

- a. The *Consultant* is required to complete all as built Architectural and Civil & Structural drawings Available DGN drawings file format will be provided to the *Consultant* at tender award stage. The *Consultant* shall review DGN files and request any missing information from the *Employer*.
- b. Full set of issued for construction drawing will be issued to the *Consultant* at tender award stage. The *Consultant* shall review issued for construction drawing and request any missing information from the *Employer*.
- c. Architectural design As-built to be done by a professionally registered Architect or Senior Architectural Technologist only, the professional person shall confirm the design complies with all parts of SANS 10400.
- d. The *Consultant* shall note that native format computer models for design and analysis (Prokon files) works are not available to the Designer.
- e. Table 2.4.1 below tabulates information for each structure/system

Table 2.4.1 Information for each structure/system

Item No.	Structure	% Construction Complete	% Data book Complete & reviewed	No. of existing QC data files	As built drawings to be produced by Consultant (Civil & Structural)	As built drawings to be produced by Consultant (Architectural)	Total Drawing count	Geo-tech Declaration required from Consultant	GA drawing No.	Design report No.
1	CPP Building U6	100	100	13	62	15	77	No	0.84/952 sheet 6,7,8	200-81532
2	CPP Building U5	100	100	13	59	11	70	Yes	0.84/26067 sheet 5,6,7,8	200-81528
3	CPP Building U4	100	0	26	59	11	70	Yes	0.84/25921 sheet 5,6,7,8	200-81524

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4	CPP Building U3	100	0	26	59	11	70	Yes	0.84/25922 sheet 5,6,7,8	200-81521
5	CPP Building U2	100	0	26	59	11	70	Yes	0.84/25923 sheet 5,6,7,8	200-81518
6	CPP Building U1	100	0	26	59	11	70	Yes	0.84/25924 sheet 6,7,8	200-81515
7	ACC S/S U6	100	100	12	29	10	39	No	0.84/3577 sheet 5,6	200-81629
8	ACC S/S U5	100	0	15	28	11	39	Yes	0.84/8607 sheet 7,8	200-81626
9	ACC S/S U4	100	0	20	27	11	38	Yes	0.84/8607 sheet 7,8	200-81623
10	ACC S/S U3	95	0	24	27	11	38	Yes	0.84/8607 sheet 7,8	200-81623
11	ACC S/S U2	95	0	20	27	11	38	Yes	0.84/8607 sheet 7,8	200-81617
12	ACC S/S U1	95	0	24	27	8	35	Yes	0.84/8824 sheet 7,8	200-81614
13	Station Services Building	100	100		0	0	181	Yes	0.84/2596 sheet 1	200-81562 200-81563 200-81564
14	CSY South S/S	100	100		1	0	28	Yes	0.84/7233 sheet 2	200-81594
15	Compressor House S/S South	100	100		1	0	26	Yes	0.84/19038 sheet 2	200-81582
16	Ash Dump S/S	100	100	1	1	0	29	Yes	0.84/23383 sheet 2	200-81635
17	CSY North S/S	100	99	1	0	0	27	Yes	0.84/7232 sheet 2	200-81591
18	Coal Plant S/S	100	99	1	1	0	28	Yes	0.84/19297 sheet 2	200-81588
19	Access Control Area Services	100	50	3	0	0	6	Yes	0.84/7250 sheet 1	None
20	Facilities S/S	100	50	3	0	0	22	Yes	0.84/20340 sheet 1	200-81602
21	Admin Island Services And Roads	80	85	2	1	0	3	No	0.84/ 7247 sheet 1 0.84/ 7245 sheet 1	None
22	Compressor House S/S North	100	91	1	19	9	28	Yes	0.84/19038 sheet 2	200-81579
23	Compressor House South	100	94	1	0	0	25	Yes	0.84/20088 sheet 5	200-81538
24	WS and Stores	90	91	2	2	3	231	Yes	0.84/894 sheet 15	200-81570
25	Access Control	100	99	3	0	0	105	Yes	0.84/7164 sheet 1	200-81535
26	Admin building	100	74	4	0	0	256	Yes	0.84/7199 sheet 1	200-81535
27	Admin Building Car Ports	100	85	9	0	0	17	No	0.84/7151 sheet 2	200-81674
28	Canteen	90	62	3	0	0	150	Yes	0.84/7108 sheet 1,2	200-81550
29	Compressor House North	100	48	3	29	6	35	Yes	0.84/36765 sheet 23	200-81541
30	Steam Clean And Refuse	95	95	1	0	2	10	Yes	0.84/651 sheet 1	N/A
31	Fire/Medical	100	74	2	0	0	57	Yes	0.84/51082 sheet 1	200-81547
32	Tunnels and Trench 30 & 31a	100	99	7	0		20	No	0.84/36339	200-81670
33	IT and Comms	100	100	1	29	7	36	No	0.84/670 sheet 2, Rev01	200-81559
34	BoP Spare Service Transformer Plinth	80	70	1	5	0	5	Yes	0.84/58913 sheet 1	200-81559
35	Ablution (Heavy Duty)	95	90	1	5	5	10	Yes	0.84/46142 sheet 2	None
36	Landscaping	80	70	13	25	18	43	Yes	0.84/43908 sheet 1 0.84/46143 sheet 1 - 5	200-173130

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37	Service Transformer Units 1 to 6	95	70	12	10	2	12	Yes	0.84/16984 sheet 7 0.84/41670 sheet 1	200-81669
38	Auxbay Unit 1	60	0	8		45	45	N/A	0.84/15222, 0.84/15223, 0.84/15224	None
39	WTP S/S	100	83	10	0	0	40	No	0.84/3367 sheet 1 0.84/915 sheet 5	200-81608
40	Ammonia Tank	100	65	6	0	0	8	No	0.84/12931 sheet 1	200-81508
41	WTP Tank farm Apron slab	100	100	2	29	33	62	No	0.84/16595 sheet 4	200-81655
42	Water Treatment Plant (including PSA and Blower Room)	100	79	10	82	1	96	No	0.84/3368 sheet 2,9 0.84/915 sheet 5	200-81567
43	Caustic & Sulphuric Acid Tanks	100	0	6	9	0	11	No	0.84/12925 sheet 1	200-81508
44	Chlorination Building	80	63	6	4	0	7	No	0.84/915 sheet 18	200-81510
45	WTP Main Clarifier	100	100	3	12	0	12	No	0.84/19059 sheet 1	200-81511
46	WTP Tank Farm Retaining Walls	100	58	3	0	0	0	No	0.84/16595 sheet 2	200-81509
47	Trench 8, 9, 9A, 9B and WTP resin trench	100	0	2	14		14	Yes	0.84/36339	200-81670
48	Trench 18A, 18B, 18C, 18D, 18E, 19, 19A, 19B, 20, 20A, 21	100	0	2	0		73	Yes	0.84/36339	200-81670
49	Tunnel 23	100	90	1	18		18	Yes	0.84/26725	200-81670
50	Trench 34	100	23	3	0		9	Yes	0.84/36339	200-81670
51	Trench 35A	100	33	3	0		5	Yes	0.84/36339	200-81670
52	Trench 33, 33B, 34A, 34, 35, 37, 40	100	33	3	0		41	Yes	0.84/36339	200-81670
53	Trench 38, 45A	100	23	3	34		34	Yes	0.84/36339	200-81670
54	Trench 39 and 39B	100	50	1	22		22	Yes	0.84/36339	200-81670
55	Trench 39A	100	50	3	1		1	Yes	0.84/36339	200-81670
56	Trench 41 & 42	100	28	3	0		12	Yes	0.84/36339	200-81670
57	Tunnel 44, 44a, 44b, 46a, 46b, 38b 38B	100	23	3	0		27	Yes	0.84/36339	200-81670
58	Tunnel Box - Unit 6	100	0	2	6		6	Yes	0.84/36339	200-81670
59	Tunnel Box - Unit 5	100	0	2	0		6	Yes	0.84/36339	200-81670
60	Tunnel Box - Unit 4	0	0	2	0		6	Yes	0.84/36339	200-81670
61	Tunnel Box - Unit 3	100	0	2	0		6	Yes	0.84/36339	200-81670
62	Tunnel Box - Unit 2	100	0	2	7		7	Yes	0.84/36339	200-81670
63	Tunnel Box - Unit 1	0	0	2	7		7	Yes	0.84/36339	200-81670
64	CSY North S/S draw box	100	0	2	2		2	Yes	0.84/36339	200-81670
65	Ash Dump Workshop	100	91	4	0	0	39	No	0.84/7142-S01	200-223085
66	Ash Conveyor S/S	100	100	7	0	0	26	Yes	0.84/7238-S02	200-134150
Total				426	898	263	2686			

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NB: Shaded blocks indicates information N/A.

- f. Available design reports will be provided to the *Consultant* at tender award stage.

2.4.1 HVAC drawings applicable for listed buildings

HVAC drawings to be submitted to the tenderer at tender award stage. These drawings primarily provides HVAC loading information to the designer. The designer shall take into consideration when performing any design verification for the structure.

Table 2.4.1.1: List of HVAC drawings

No.	Structure/System Name	HVAC Layout Drawing
1	Chlorination Building	0.84/46313
2	Facilities S/S	0.84/40587
3	Compressor House S/S North	0.84/36765
4	Compressor House South	0.84/36764
5	Workshop and Stores	0.84/36770
6	Access Control	0.84/36785
7	Admin building	0.84/41655
8	Canteen	0.84/39080
9	Compressor House North	0.84/39374
10	ACC S/S U5	0.84/38257
11	ACC S/S U1	0.84/42907
12	ACC S/S U2	0.84/38371
13	ACC S/S U3	0.84/35184
14	CPP Building U5	0.84/37819
15	CPP Building U4	0.84/39370
16	CPP Building U3	0.84/39428
17	CPP Building U1	0.84/37060
18	CPP Building U2	0.84/43042

2.5 CODES & STANDARDS

- a. *Works* shall be done in accordance with prescribed Eskom standards, applicable codes of practice, specifications and regulations. All works shall also be conducted in terms of the OHS Act, Eskom Medupi Project Specific Safety Plan.

2.6 CONFIGURATION MANAGEMENT

2.6.1 Configuration management (CM) plan

The *Consultant* shall prepare a CM plan utilizing ISO 10007 as a reference guide for the scope of work. The CM plan shall include the following:

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The process of managing documentation for the project works will be supported by the following:

- a) A complete and comprehensive description of the Contractor’s document numbering conventions and revision schema;
- b) A description of the electronic data management system(s) that the *Consultant* will use for the management of documents and/or configuration items;
- c) A description of the configuration management activities which will be undertaken by the *Consultant* as well as a rough time-scale thereof;
- d) A description of the baselines that will be established and the content of these baselines;
- e) The release procedure for product configuration information;
- f) The procedure for the control of changes prior to the establishment of baselines as well as after;
- g) The method for processing changes, emanating both internally and from sub-suppliers;
- h) The method for collecting, recording, processing and maintaining the data necessary for producing configuration status accounting records;
- i) The definition of the content and format for all configuration status accounting reports;
- j) A list of audits which will be conducted to ensure adherence to the CM plan.

2.6.2 Kraftwerk-Kennzeichensystem (KKS) codification standard

If required, The *Consultant* shall use KKS codification standard as a reference guide for systems, sub-systems and components identification on the drawings and plant. The following are the guidelines and standards that are used for plant coding and can be consulted by the Consultant:

- a) KKS Key Part-Fossil Power Station (NPSZ 45-45)-200-18202 ^[35]
- b) The application of KKS plant coding (NMP 45-7)-200-4190 ^[36]
- c) VGB-B 106 E Part B2-KKS Application Commentaries Part B2_Civil Engineering ^[37]

Table 2.6.2: Eskom Configuration Management Codes and Standards

Code	Description
240-58552870	Smart Plant for Owner Operators (SPO) Documentation Metadata Standard
240-71432150	Plant Labelling Standard
240-93576498	KKS Coding Standard
240-109607332	Eskom Plant Labelling Abbreviation Standard

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2.7 DOCUMENTATION MANAGEMENT

To maintain proper management of documentation on the Medupi Project, the *Consultant* is required to adhere to the requirements stated below.

2.7.1 Project communication

- a. Generic proxy email accounts:

This refers to a non-personalised email account shared amongst authorised users. All project correspondences must copy the project proxy account(s) to avoid the dependency on individual's availability and to ensure business continuation. The subject of the email shall as minimum contain contract number and transmittal number.

- b. Large file transfer portal:

Documentation submission of file size which is not transferable through email, may be transferred via the Eskom large file transfer portal. Details to be requested at tender award stage.

2.7.2 Documentation Transmission

- a. All documentation shall be submitted with a transmittal containing the submitter details and signature of sender; the recipient must sign and send back the transmittal to the sender, to confirm receipts, within 14 working days. The vendor shall receive the transmittal template from the *Employer* or align their template to that of the *Employer*.

- b. Walk in hand delivery must be managed as follows:

- Submission of large number of arch files exceeding a quantity of three (3) files must be packaged in an archive box for submission to Eskom.
- Every hardcopy submission shall be accompanied by an electronic version loaded on a labeled CD. The content in the CD must be an exact copy of the content on hard copy
- Labeling on both Arch file and CD must contain as minimum KKS code, Unit and contract number.

2.7.3 Reporting

- a. Exchange of documentation between the *Consultant* and Eskom must be tracked for progress and completeness as per the following tools.

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2.7.4 Vendor Documentation Submission Schedule (VDSS):

- a. The *Consultant* is required to compile and maintain a documentation submission schedule of all required project documentation, which details when the documentation shall be submitted to Eskom. The *Consultant* must submit a template of the VDSS to Eskom, for review and approval.
- b. The *Consultant* must submit a preliminary VDSS within 30 calendar days of contract award.
- c. The *Consultant* must ensure that the updated VDSS is communicated to Eskom at least once a month for review.

2.7.5 Master Documentation List (MDL):

- a. The Vendor shall maintain the MDL that reflects all submitted documentation; the MDL must be in line with the VDSS.
- b. The *Consultant* must submit the updated MDL once a month for review, to reflect all submitted documentation at that point in time.

2.7.6 Documentation Format and layout

The vendor must ensure that the documentation has as minimum the following Attributes:

- a. Documentation Unique identification number
- b. Eskom Drawings must have the Eskom Drawing number before the Vendor submits to Eskom. The Vendor may request pre-allocation of Eskom Drawing numbers, if required.
- c. Documentation Revision
- d. Documentation Title or Description
- e. KKS code

2.7.7 Documentation Management Governance

The *Consultant* shall manage the documentation in line with the Eskom Documentation Management governance listed below (Including all reference documents that form part of the governance) after the contract is awarded.

- a. 348-883860: Medupi Format and Layout Specification
- b. 348-883808: Medupi Document and Records Management Procedure
- c. 240-86973501: Engineering Drawing Standard
- d. 36-943: Engineering Drawing Office and Engineering Documentation Standard
- e. 240-53114186: Eskom Project/Plant Specific Technical Document and Records Management Procedure
- f. 240-83561037: Reporting and Data Requirements Specification for Contractors.

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- g. 348-942820: Transmittal Template
- h. 200-1689: Contractor Quality Requirements

These documents to be submitted at tender award stage.

2.8 CONSULTANT'S DELIVERABLES

The *Consultant* is required to submit to Eskom Engineering a detailed design verification report complete with raw data and calculations and as-built drawings, providing, but not limited to, the following information:

1. Design review and verification:
 - a. Reports
 - b. Corrective Action report if required
 - c. Design Acceptance Letter
2. Storm water management systems:
 - a. Storm water and sewerage reticulation section in each system/structure's design verification report
 - b. Redesign storm water drains/pipeline if required (design report)
 - c. CAD drawings for storm water management
 - d. Remedial work drawings
 - e. As-built drawings for storm water drainage and sewerage pipelines
3. Handover Completion Package of Structures:
 - a. Construction Completion Reports
 - b. Corrective Action report if required
 - c. Native drawings (CAD, dgn format, etc.)
 - d. As-built drawings
 - e. MDL including drawing registers

In addition,

4. Professional Engineering Certification of the Medupi Power Station buildings and infrastructures as per scope of works.
5. Monthly progress report on overall progress of the *Consultant's* scope of works
6. Data book acceptance letter to the Employer and the Contractor, authorized by the Designer
7. *Consultant* provision of resource(s) to the *Employer*:

The *Consultant* shall cost for the provision of one civil and structural draughts person to the *Employer* for a maximum duration of one thousand (1000) man hours for the duration of the contract. The draughts person shall be available on site on an ad hoc basis as requested by the *Employer* and agreed by the *Consultant*. The draughts person will be tasked to perform updates on existing

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drawings on behalf of the *Employer*. These drawing had been submitted by the original appointed *Consultant* for buildings/systems that are not listed in this scope of works..

8. *The Consultant* grants to the *Employer* an irrevocable, nonexclusive, royalty-free licence to any intellectual property to the extent necessary for the operation, maintenance, completion, repair or alteration to any works certified or that of the third party.

2.9 EMPLOYER'S DELIVERABLES

- a. Fully functional office space at Medupi Power Station Project Engineering offices for the professional registered Engineer providing construction monitoring (excluding laptop).

2.10 SKILLS TRANSFER

- a. The *Consultant* is required to provide skills transfer for two Civil Engineers from the *Employer's* team. The *Consultant* makes available the design tools, and office space as required to include the *Employer's* engineers in the design verification process. The *Consultant's* senior design engineer is required to provide supervision and guidance to the *Employer's* engineers for the duration of the design verification stage. The logistical aspects will be confirmed after appointment.
- b. The design Engineer will be responsible to assist the Eskom civil engineer 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.

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3. RESPONSIBILITY MATRIX

Table 3.1 below defines the responsibility of the critical items of the SoW. The *Consultant* is to read the table in conjunction with the scope document.

Table 3.1: Responsibility Matrix

No.	Activity	Responsibility		
		Consultant	Employer	Contractor
1	Provide all available historic data		x	
2	Compliance testing for missing data book items, including repair of destructive testing - Contractor is available.			x
3	Construction Declaration certificates from originally appointed Consultant as defined in the scope of work refer to section 2.1.3	x		
4	Compliance testing for missing data book items, including repair of destructive testing - Contractor is not available.	x		
5	Additional Compliance testing required by <i>Consultant</i> to certify the works for building/system, including repair of destructive testing - Contractor is available	x		
6	Additional Compliance testing required by <i>Consultant</i> to certify the works for building/system, including repair of destructive testing - Contractor is not available	x		
7	Construction Monitoring of works	x		
8	Technical support to the Employer for items applicable to the scope of works	x		
9	Design verification and Handover Completion Package of Structures	x		
10	Construction defects corrective action methodology and implementation of corrective action – Contractor is available			x
11	Construction defects corrective action methodology Contractor is not available	x		
12	Implementation of corrective action for construction defects - Contractor is not available		x	
13	Outstanding construction works		x	x
14	As built drawings	x		
16	Configuration management	x		
17	Documentation Control	x		
18	PEC/Risk assessment with risk mitigations	x		
19	Risk assessment mitigation implementation		x	
20	Review and acceptance of Consultants deliverables		x	

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21	Provision of Civil & Structural draughts person to the Employers (ad-hoc)	x		
22	Provision of office space at Medupi Power Station Project Engineering offices		x	
23	Skill Transfer	x		

4. DRAWINGS SUBMISSION BY THE *EMPLOYER* AT TENDER STAGE

All GA drawings listed in Table 2.4.1

5. NORMATIVE DOCUMENT SUBMISSION BY THE *EMPLOYER* AT TENDER STAGE

Table 5.1: Document submission at tender stage

Document No.	Document Title
84CIVL053	Medupi Power Station Specification for Structural Concrete
200-6166	Eskom backfill specification
240-53113685	Design Review Procedure
240-56364545	Structural Design and Engineering standard
200-5664	Medupi Project Engineering Change management works instruction

All other normative reference will be submitted at tender award.

6. AUTHORISATION FOR REVISION 3

This document has been seen and accepted by:

Table 6.1: Authorisation list

Name & Surname	Designation
Avesh Haricharan	Medupi Project: Civil Engineer
Dhiren Narsai	Medupi Project: Civil Engineer
Elvis Modise	Medupi Project: <i>Employer's</i> Representative
Jabulani Mkhathshwa	Engineering Manager: Medupi Power Station
Justin Padiachy	Medupi Project: Civil Engineer
Mandla Patric Nkosi	Medupi Project: Configuration Manager
Marius van Niekerk	Medupi Project: Civil Engineer
Prenolan Gangan	Medupi Project: Low Pressure Services Engineer

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Name & Surname	Designation
Rene Thijs	Medupi Project: Civil Engineer
Rofhiwa Nemutandani	Medupi Project: Engineering Manager
Sibonelo Sibiya	Medupi Project: Architect
Tau Chokoe	Medupi Project: Civil Lead Discipline Engineer
Thelma Madzhiga	Medupi Project: Documentation Control Manager
Thomas Chambale	Medupi Project: Civil Engineer

7. REVISIONS

Table 7.1: Revision Table

Date	Rev.	Compiler	Remarks
February 2018	0.1	TP Sathekge	Draft version for review by Engineering Team
February 2018	0.0	TP Sathekge	Approved Scope of Work
September 2019	0.2	TP Sathekge	Removal HVAC scope
September 2020	1	Avesh Haricharan	Medupi Power Station ownership
March 2021	2	Avesh Haricharan	Revised to accommodate the termination of the main civil Contractor's Contract.
October 2021	3	Avesh Haricharan	<ol style="list-style-type: none"> 1. Revised to accommodate the reinstatement of the P08. 2. Building numbered 65 & 66 added (water ingress in building prevention). 3. Change of responsibility of repairs to destructive test. <i>Consultant</i> is now responsible to perform the repairs. 4. Contract period changed from 24 months to 14 months 5. Inclusion of skill development section 6. Inclusion of Responsibility matrix 7. Removal or CESA clause

8. DEVELOPMENT TEAM

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

- Avesh Haricharan
- Dhiren Narsai

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- Justin Padiachy
- Marius Van Niekerk
- Sikhulile Tshabalala
- Thomas Chambale
- Willie Beetge
- Thelma Madzhiga
- Mandla Patric Nkosi
- Sibonelo Sibiya
- Prenolan Gangan

9. ACKNOWLEDGEMENTS REVISION 3

- N/A

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