



NEC3 Engineering & Construction Contract

Between **ESKOM HOLDINGS SOC Ltd**
(Reg No. 2002/015527/30)

and **[Insert at award stage]**
(Reg No. _____)

for **Replacement of oil filled RMU Switchgear**

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CONTRACT No.

Part C1: Agreements & Contract Data

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PART 2: PRICING DATA

ECC3 Option B

Document reference	Title	No of pages
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C2.1 Pricing assumptions: Option B

1. How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract (ECC3) Option B states:

Identified and defined terms	11	
	11.2	(21) The Bill of Quantities is the <i>bill of quantities</i> as changed in accordance with this contract to accommodate implemented compensation events and for accepted quotations for acceleration.
		(28) The Price for Work Done to Date is the total of <ul style="list-style-type: none">• the quantity of the work which the <i>Contractor</i> has completed for each item in the Bill of Quantities multiplied by the rate and• a proportion of each lump sum which is the proportion of the work covered by the item which the <i>Contractor</i> has completed. Completed work is work without Defects which would either delay or be covered by immediately following work.
		(31) The Prices are the lump sums and the amounts obtained by multiplying the rates by the quantities for the items in the Bill of Quantities.

This confirms that Option B is a re-measurement contract and the bill comprises only items measured using quantities and rates or stated as lump sums. Value related items are not used. Time related items are items measured using rates where the rate is a unit of time.

2. Function of the Bill of Quantities

Clause 55.1 in Option B states, "Information in the Bill of Quantities is not Works Information or Site Information". This confirms that specifications and descriptions of the work or any constraints on how it is to be done are not included in the Bill, but in the Works Information. This is further confirmed by Clause 20.1 which states, "The *Contractor* Provides the Works in accordance with the Works Information". Hence the *Contractor* does **not** Provide the Works in accordance with the Bill of Quantities. The Bill of Quantities is only a pricing document.

3. Guidance before pricing and measuring

Employers preparing tenders or contract documents, and tendering contractors are advised to consult the sections dealing with the bill of quantities in the NEC3 Engineering and Construction Contract Guidance Notes before preparing the *bill of quantities* or before entering rates and lump sums into the *bill*.

There is no general provision in Option B for payment for materials on Site before incorporation into the *works*. If secondary Option X14 Advanced payment has not been used then the tendering contractor may obtain the same effect by inserting appropriate items in the method related charges where the *method of measurement* allows, or alternatively making allowance in the rates of the *bill of quantities* for the financing of Plant and Materials until they are incorporated in the *works*.

When compensation events arise, the default position is that the Bill of Quantities is not used to calculate the cost effect of the event. Defined Cost and the resulting Fee is used and Defined Cost includes all components of cost which the *Contractor* is likely to incur, including so called P & G items. Rates and lump sums from the Bill of Quantities, or from any other source, may be used instead of Defined Cost and the Fee only if the *Contractor* and *Project Manager* agree. If they are unable to agree, then Defined Cost

plus Fee is used.

4. Measurement and payment

4.1. Symbols

The units of measurement described in the Bill of Quantities are metric units abbreviated as follows:

Abbreviation	Unit
%	percent
h	hour
ha	hectare
kg	kilogram
kl	kilolitre
km	kilometre
km-pass	kilometre-pass
kPa	kilopascal
kW	kilowatt
l	litre
m	metre
mm	millimetre
m ²	square metre
m ² -pass	square metre pass
m ³	cubic metre
m ³ -km	cubic metre-kilometre
MN	meganewton
MN.m	meganewton-metre
MPa	megapascal
No.	number
sum	Lump sum
t	tonne (1000kg)

4.2. General assumptions

- 4.2.1. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance has been made in the quantities for waste.
- 4.2.2. The Prices and rates stated for each item in the Bill of Quantities shall be treated as being fully inclusive of all work, risks, liabilities, obligations, overheads, profit and everything necessary as incurred or required by the *Contractor* in carrying out or providing that item.
- 4.2.3. An item against which no Price is entered will be treated as covered by other Prices or rates in the *bill of quantities*.
- 4.2.4. The quantities contained in the Bill of Quantities may not be final and do not necessarily represent the actual amount of work to be done. The quantities of work assessed and certified for payment by the *Project Manager* at each assessment date will be used for determining payments due.
- 4.2.5. The short descriptions of the items of payment given in the *bill of quantities* are only for the purposes of identifying the items. Detail regarding the extent of the work entailed under each item is provided in the Works Information.

4.3. Departures from the *method of measurement*

4.3.1.

4.4. Amplification of or assumptions about measurement items

The following is provided to assist in the interpretation of descriptions given in the *method of measurement*. In the event of any ambiguity or inconsistency between the statements in the *method of measurement* and this section, the interpretation given in this section shall be used.

4.4.1.

C2.2 the *bill of quantities*

Use this page as a summary page or as a cover page to the *bill of quantities*.

Item description	Unit	Rate	Cost	Total cost
CIVIL WORKS				
<u>Section A</u>				
<u>Preliminary & General</u>				
Site Establishment	Product	1,00		
Health and Safety	Product	1,00		
Accommodation	Months	2,00		
Transport	Months	2,00		
Site De-Establishment	Product	1,00		
Sub-Total (Excl. VAT)				
<u>Section B</u>				
<u>External Works</u>				
<u>DESIGN</u>				
Provide design, signed and approved by the Engineer	Item	1,00		
<u>GEO-TECHNICAL INVESTIGATION</u>				
Conduct required surveys and submit reports - As per works information	Item	1,00		
<u>EXISTING SERVICES</u>				
Conduct cable detention	Item	1,00		
<u>DRAWINGS</u>				
Submit As - Built	Item	1,00		

<u>THE FOLLOWING IN CONCRETE PLINTHS SUPPORTS</u>				
-				
<u>EARTHWORKS:</u>				
-				
<u>SITE CLEARANCE ETC</u>				
-				
<u>Clearsite:</u>				
-				
Clearsite of all material	m ²	52,00		
Stripping average 500mm thick layer of top soil and depositing material in prescribed stock piles on site	m ³	21,00		
<u>Excavate in all materials and use for backfill or cartaway exceeding 0m and not exceeding 2m deep:</u>				
-				
Bases	m ³	26,00		
<u>Extra over for:</u>				
Intermediate excavation	m ³	2,64		
Hard rock excavation	m ³	2,64		
<u>Backfilling with material from excavation/sourced material (G5), including compacting to 95% MOD and testing:</u>				
Bases	m ³	45,00		
<u>Compaction of surfaces</u>				
Compaction of ground surface under slabs etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 90% Mod AASHTO density	m ²	45,00		
<u>Prescribed density tests on filling</u>				
Modified AASHTO Density test	No	4,00		

<u>Keep Excavations free from water</u>				
Keeping excavations free of water other than subterranean water	Item	1,00		
<u>SOIL POISONING</u>				
-				
Weedkiller (active ingredients metalaclor 102,8 g/l, terbitilasien 248,6 g/l and atrasiem 248,6 g/l) mixed in the proportion of 100 ml weedkiller to 100 l water and applied at a rate of 10 l/m ²				
Under slabs, etc	m ²	45,00		
<u>CONCRETE, FORMWORK AND REINFORCEMENT:</u>				
<u>Grade 10Mpa/19mm:</u>				
50mm Blinding layer	m ³	3,00		
<u>35MPa/19mm:</u>				
Bases	m ³	45,00		
<u>TEST BLOCKS</u>				
<u>Test blocks:</u>				
Making and testing set of three 150 x 150 x 150mm concrete strength test cubes (Provisional).	Sets	4,00		
<u>FINISHING TOP SURFACE OF CONCRETE</u>				
<u>Finishing top surfaces of concrete smooth with a steel float:</u>				
On the sides of the slab	m ²	64,00		
On top of the slab	m ²	45,00		
<u>SMOOTH FORMWORK</u>				
-				
<u>Smooth Formwork to sides and soffits:</u>				
-				

Slab	m ²	45,00		
-				
<u>MOVEMENT JOINTS, ETC</u>				
-				
<u>Saw cut joints between vertical concrete surfaces:</u>				
13mm wide x 30mm deep reamed and sealed with polyurethane	m	13,00		
<u>Isolation joints between structures and canopy</u>				
13mm x 270mm deep bitumen infused softboard with 13 x 30 polyurethane	m	1,00		
<u>REINFORCEMENT</u>				
-				
<u>Fabric reinforcement:</u>				
Type 617 fabric reinforcement in concrete surface beds, slabs, etc.	m ²	45,00		
<u>STEEL REINFORCEMENT</u>				
<u>Mild steel bars reinforcement to structural concrete work:</u>				
Mild tensile steel	Tonns	1,00		
High tensile steel	Tonns	1,00		
<u>Form chamfers:</u>				
30 x 30mm chamfer to sides of plinths	No.	16,00		
<u>Grouting:</u>				
Cement and sand grout 1:3 in pockets for HD bolts	m ³	5,00		
<u>MASONRY</u>				

<u>FOUNDATIONS - PROVISIONAL</u>				
-				
<u>Brickwork of NFX bricks</u>				
-				
230mm Brick walls	m ²	32,00		
<u>SUPERSTRUCTURE</u>				
<u>Brickwork of NFP bricks in class II mortar</u>				
-				
230mm Brick walls	m ²	32,00		
<u>Brickwork reinforcement</u>				
150mm wide reinforcement built horizontally	m	45,90		
<u>PLASTERING</u>				
<u>EXTERNAL PLASTER</u>				
-				
<u>Cement plaster on brickwork</u>				
-				
On walls	m ²	16,07		
<u>WATERPROOFING</u>				
250 micron DPM	m ²	52,00		
<u>Sundries:</u>				
M16 x 250 Long HD bolts	No.	16,00		
100 x 100 x 6mm steel plates	No.	16,00		
Soilcrete	m ³	2,00		
Drilling of holes for HD bolts	No.	16,00		
Concrete stair cases	m ³	2,00		
Handrailing	m	52,00		
Sub-total (Excl. VAT)				

ELECTRICAL WORKS			
Cables			
3-core, 150mm ² , 6.6kV, XLPE armoured cables	m	105,00	
Cable joining and termination kits	pu	10,00	
Cable testing (HV test)	pu	11,00	
Cable labelling		12,00	
Total (Excl. VAT)			
Ring Main Unit			
RMU 11kV 630A 2R-1F N/EXT CSTL O/D D8060 (SAP short description)	unit	5,00	
RMU Delivery to site at the work station		1,00	
RMU Mounting and securing	days	2,00	
RMU cable connection		12,00	
RMU commissioning	day	1,00	
Training (Engineer & assistant)	Hour	8,00	
Decommissioning of existing RMUs	days	1,50	
Warning signs	Sum	1,00	
Documentation	Product	1,00	
Total (Excl.VAT)	Sum		
Preliminary & General (Electrical)			
Labour costs	Product	1,00	
Accomodation	day	140,00	
Transportation	Months	2,00	
Communication	Product	1,00	
Total (Excl.VAT)	Sum		
Estimated Cost - Excl. Vat	Sum		

C3.1: EMPLOYER'S WORKS INFORMATION

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1 Description of the works

1.1 Executive overview

Hendrina power station came into operation by the end of 1976. The. It is located on the N11 between Middelburg and Hendrina. The facility is situated south-west of Optimum Colliery, which historically supplied most of the coal to the power station.

The scope of the project is about the replacement of 4 oil-filled outdoor ring main unit (RMU) MV switchgears at Hendrina power station (in Pullenshope). The scope of work comprises of:

- Design and manufacturing of the RMU
- Delivery of the RMU to site
- Site establishment
- Civil works
 - Earth works
 - Construction
- Cable works/ electrical installations
- Electrical testing and commissioning
- Decommissioning
- Training
- Documentation
- Handing over

1.2 Employer's objectives and purpose of the works

- The objective of this project is to replace the existing RMUs with the RMUs that are internal arc compliant (IAC) and AFLR.
- The objective is to have functional ring feed without electrical risks (electrical shock, arc flash exposure) to all personnel.
- The new plant must not prejudice the environment i.e. It must not pose a risk of water or air pollution/soil contamination.

1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
A	Ampere
AFLR	Access front lateral rear
AIS	Air insulated switchgear
CQP	Contractor quality plan
EMP	Environmental management plan
EMS	Environmental management system
EOD	Electrical operating desk
IAC	Internal arc compliant
kA	Kiloampere
kV	Kilovolts
LAR	Limited access register

MPa	Megapascals
MV	Medium voltage
NEC	New engineering contract
NEMWA	National environmental management waste act.
OPC	Ordinary Portland cement
ORHVS	Operating regulations for high voltage systems
PPE	Personal protective equipment
PSR	Plant safety regulations
QCP	Quality control plan
QIP	Quality inspection plan
RMU	Ring main unit
SANS	South African national standards
SHEQ	Safety health environment and quality
SIT	Site integration test
SOW	Scope of work
VAT	Value-added tax
XLPE	Cross linked polyethylene cable

The following definitions are used in this Works information:

Definitions
Switchgear: A general term covering switching devices and their combination with associated control, measuring, protective and regulating equipment, also assemblies of such devices and equipment with associated interconnections, accessories, enclosures and supporting structures, intended in principle for use in connection with generation, transmission, distribution, and conversion of electric energy.
Ring main unit (outdoor): switchgear assembly that is suitable for installation in the open air i.e. capable of withstanding wind, rain, snow, dirt deposits, condensation, ice and frost.

2 Management and start up.

2.1 Management meetings

After contract award, *Project Manager* schedules a kick-off meeting to discuss the execution requirements.

Kick-off meeting specifies how the *Contractor* will meet the project objectives and confirm *Contractor* understands the required works, and programme to execute the SOW.

Regular meetings of a general nature may be convened and chaired by the *Project Manager* as follows:

Title and purpose	Approximate time & interval.	Location	Attendance by:
Project kick-off meeting.	Within 5 working days after the contract is officially placed.	Hendrina power station site- the boardroom to be determined or through MS Teams.	<i>Contractor's Project Manager</i> OR project supervisor and attendees at the discretion of the <i>Contractor Employer's</i> project team.
Risk register and compensation events.	When a need arises.	MS Teams/Hendrina power station boardroom.	<i>Contractor's Project Manager</i> or project, Supervisor. <i>Employer's</i> project team.
Early warning (risk reduction) meeting	When a need arises.	MS Teams/Hendrina power station boardroom.	<i>Contractor's Project Manager</i> or project, Supervisor. <i>Employer's</i> project team.
Safety plant walk	Weekly.	Hendrina power station site.	<i>Contractor's</i> safety representative/ <i>Employer's</i> representative.
Safety meeting	Weekly at a mutually agreed time and venue.	MS Teams/Hendrina power station boardroom.	<i>Contractor's</i> safety representative/ <i>Employer's</i> representative.
Interfacing meeting	As and when required.	MS Teams/Hendrina power station boardroom.	<i>Contractor's</i> project engineer and/or technical team. <i>Employer's Project Manager.</i>
Overall contract progress and feedback.	Weekly at a mutually agreed time and venue. This is subject to change depending on requirement/need.	MS Teams/Hendrina power station boardroom.	<i>Contractor's Project Manager</i> or project, Supervisor. <i>Employer's</i> project team.

Meetings of a specialist nature may be convened as specified elsewhere in this Works Information or if not so specified by persons and at times and locations to suit the Parties, the nature, and the progress of the works. Records of these meetings shall be submitted to the Project Manager by the person convening the meeting within five days of the meeting.

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

2.2 Documentation control

The documentation requirements cover the duration of the contract from the awarding of contract to the completion of replacement of RMU switchgears project at Hendrina power Station.

The routing of all written communications is between the *Project Manager* and the *Contractor* only. Any agreement between the *Contractor* and any other person representing the *Employer*, which has not been routed via the *Project Manager*, is unacceptable and invalid.

All documents supplied by the *Contractor* are subject to the *Employer's* approval. The language of all documentation is required to be in English.

All contractual correspondences are in pdf format or forms attached to e-mails and not as a message in the e-mail itself. Letters are typed and signed by the *Contractor* and delivered in hardcopy or e-mailed to the *Project Manager*. The correspondences shall include the following details:

- Hendrina power station
- Date
- *Employer's* Contract number
- Contract description
- Correspondence subject matter
- *Contractor's* reference number
- *Employer's* reference number
- Telephone number
- FAX number
- Reference to the relevant NEC Clause(s) (if applicable)
- Function group number or name (if applicable)

Standard NEC templates adhere to and are used for letters and to issue communication.

Any instructions written or verbal resulting in any changes to the duration, quality, and cost of the project is sent to *Project Manager*.

All reports are compiled in word format and submitted electronically as pdf to the *Project Manager*.

Hardcopy reports (which are deemed originals) are counter signed by the *Contractor's* line of authority for authenticity and quality verification after finalisation for purposes of record keeping.

All communications from the *Contractor* are numbered sequentially with a prefix as advised by the *Project Manager*. The *Project Manager* responds in like manner to a maximum of two address formats provided in writing by the *Contractor*. The prefix is to be decided upon at the kick-off meeting.

The *Contractor* submits project documents to the *Project Manager* with transmittal note according to project / plant specific technical documents and records management work instruction (240-76992014, annexure G). All documents used within the project to follow the same standards of layout, style and formatting as described in the work instruction to portray a consistent image.

All hard copies are submitted to *Project Manager* accompanied by the transmittal note.

Electronic copies that are too large for email are delivered on CD/DVD, large file transfer protocol and/or hard drives to *Project Manager*. In a case where CD has been submitted, a notification email, with the transmittal note attached, is sent to *Project Manager's* email address.

All drawings are created in the required format which is MicroStation version 7/8 SE, according to the specified drawing format and standards 36-945, 36-946. Accompanying the new drawings is the item list with full component descriptions. *Contractor* refers to the drawing standard issued by the *Project Manager*. The drawing is approved and officially handed over (original signed copy & editable soft copy on CD), via the *Project Manager*, to the *Employer*.

The *Contractor* includes the *Employer's* drawing number in the drawing title block. This requirement only applies to design drawings developed by the *Contractor* and his *Sub-Contractors*. Drawing numbers are assigned by the *Employer* as drawings are developed.

Drawings issued may not be "Right Protected" or encrypted or have any password requirements.

All documentation issued by the *Employer* for this contract is copyright protected and are not to be copied by the *Contractor*, except where the updating of all these documents is required as per the project new updated hand-over documents.

Reports documented for the purpose of this project shall remain a property of Hendrina power station.

The *Contractor* in hardcopy format as well as electronic format (pdf format for signed documents) retains copies of all documents relating to the works for 5 years.

2.3 Health and safety risk management

2.3.1 General

- *Employer* compiles a baseline safety risk assessment to identify all the possible risks during the implementation of the project. The risk assessment includes all the mitigating strategies to minimise all the possible risks.
- *Employer* provides the *Contractor* with the baseline risk assessment to use it as a minimum requirement to compile a risk assessment identifying all the risks before the implementation commences. The risk assessment compiled by the *Contractor* will clearly show all the mitigating strategies to minimise all possible risks.

The *Contractor* does the following:

- Complies with the health and safety regulations prescribed by law of any statutory authority. This is the Occupational Health and Safety Act (No 85. of 1993, as amended), and all regulations and operating procedures made thereafter.
- Ensures that all statutory appointments and appointments required by any Eskom regulations are made in writing and that all appointees fully understand their responsibilities and are trained and competent to execute their duties.
- Provides qualified Safety Officer to be on site for the duration of the project.
- Provides a risk management plan identifying measures used to preserve safety.
- Provides a detailed risk assessment identifying all safety hazards and mitigation measures. Reference is made to the *Employer's* Risk Assessment for all risks related to the work.
- Complies to take responsibility that all risks associated with executing the required works are identified, recorded, and managed.
- Ensures that all his personnel attend a health and safety induction course presented by safety officers, Monday to Friday – 09:00 to 10:00, free of charge prior to commencement of any works. This is a one (1) hour course and is valid for the duration of one (1) year at Hendrina Power Station.
- Daily conducts toolbox talks and inspects all PPE before any work commences and retains written proof of such actions.
- Performs daily activity safety risk assessment in line with a daily site register. Upon request by the *Employer*, this is to be provided to the *Project Manager*. The *Contractor* works strictly to regularly updated risk assessment. No work shall be carried out without the risk assessment identifying all the risks and the mitigating strategies in place to address the identified risks.
- Always ensures safety awareness through continuous training.

- Always responsible for the supervision of his employees, agents and Sub-Contractors and takes full responsibility and accountability for ensuring that they are competent, compliant, and aware of the legal requirements and other requirements and execute the works accordingly.
- Immediately reports any incidents, disabling injury, near miss, first aid incident as well as any threat to health and safety of which it becomes aware at the works or on the site to the *Project Manager*.
- Agrees that the *Employer* is relieved of all of its responsibilities and liabilities in terms of the Occupational Health and Safety Act no 85 of 1993; in respect of any acts or omissions of the *Contractor*, and the *Contractor's* employees, agents or Sub-Contractors, to the extent permitted by the Occupational Health and Safety Act no 85 of 1993.
- Ensures supervised and authorised entry into the plant.
- Ensures the safety of all persons working in the site. Any hot work including welding will be applied for in accordance with a permit to work system. No welding will be allowed on site unless permission is granted in writing by the *Project Manager*. All welding, flame cutting and grinding work is properly screened to protect persons from arc flashes or eye injuries. Fire blankets are fitted over the scaffolding planks and platforms. Precautions are taken to prevent any objects welding or grinding splatter from falling.
- Ensures that adequate firefighting apparatus is provided at all their work sites and office areas, and that all their staff or representatives are trained in the use of this apparatus.
- Takes precautions to prevent any occurrence of fires or explosions while carrying out any work near flammable gas and liquid systems. Any tampering with the *Employer's* fire equipment is strictly forbidden.
- Ensures that firefighting equipment always remains accessible at working site. All exit ways, fire escape routes, walkways, must be kept free of obstruction, and not be used for work or storage at any time.
- In case of a fire, report the location and extent of the fire to the electrical operating (EOD)desk at extension 5555.
- Takes the necessary action to safeguard the area to prevent injury and spreading of the fire.
- Manages hazardous substances in accordance with the requirements of Occupational Health and Safety Act no 85 of 1993 and NEMWA.
- Declares all hazardous chemical substances brought to site to the *Employer*.

Furthermore, *Contractor* complies with the health and safety requirements prescribed as follows:

- Hendrina power station safety, health and environmental specifications for principal *Contractors* (HSPHO/058).
- Provision of a first aid service to his/her employees. In the case where these prove to be inadequate, like in the event of serious injury, the *Employer's* medical centre and facilities will be available. outside the *Employer's* office hours, *Employer's* first aid services are only available for serious injuries and life-threatening situations. *Employer* recovers the cost incurred, in the use of the above *Employer's* facilities from the *Contractor*.
- Complies that no personnel are transported on any open vehicles. Personnel may only travel in a vehicle with SANS seating and safety belts.

The *Employer*, or any person appointed by the *Employer*, may, at any stage during the term of the contract:

- Conducts health and safety audits by a competent person regarding all aspects of compliance with the SHEQ requirements, at any off-site place of work, or the site establishment of the *Contractor*.
- Refuses any employee, Sub-Contractor, or agent of the *Contractor* access to the premises if such a person has been found to commit an unsafe act or any unsafe working practice or is found not to be competent or authorized.
- Issues the *Contractor* with a stop order, should the *Employer* become aware of any unsafe working procedure or condition or any non-compliance.

2.3.2 Plant Safety Regulations

- The *Employer*, upon request from the *Contractor*, isolates required plant from all sources of danger as described in the PSR and/or ORHVS.
- The *Project Manager*, upon request, makes available a copy of the latest revision of the PSR and ORHVS to the *Contractor*.

- The *Contractor* complies with all rules and regulations applicable to plant safety and completes the worker's register prior to working on the plant and or limited access register (LAR).
- The *Contractor* declares any grinding and welding to be carried out on the workers register.
- At every permit change the *Contractor* withdraws himself/herself/his staff for that period of permit suspension/revocation and thereafter only proceeds with the works after signing onto the new permit.
- The *Contractor* ensures that he/she/all sub-*Contractors*/personnel/staff/his visitors are medically, physically, and psychologically fit to enter the Hendrina power station, and specifically any confined space.
- The *Contractor* is prohibited from entering radiation areas.
- The *Contractor* is responsible to ensure that the correct confined space requirements and tests have been done/met by the *Employer* prior to entry into any confined space or hazardous plant areas.
- The *Contractor* provides proof of competency for technical and safety aspects and must be available as and when required on site.

2.4 Environmental constraints and management

The *Contractor* ensures conformance to the power station's Environmental Management System (EMS) ISO14001: 2015 as well as comply to the following applicable Licenses and Permits:

- Temporary Hazardous Waste Storage Facilities License (12/9/11/L440/6)
- Landfill Site Permit (B33/2/210/141/P9)
- Atmospheric Emission Licence (17/4/AEL/Mp312/11/16)
- Integrated Water Use Licence (24046033)
- Bulk Water Use License (27/2/1/C211/1/1)
- Flammable Liquids and Substances Certificates

The *Contractor* submits Environmental Management Plan (EMP) before the execution works start. EMP indicates how environmental risks and impacts of the road rehabilitation works are prevented and mitigated. EMP is subject to approval by the *Project Manager*.

The *Contractor* provides strategy-identifying measures of how the execution of the works does not contravene environmental compliance.

All works are executed within the site boundaries provided by the *Employer*, as demonstrated in the drawings issued by the *Employer*.

Non-hazardous waste and rubble induced from executing the works is disposed at the landfill site. Hazardous material to be disposed at a permitted landfill site, at which *Contractor* provides safe disposal certificate, this to be approved by the *Project Manager*.

The *Contractor* submits environmental requirements compatible with the site conditions and constraints of the project.

The *Contractor* takes note of the road conditions during this period.

The *Contractor* handles all environmental emergencies in accordance with *Employer's* emergency preparedness and response (HSPPIN032) procedure, annexure I.

The *Contractor* handles all spillages in accordance with *Employer's* prevention clean-up of chemicals hydrocarbon spills (HSPPON003) procedure, annexure J.

The *Contractor* manages all Incidents in compliance with environmental incident management procedure (240-133087117, annexure O).

The Contractor complies with the

- Hendrina power station environmental policy (HSPPPIN005), annexure P.
- EMS non-conformance, corrective and preventative action (HSPPIN034), annexure L.

The *Contractor* is responsible to keep the work area clean of any rubble. All waste introduced and/or produced on the *Employer's* premises by the *Contractor* for this contract, is handled in accordance with the Hendrina power station waste management procedure- HSPPIN003 latest revision, annexure K. All scrap material(s) shall be disposed in accordance with materials management procedures/processes.

If there is uncertainty around the any environmental issues, the environmental department at Hendrina power station may be contacted via *Project Manager*.

2.5 Quality assurance requirements

The *Contractor* implements and maintain a quality management system; as a minimum, meets the requirements of the ISO 9001:2015 Standard Quality Management. If the *Contractor* is certified, the ISO 9001:2015 certificate of compliance must be submitted with the tendering documents. If the *Contractor* is not ISO 9001:2015 certified, evidence of compliance to ISO 9001:2015 must be submitted as outlined on the QM-58 Supplier *Contractor* requirements specification.

The *Contractor* further ensures that the sub-*Contractor's* programme comply with the requirements of the *Works* information.

The *Contractor* notifies the *Project Manager* of any changes to the quality management system and obtains agreement prior to implementation on existing orders and contracts, or sub orders and sub- contracts.

The *Contractor* shall be required to demonstrate by means of a Contract Quality Plan (QCP) that this organisation is so structured that all the requirements of the specification will be properly monitored and controlled. The Contract Quality Plan (CQP), which must include the Quality Control Plan (QCP), is to be drafted in accordance with QM-58 and the Supplier Contract Quality Requirement Specification (QM58). The Quality documents are to be submitted for approval to the Quality Personnel within thirty (15) days after a contract has been awarded to the *Contractor*.

No work may commence unless the Contract Quality Plan and Quality Control Plan documents have been approved in writing and a copy submitted to the *Quality Personnel/ Project Manager*. The *Contractor*, in conjunction with the Quality Personnel must sign off all Quality Control documents after completing all work as per the agreed scope. The *Contractor* to submit a copy of the final signed off documents/data packages to the *Project Manager* within one (1) week after completion of work.

The *Contractor* shall be required to read and fully understand the contents of the Supplier Contract Quality Requirement Specification (QM58) and a copy is to be kept in possession or on premises.

The Supplier Contract Quality Requirement Specification (QM58) shall remain applicable in the event of the contract being extended or modified for reasons permitted.

The *Contractor* acknowledges and agrees to comply with and adhere to Eskom's policies and procedures (current and/or latest revisions) including the Supplier Contract Quality Requirement Specification (QM58) by signature and acceptance of this contract

2.5.1 Contract Quality Management Plan Requirement

The *Contractor* prepares a contract quality management plan that, where appropriate, indicates the following:

- Indicates the interface with the *Contractor's* quality system and applicable documents such as procedures and work instructions.
- Establishes communication channels between the *Contractor* and the *Quality Personnel/Project Manager* in respect of quality and the integration of such with prescribed contract communication channels.
- Indicates how specific sub-*Contractors* will be monitored.
- Identifies items or activities for which quality control plans will be prepared.

- Identifies the specifications, drawings, and acceptance criteria for material for which quality control plans are not required.
- Identifies the areas or processes requiring special controls.
- Identifies the *Contractor's* management representative and personnel responsible for the control of quality activities and their relationship to the *Contractor's* management structure.
- Activities and their relationship to the *Contractor's* management structure
- Identifies the documents which are to be submitted to the *Project Manager*.
- Identifies the *Contractor's* quality monitoring programme.
- The *Contractor* periodically updates the contract quality management plan to reflect changes in any of the above details. The frequency of such updates is determined by the *Project Manager* but will not be greater than one year.

The *Contractor* periodically updates the contract quality management plan to reflect changes in any of the above details. The frequency of such updates is determined by the *Quality Personnel* but will not be greater than one year.

2.5.2 Quality Control Plan

The *Contractor's* or Sub-*Contractor's* quality control plans cover inspection and test proposals for items or activities to be supplied as part of the works.

The quality control plan indicates the following as appropriate:

- The identification of the item.
- A list of the sequence of operations including inspections and tests.
- The identification of the specification, drawings, or procedures for each operation.
- The acceptance criteria with reference to the appropriate technical specification, in-house, national, or international standard and relevant clause number.
- The inspections and tests the *Contractor* has nominated for hold and witness points.
- Provision for inspections and tests nominated by the *Quality Personnel*.
- Provision for inspection status indication.
- Inspection and test records which are generated by the *Contractor*
- Personnel qualifications from approved training and accredited institute
- ITPs and procedures
- Material certificates
- Adhere to the QM58

The *Quality Personnel* and *Project Manager* to allow for insertion of his specific requirements, including hold, review the quality control plans and witness points, prior to commencement of work. The *Contractor* does not commence work until the *Project Manager* accepts.

2.5.3 Access to the *Contractor's* and Sub-*Contractor(s)* premises and facilities

The *Contractor* and/or its sub-*Contractor* gives access to the supervisor and/or the Authority/Agency and the Regulator where appropriate to their premises and facilities at reasonable times to conduct quality assessments, audits, surveillances, and inspections to establish compliance with the contractual requirements.

2.5.4 Verification and Testing

- The *Contractor* gives at least 24 hours advance notification to the supervisor or the Authority for verification/testing, which require their attendance. The *Contractor* confirms readiness for verification at least 12 hours prior to the test.
- The *Contractor* ensures that all work has been fully verified, accepted, and documented prior to requesting any verification by the supervisor.

2.5.5 Quality Records

- The *Contractor* prepares and submits to the *Employer* an Index of QA/QC and inspection and test records prior to the commencement of work.

- The *Employer* determines which documents are to be submitted during the performance of work and reviews the index and request changes if required. The *Contractor* conforms to the Index approved by the *Employer*.
- The *Contractor* ensures that all records identify the items, equipment and/or activities to which they pertain and collates indexes and securely stores the records in such a manner that they are readily retrievable.
- The *Contractor* implements appropriate administrative controls to limit access to prevent inadvertent loss of or damage to records.
- The *Contractor* stores all quality records. The *Contractor* only destroys or discards quality records with the approval of the *Employer*.
- The *Contractor* presents on completion of the works all quality records in the form of a data package. The package is indexed and shows the entire contents.

2.6 Programming constraints

The *Contractor* submits a first programme for acceptance within 5 working days of the contract date. Programme is submitted in an electronic MS Project format and a pdf Gantt chart programme, identifying how the execution of the works is achieved within the specified project duration.

The *Contractor* submits a single programme that incorporates programmes of all his sub-*Contractors*. The interface points with sub-*Contractors*, including interfacing between different sub-*Contractors* are to be clearly identified by the *Contractor*. The project key milestones to be supplied by the *Project Manager*, must be incorporated into the programme by the *Contractor*.

The programme summarizes the major work activities, estimated durations, and relationships to the other activities of the project. This includes demonstrating how quickly labour, machinery, and equipment to execute the required works will arrive and be secured on site.

The calendar used for planning shall be based on normal working hours per day and working days per week. Any changes to this are to be approved by the *Project Manager*. At the time stated in the contract data, the *Contractor* submits the programme for the *Project Manager's* acceptance.

The *Project Manager* approves programme before the works commences.

The programme submitted by the *Contractor* is compatible with the site conditions and constraints of the project.

Computerised planning and reporting

Microsoft Project 2007 or latest version of Microsoft Projects has been adopted by the Employer and is to be used for all planning, progress monitoring and reporting of the works for the project. The Contractor is to obtain this software and apply it for the planning and control of the works.

Submission of revised programmes and progress reporting

On a weekly basis, *Contractor* submits electronic copies (pdf and MS Project Format) of the revised programme and schedule progress report to the *Project Manager* for acceptance. All formally, issued reports follow the progress reporting requirements as stated below.

Daily Site register/dairies

- *Contractor* develops a daily site register/diary detailing the works to be carried out on daily basis and to be in line with the accepted programme.
- Both the *Contractor* and the *Project Manager* sign daily site register/diary.
- *Contractor* complies that all workers are accounted for in the daily site register/diary with their signatures.

Monthly progress report

The contents of the report may vary from month to month depending on the phase of the project and/or the items of management focus. The basic framework of the report consists of the following:

- Narrative in an executive summary format identifying major movement within the reporting period.
- Programme summary narrative.
- Progress and performance summaries.
- Sectional completion and Key Milestone status.
- Key issues/items of concern and corrective actions.
- Cost and cash flow.
- Early warning log.
- Compensation event log.

The method of reporting on activities in progress shall be by remaining duration, i.e. the time in working days needed to complete the activity from the report date. Once an activity has started, the remaining duration is assessed for each update.

When completion of any activity is confirmed by quoting document numbers, these numbers shall be given in a remark's appendix, e.g. suborders, drawings, inspection certificates, delivery notes, etc. The actual start and completion dates of all activities shall be reported. Once the completion has been recorded, completed activities are removed from progress reports, although full reports may be requested.

Weekly status reports

A weekly status report is submitted by the *Contractor* to the *Project Manager*. This report is less formal than the monthly report and is used as a tool for the day-to-day management of the project. Contents of a weekly report may include the following items:

- Programme summary narrative
- Progress and performance summaries
- Schedule rolling horizon
- Sectional completion and Key Milestone status

2.7 Contractor's management, supervision, and key people

The *Contractor* submits an organogram of the *Contractor's* project team to the *Project Manager*, indicating clearly reporting lines from the lowest to the highest level of the structure. Lines of authority / communication to be clearly indicated as well as key people and decision makers.

The *Contractor* appoints qualified and competent site manager, technician/s, safety officer and supervisors. Resource allocation abides to their respective function. These resources are present for the duration of the works. Daily site register to be signed with all the resources specified.

The implementation of this project has no organisational impact with respect to changes to *Employer's* organisational structures, jobs, positions, and staffing requirements.

The *Contractor* complies with provision of key people required to successfully execute the works. Resource allocation is clearly reflected on the activity programme they are required to execute, and duration stipulated. During the execution of the works, registers or time sheets of the *Contractor's* employees is kept for contract records.

Management indicated on the *Contractor's* organogram avail themselves immediately when required to resolve matters that may affect the accomplishment of the works.

Reference is to be made to the technical evaluation criteria for further requirements documenting the control measures to mitigate technical risks.

2.8 Invoicing and payment

The *Contractor* submits the forecast rate of invoice along with the programme within 7 days after contract award.

The *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Project Manager's* payment certificate within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1.

The *Contractor* addresses the tax invoice to:
Eskom Holdings SOC Ltd
Hendrina Power Station
Accounts Payable
P/Bag X1003
Pullenshope
1096

The *Contractor* addresses the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:

- Name and address of the *Contractor* and the *Project Manager*
- The contract number and title.
- *Contractor's* VAT registration number.
- The *Employer's* VAT registration number 4740101508.
- Description of service provided for each item invoiced based on the price list.
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT.

The *Contractor* uses the assessed amount when completing the tax invoice and the invoice is forwarded to Management Accounting Payables. Invoices not submitted by hand must have COPY TAX INVOICE heading.

2.9 Insurance provided by the Employer

Refer to section 8 clause 84 in the NEC "Contract Data"

2.10 Contract change management

Contractor communicates any contract change to the *Project Manager* for approval.
The *Contractor* and *Employer* shall use the standard NEC forms for any form of communication.

2.11 Provision of bonds and guarantees

The form in which a bond or guarantee required by the *conditions of contract* (if any) is to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.

The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Project Manager* to receive and accept such bond or guarantee; such withholding of payment due to the *Contractor* does not affect the *Employer's* right to termination stated in this contract.

2.12 Records of defined cost, payments & assessments of compensation events to be kept by the *Contractor*.

The *Contractor* keeps all records of costs incurred during the works and makes it available to the *Project Manager* upon request.

No standing time claims will be considered without the relevant proof of presence and activity in the form of a time sheet.

Proof of expenses must be provided to the *Employer* as a hard copy as well as a soft copy.

- i. The *Contractor* provides Daily diaries of planned work versus work completed to the *Project Manager*; the following information is required from the site diary:
 - a. Task based risk assessments and toolbox talks,
 - b. Signed time sheets,
 - c. Weather conditions,
 - d. Site conditions, Locations where work was being undertaken together with resources being utilised,
 - e. Any delays noted (for whatever reason), any notification by people employed by the *Contractor* regarding difficulties encountered.
 - f. Complaints by third parties,
 - g. Any work done by Others at the site.
- ii. No standing time claims will be entertained without the relevant proof of presence and activity in the form of a time sheet.
- iii. Proof of expenses must be provided to the *Employer* as a hard copy as well as a soft copy.
- iv. Equipment is guaranteed for a period of twelve (12) months from date of delivery with a maximum period of eighteen (18) months from date of delivery to site. The warranties and guarantees expressly provided in this contract shall be in lieu of and to the exclusion of any other warranties, conditions or guarantees whether written, oral, implied or statutory except to the extent that such exclusion is prohibited by law

2.13 Training workshops and technology transfer

- The *Contractor* provides formal training on the installed RMUs as per the scope.
- The *Contractor* provides two training sessions on different dates.
- The *Contractor* prepares training aids (visuals, power point presentation, training manuals) for the training of electrical maintenance, operating, electrical engineering and station training personnel. The training manuals for each trainee to be hard copies, with tools shared by trainees during the training.
- The *Contractor* submits to the *Employer* the two hardcopy master sets and soft copies training manuals that would be used including details of what is covered on the training for technical personnel before conducting a formal training. The training to be offered in English. All the course material to be in English including all third-party documentation.
- All training documentation provided by the *Contractor* to be customised for Hendrina power station.

- Training manuals shall be continuously updated by the *Contractor* up to the date of issue of the defects certificate for the whole of the works.
- The *Contractor* provides practical training by physically demonstrating using the spare RMU available onsite or using video aid.
- The training to include spares management and maintenance requirements i.e. The recommended spare(s) or part(s) to be kept onsite and recommended maintenance plan with frequencies.

3 Engineering and the *Contractor's* design

3.1 *Employer's* design

The *Contractor* is required to confirm the Employer's Design, taking full professional accountability and liability for the works required.

3.1.1 System description

The RMU switchgear is the source of power supply to the one of the critical plants in the outside plant (older lower and the new lower dams). It offers great flexibility of the power system in maintaining continuity of supply. There is a total of 4 RMUs, which form a ring feed network.

The ring feed network can be supplied either through 6.6kV substation board 1B or 6.6kV substation board 2B. Figure 1 (this section of the drawing is taken from 0.15/686 - unit and station MV&LV electrical diagram, annexure N) below shows the network connection of the electrical plant.

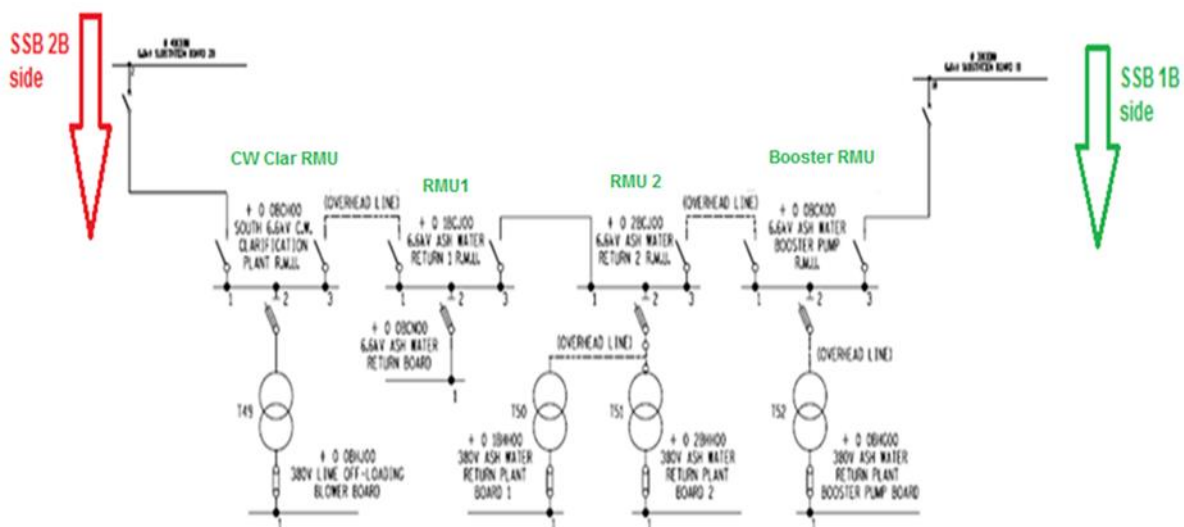


Figure 1. RMU network connection

The new ring feed network shall consist of 4X RMUs (6.6kV Ash Water Booster RMU; 6.6kV South CW Clarification RMU; 6.6kV Ash Water Return (AWR) RMU 1; 6.6kV Ash Water Return (AWR) RMU 2). They shall be supplied from the existing supply point of 6.6kV substation board 1B and/or 6.6kV substation board 2B.

The new RMUs shall be installed within a 5 metres radius of the existing RMU locations and they shall continue to supply the corresponding existing loads:

- The 6.6kV Ash Water Booster RMU located inside the station and feeds the 6.6kV/380V transformer which then supplies the 380V ash water return plant booster pump board.
- The 6.6kV South CW Clarification RMU located inside the station and feeds the 6.6kV/380V transformer which then supplies the 380V lime off-loading blower board.

- The 6.6kV Ash Water Return (AWR) RMU 1 located at the old lower dams and feeds AWR RMU 1 feeds the 6.6kV ash water return board 1.
- The 6.6kV Ash Water Return (AWR) RMU 2 located at the old lower dams and feeds AWR RMU 2 feeds the two 6.6kV/380V transformers which then supplies the 380V ash water return board 1 and 380V ash water return board 2.

The design for all 4 RMU switchgears will be the same, and in accordance with 240-56030406- Specification for the ring main unit for systems with nominal voltages from 3.3kV to 33kV annexure E, and SANS 1874.

The specification of the intended RMU switchgear is specified in the Eskom buyers guide spec sheet D-DT 8060, annexure B, as well as the table below.

The SAP Material number: 0170213

Specifications		
Description		Comments
Switchgear type	Outdoor	
Internal arc classification	A-B	
Insulation type	AIS	Air insulated switchgear
Rated voltage	12kV	
Service voltage	6.6kV	
Rated lightning impulse peak withstand voltage	95kV	
Rated short-duration power frequency r.m.s withstand voltage	28kV	
Rated current	630A	
Rated short time withstand r.m.s. current (3s)	20kA	
Rated peak withstand current	50kA	
Configuration	R-F-R (2R-1F), 3way	RMU consists of 2X ring-switches and 1x TEE-OFF switch-fuse combination.
Frequency	50Hz	

Table 1: RMU Technical Specification

The following proposed dimensions of the plinth are provided by the Employer for information.

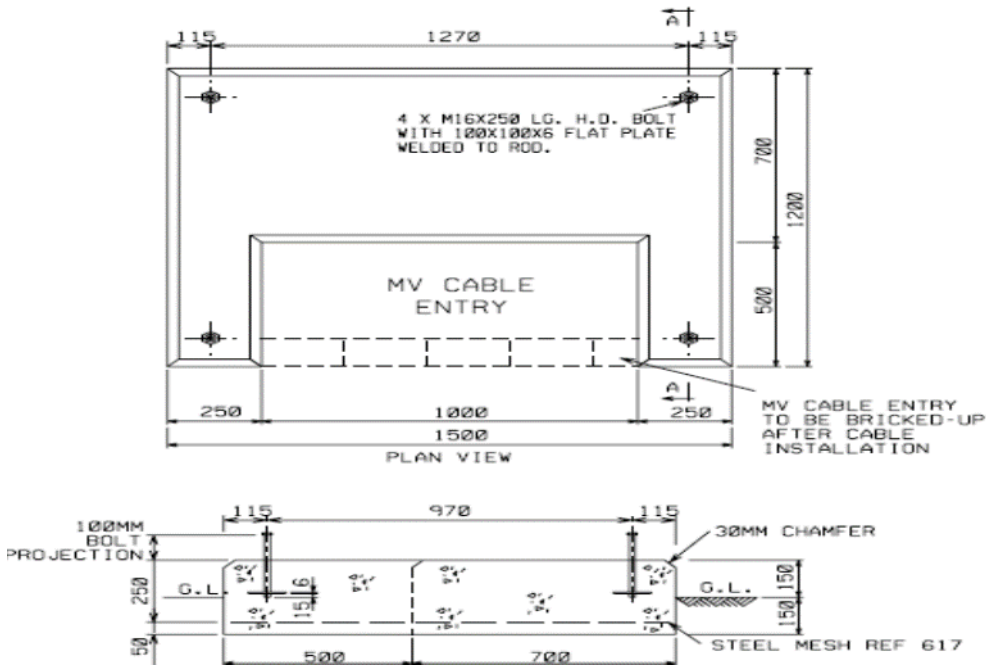


Figure 2: 11kV 3-way RMU Plinth details (Cast on site)

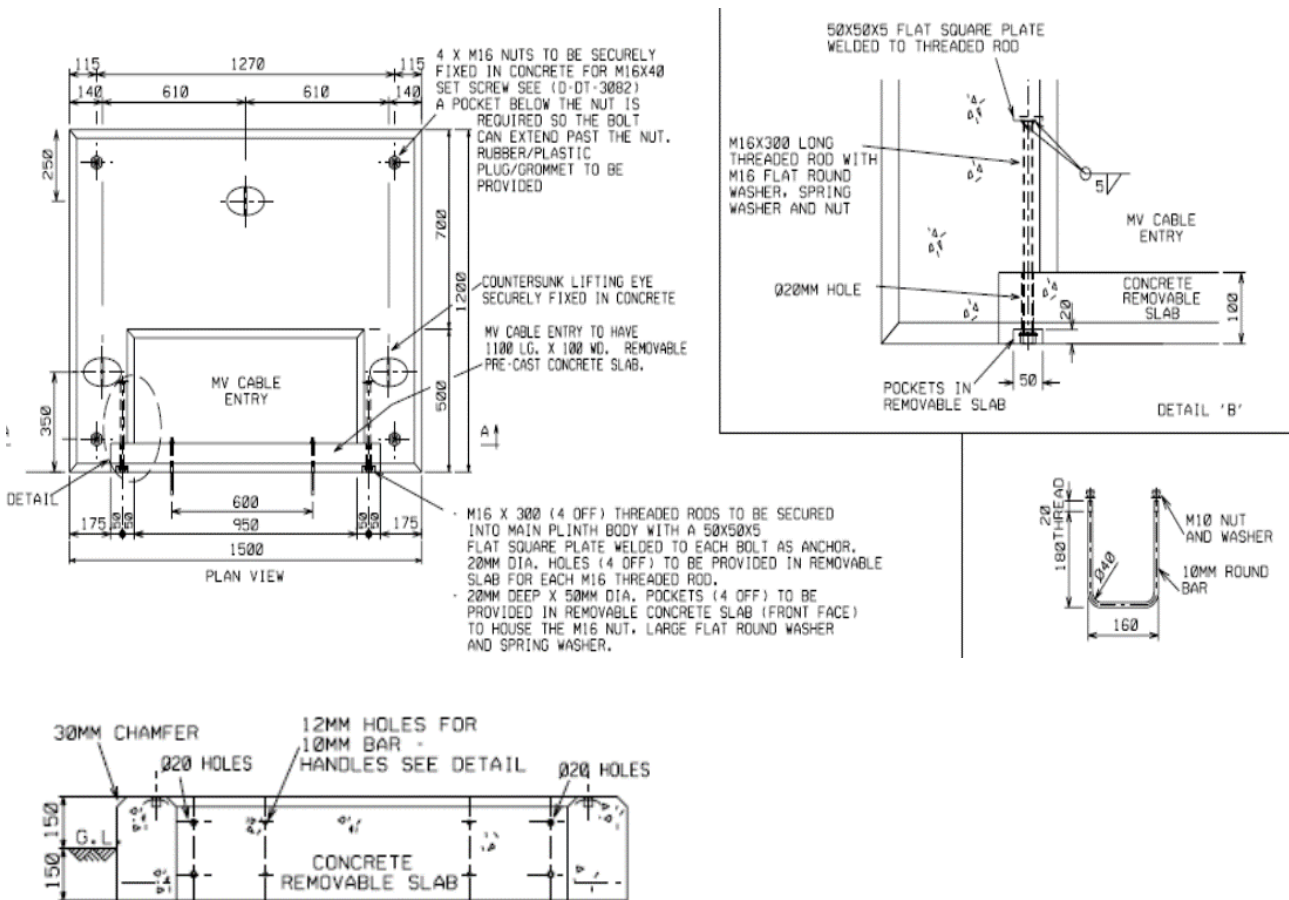


Figure 3: 11kV 3-way RMU Plinth details (Pre-cast)

RMU layout

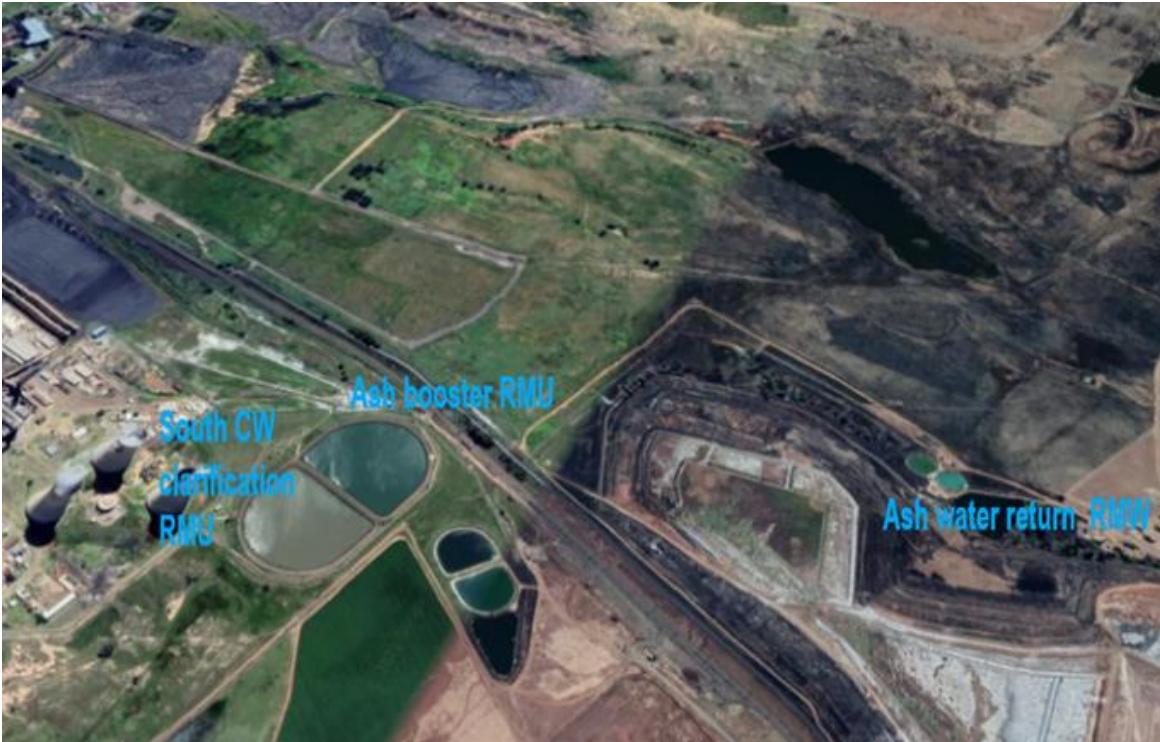


Figure 4: RMU layout

3.2 Parts of the works which the **Contractor** is to design

The *Contractor* designs, manufacture, test and deliver all 4 RMU switchgears in accordance with 240-56030406- Specification for the ring main unit for systems with nominal voltages from 3.3kV to 33kV annexure E, Eskom buyers drawing guide D-DT-8060 annexure B and SANS 1874. In cases where the Eskom standard/task manual is silent the SANS 1874 will take precedence.

The *Contractor* also supplies the 6.6kV, 3-phase, 3 cores, 150mm² armoured, XLPE cable.

The *Contractor* shall design and build the plinths in accordance with 240-77904802 – Replacement / Installation of mini-substations, ring main units and ground mounted transformers annexure F, and Eskom buyers drawing guide D-DT-0863 annexure C.

3.2.1 Electrical works

The **Contractor** does the following:

1. Designs, manufactures, tests, delivers, installs, commissions, and decommissions the RMU switchgears.

Designs

- A quantity of 5 x RMUs shall be designed according to Eskom buyers drawing guide D-DT-8060 and as detailed in schedule A&B (RMU specification), annexure A.

Tests

- Ring main units shall be tested in accordance with Eskom standard 240-56030406- specification for ring main units for systems with nominal voltages from 3.3 kV to 33 kV, SANS 1874, and SANS 62271-200.

Delivery/transportation

- *Contractor* arranges the delivery of the RMUs from the factory/supplier/*Contractor's* site/ to Hendrina power station.
- *Contractor* arranges with the *Employer* with regards to the delivery date and times.
- *Contractor* is responsible for rigging and transportation of the RMUs from the *Employer's* storage facility to the specific location where the *works* is to be executed.
- Defects that are incurred during the transportation/rigging remains the responsibility of the *Contractor*.
- *Contractor* transports and stores the RMUs in accordance with 240-56030635-general information and requirements for medium-voltage cable systems annexure M, section 3.19, page 46 of 66.

Installation

- *Contractor* installs the RMUs in accordance with Eskom task manual 240-77904802 – replacement/installation of mini-substation, ring main units and ground mounted transformers. Able tranches.
- *Contractor* supplies 105 metres, 6.6kV, 3-phase, 3 cores, 150mm² armoured, XLPE cable. The 105metre cable length is divided amongst 12 circuits.
- *Contractor* supplies 11 joint kits, 12 cables termination kits and 12 steel cable glands.
- The *Contractor* complies with Eskom standard, 240-56030635: General information and requirements for medium voltage cable systems, annexure M.
- **The *Contractor* shall conduct underground detection of underground services and provide a report and/or drawings with the following outputs.**
 - ✓ **Identification of the existing underground cable route.**
 - ✓ **Proposed unobstructed cable route, for the new joint (or new cable) from existing cables to the new RMUs.**
- *Contractor* digs and backfill the cable trenches in accordance with D-DT-0854 annexure D, set 8, sheet 1, revision 8. The combined distance of all trenches is approximately 110metres.
- The *Contractor* lays, terminate, joins, secure, test, connects, labels the cables in accordance with 240-77904802- Replacement/installation of mini-substations, ring main units and ground mounted transformers and 240-56030635: General information and requirements for medium voltage cable systems.

Commissioning

- The *Contractor* develops the commissioning procedure and the *Employer* reviews and approves the commissioning procedure.
- The *Contractor* commissions the plant in the presence of *Employer* representative in accordance to developed commission procedure to ensure safe and correct operation of the plant.

Documentation

- The *Contractor* submits all required documentation listed in the 240-56030406 annexure E, clause 3.21 to ensure compliance.
- The *Contractor* submits the following RMU documents for each RMU switchgear:
 - ✓ The completed factory routine and type tests reports and certificates.
 - ✓ Installation, operating and maintenance manual(s).
 - ✓ Auxiliary circuit wiring diagram(s).
- The *Contractor* supplies a list of recommended spares in schedule B.

Decommissioning the existing oil filled RMUs

- The *Contractor* dismantles, decommissions, and removes the existing oil filled RMUs to the allocated waste facility provided by the *Employer*.
- The *Contractor* complies with the Hendrina power station waste management procedure HSPPON003.

3.2.2 Civil works

The scope of work involves the Design and Construction of 4 RMU plinths, the plinths will be located adjacent to the existing RMU's.

The *Contractor* is responsible for the following:

Design

- The *Contractor* conducts the structural design of the plinths in accordance with the specifications and standards indicated herein.
- The *Contractor* is required to submit a layout drawing with setting out coordinates of the plinth locations to the *Project Manager* for acceptance.
- The *Contractor* submits the detailed design report and drawings for acceptance before any construction can take place.

Site establishment

- Establish site offices to control and supervise construction works.

Site clearance

- Clear and grub all unwanted material along channel running length before excavations up to 150mm depth.

Excavations

All excavation works to be according to SANS 1200 standards and Engineering specifics regarding excavations and disposal of all excavated material.

- Earthworks – all earthworks to be done to engineers' specifications. Any selected material to be compacted and tested for density and moisture content.

Backfilling

- The in-situ material is compacted to 95% mod ASSHTO density of a minimum depth of 150mm.

Concrete works

- A 50mm blinding layer is applied to provide for adequate cover for reinforcement.

Reinforcement

- All reinforcement is stamped with a SANS quality assurance mark.

Concrete strength

- Use 25Mpa concrete strength for all concrete works.

Formwork

- All concrete finishes are to be smooth and desired texture. Use shutter board formwork or any type of formwork to achieve desired texture of finishing.

Construction joints installation

- The concrete to have silicon joints 10mm thick to join old and new cast concrete.

Cube test

- For every concrete mix delivered on site, it is required that a cube test be performed to obtain the 7-, 14- and 28-day concrete strength, and results shall be submitted to the project engineers

3.3 Procedure for submission and acceptance of *Contractor's* design

Refer to section 2.2 of the issued Part 3: scope of work

3.4 Other requirements of the *Contractor's* design

The *Contractor* is required to submit documents as electronic and hard copies. Both copies are delivered to the *Employer's* representative with a transmittal note.

3.5 Use of *Contractor's* design

The *Contractor's* design is used for the construction of the plinths for the RMUs.

3.6 Design of Equipment

Not applicable.

3.7 Equipment required to be included in the works

The *Contractor*:

- Provides all machinery/equipment to conduct the works, compatible with the site conditions and constraints of the project. The *Employer* issues no other machinery/equipment, to the *Contractor*, except for scaffolding.
- Provides their own resources to secure security of machinery and equipment that may be stored on site. The *Employer* is not liable to account for any costs related to damages or theft of machinery and equipment.
- Delivers the ordered spares with the first delivery of the ring main units, and shall be packed in sets, in containers suitable for long periods of storage, and marked on the outside with the contract or order number, the Contractor's/Supplier's name, type and model of the equipment, and the date of packing.

3.8 As-built drawings, operating manuals and maintenance schedules

The *Contractor* submits the RMU documents as listed in section 3.2.1 when delivering the RMU to Hendrina power station site.

The *Contractor* submits the updated, completed, and approved RMU plinths as built drawings before date of issue of the defects certificate for the whole of the works.

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed on the Site

The people who are executing the work onsite need to be reflected in the safety file. New people to be approved by the safety officer and safety file to be revised.

4.1.2 BBEE and preferencing scheme

Compliance to the Preferential Procurement Policy Framework Act (PPPFA)

Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor's* B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.

The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Employer* within thirty days of the notification or as otherwise instructed by the *Employer*.

Where, as a result, the *Contractor's* B-BBEE status has decreased since the starting date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor's* obligation to provide the service.

Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination will be dealt with according to the NEC3 ECC penalty/termination clauses.

Supplier Development and Localisation

Skills Development	Training of 1 cable jointer
CSI	CSI% to be negotiated to 1.5%
Designated Sector	Cables – 90%

4.1.3 Accelerated Shared Growth Initiative – South Africa (ASGI-SA)

The *Contractor* complies with and fulfils the *Contractor's* obligations in respect of the Accelerated and Shared Growth Initiative – South Africa in accordance with and as provided for in the *Contractor's* ASGI-SA Compliance Schedule stated below.

[Insert the agreed ASGI-SA Compliance Schedule here]

The *Contractor* shall keep accurate records and provide the *Project Manager* with reports on the *Contractor's* actual delivery against the above stated ASGI-SA criteria. [Elaborate on access to and format of records and frequency of submission etc.]

The *Contractor's* failure to comply with his ASGI-SA obligations constitutes substantial failure on the part of the *Contractor* to comply with his obligations under this contract.

4.2 Subcontracting

4.2.1 Preferred subcontractors

The Contractor submits conditions of subcontracting to the *Project Manager* for approval.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

It is compulsory for the *Contractor* to use NEC system to prepare subcontract documentation.

4.2.3 Limitations on subcontracting

The *lead Contractor* for the entire this contract is for electrical works. The *Employer* permits the principal Contractor to subcontract other works, but not more than a specialised proportion of the whole contract. *Contractor* provides the majority of the works being 80% from own resources and all the necessary documentation for the works carried out by subcontracting is submitted to the *Project Manager* for approval

4.2.4 Attendance on subcontractors

The main *Contractor* is responsible for the management of the duties and performance of the Subcontractor.

4.3 Plant and Materials

4.3.1 Quality

Refer to section 2.5 of this Works Information

4.3.2 Plant & Materials provided “free issue” by the *Employer*

There are no “free issue” plant and/or materials provided by the *Employer*. All other plant and/or materials are to be provided by the *Contractor*.

4.3.3 *Contractor*'s procurement of Plant and Materials

Contractor procures transports, offloads, and stores all plant and material to provide the works as per the Works Information of this contract.

4.3.4 Spares and consumables

The *Contractor* provides with full specification/description with a part number a list of recommended spare(s) or part(s) to the *Employer*.

4.4 Tests and inspections before delivery

Contractor does not bring to the working area those plant and materials which are to be tested or inspected before delivery. *Contractor* submits calibration certificates of equipment/machinery to the *Project Manager*, upon request.

4.5 Marking Plant and Materials outside the Working Areas

- *Contractor* marks Plant and Materials that are stored outside the designated working Area(s). Such storage spaces are clearly demarcated and include project/contract information and contract details of the *Project Manager*. The *Project Manager* approves of such storage areas.
- *Contractor* provides their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or thief of machinery and equipment.

4.6 Contractor's Equipment (including temporary works).

The *Contractor*:

- Provides all machinery/equipment to conduct the works. This is compatible with the site conditions and constraints of the project. The *Employer* issues no other machinery/equipment, to the Contractor, except for scaffolding.
- Provides their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or theft of machinery and equipment

4.7 Cataloguing requirements by the Contractor

Not applicable for this contract.

5 Construction

Hendrina Power Station is located within the Middleburg Magisterial District, approximately 35 km south-east of the town Middleburg and on the south-western border of the town Pullenshope. The power station is located south of the Optimum Colliery, which is the main supply of coal for the power station.

- I. Hendrina Road (N11) taking the Pullenshope turn off and continue about 8km, then there is a sign Hendrina Power Station and turn left to the security gate.
- II. Site coordinates: 26.0326° S, 29.5992° E

Compulsory induction is required before gaining access to *Employer's* site. Adherence to 'Life Saving rules' of *Employer's* and other requirements re explained during the induction and in addition these rules are also indicated on signage within the perimeter of the Station. The rules and regulations for site access and security measures are contained in HSPHO020 'Access Control-Protective Services'. The *Contractor* always adheres to this procedure.

Failure to adhere to any of the access, security or "Life Saving" rules at any times will result in the suspension of the permit for the relevant person and may also lead to criminal prosecution for the violation of safety rules and regulations.

5.1 Temporary works, Site services & construction constraints

5.1.1 *Employer's* Site entry and security control, permits, and Site regulations

- The *Project Manager* gives access to the project site
- All persons entering and leaving the Site will be subject to security checks including breathalyser testing for alcohol levels. Persons failing the latter test will be denied entry to Site.
- No person may enter the Site without the necessary permits.
- All persons entering the Site for the first time shall attend a safety induction course.
- Copies of Site regulations shall be obtained by the *Contractor* and these regulations shall be made available to, and imposed on, all persons employed by the *Contractor* and on visitors accompanying the *Contractor* on site.
- All persons shall obey road signs and no entry passed safety barricades shall be condoned.

5.1.2 Restrictions to access on Site, roads, walkways and barricades

- As per section 5.1.1
- Working hours at *Employer* are 07:00-16:15 on Mondays to Thursdays and 07:00-12:00pm on Fridays. Collection and delivery of any plant or equipment would be within working hours.
- During the execution of the works, *Contractor* keeps records of signed registers or time sheets of the *Contractor's* specific employees on site, including subcontractors. *Contractor* keeps the records and avail it to the *Project Manager* upon request.

5.1.3 People restrictions on Site; hours of work, conduct and records

Working hours will be adhered to as per negotiations. The *Contractor* keeps records of his people on site, including those of his Sub- *Contractors* which the *Project Manager* or supervisor have access to at any time. These records may be needed when assessing compensation events.

5.1.4 Health and safety facilities on Site

The Medical Centre is used by all individuals on site for injuries and first aid related issues, however cost to perform medical services is covered by the Contractor. The fire department is also available for fire and other related emergencies. Their respective contact details to be provided during induction. However, the Contractor must have their own medical facilities available and appointed safety supervisor

5.1.5 Environmental controls, fauna & flora, dealing with objects of historical interest

Refer to section 2.4

The *Contractor* will be accountable for housekeeping of his area. The *Project Manager* will inspect before hand-over will be signed

5.1.6 Title to materials from demolition and excavation

Employer has the title deeds to the waste accumulated from conducting the works. *Contractor* complies with the following waste disposal requirements:

- Ash debris/slurry is disposed at the ash dams.
- Construction rubble is disposed at the landfill site.
- Coal sediments is disposed at the designated dumping site at the ash dams
- Hazardous waste is disposed at a permitted landfill. *Contractor* submits disposal certificate to *Project Manager* for approval.

5.1.7 Cooperating with and obtaining acceptance of Others

Site access is granted by *Project Manager*. During contract period, *Contractor* works in parallel with other *Contractors*.

The routing of all written communications is between the *Project Manager* and the *Contractor* only. Any agreement between the *Contractor* and any other person representing the *Employer* which has not been routed via the *Project Manager* is unacceptable and invalid.

Contractor takes charge of the work site and ensures no interference from other parties which may hinder the progress and completion of the works in the stipulated time frame

5.1.8 Publicity and progress photographs

No pictures of anything on site are taken by the *Contractor* without prior approval of the *Employer*.

5.1.9 Contractor's Equipment

- The *Contractor's* equipment is inspected by an authorised employee of the *Employer* on arrival at the site. The following documentation is required to accompany the equipment where applicable:
 - ✓ The copies of all test/calibration certificates and maintenance records.
- Each piece of workshop equipment and tools the *Contractor* brings on site must be declared and logged at Protective services. Failure to declare, the *Employer* will not issue gate release permits to take *Contractor's* workshop equipment/tools off site.
- *Contractor* marks Plant and Materials which are stored outside the designated Working Area(s). Such storage spaces are clearly demarcated and include project/contract information and contact details of the *Project Manager*. *Project Manager* approves of such storage areas.
- *Contractor* complies with providing:
 - ✓ All labour and machinery/equipment to conduct the works. This is compatible with the site conditions and constraints of the project. No other machinery/equipment is issued, by the *Employer* to the *Contractor*, except for scaffolding.
 - ✓ Their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or theft of machinery and equipment.
- *Contractor* keeps comprehensive records of the *Contractor's* equipment bought on and removed from site.
- *Contractor* complies with the *Employer's* site access procedures.

5.1.10 Equipment provided by the Employer

No equipment shall be provided by the *Employer* for this contract. The *Contractor* provides all the equipment required for this contract.

5.1.11 Site services and facilities

Item	Date by which it will be provided
Safety file review	Before commencement of the project
Induction for Contractor's <i>Employer's</i>	Before commencement of the project

Permit to Work	At commencement of the project
Power supply at the site-establishment area	At commencement of the project
Potable water	At commencement of the project
Ablution facilities	At commencement of the project
Waste disposal area	At commencement of the project

Table 2: Site services and facilities

5.1.11.1 Potable water supply

The *Employer supplies*, free of charge, reasonable quantities of potable water required for the purposes of this contract from the existing points. *Contractor* provides, at his own cost, all connection fittings, pipe work, temporary plumbing, and pumps necessary to lead the water from the *Employer's* point of supply to the various points where it is required.

5.1.11.2 Electrical Power Supply

- Power is available at the existing points.
- *Contractor* provides his own portable 380V electrical distribution boards, and supply cables to and from the boards, for all his power supply requirements to execute the works.
- *Contractor's* electrical distribution boards comply with OHS&A as referred to in the Electrical Installation Regulations and the Electrical Machinery Regulations. Each board brought onto site has a Certificate of Compliance issued by an accredited person.
- *Contractor's* electrical distribution boards re installed at the works on a time negotiated with the *Supervisor*, prior to the possession date.
- The *Employer connects* distribution boards to a 380V three-phase AC power supply, only after the *Contractor* has submitted the valid Certificate of Compliance. All *Contractor's* electrical distribution boards are unearthed to the steel structure of the plant.
- Any additional electrical and lighting requirements around the work area shall be provided by the *Contractor*. The *Contractor* shall provide everything else necessary for providing the Works.

5.1.11.3 Ablution Facilities

Employer provides Contractor access to identified existing toilet facilities when working within site boundaries. *Contractor* provides portable ablution facilities for site workers in close proximity to road rehabilitation sites.

5.1.11.4 Medical Facilities

- *Contractor* provides a First Aid service to his/her employees and *Subcontractors*. In the case where these prove to be inadequate, like in the event of a serious injury, the *Employer's* medical centre and facilities will be available.
- *Employer recovers* the costs incurred, in the use of the above *Employer's* facilities from the *Contractor*.

5.1.11.5 Site yard

- *Employer provides* a site for the *Contractor's* yard at a location that is indicated to the *Contractor*. *Contractor* provides all the facilities required by him/her for such a site at their own cost (including fencing of area as per the requirements).
- *Contractor* provides their own resources to secure security of machinery and equipment that may be stored on site. *Employer is* not liable to account for any costs related to damages or theft of machinery and equipment.
- *Contractor* maintains the site to meet the requirements of the health and safety requirements as per the requirements of the *Project Manager*. *Contractor* restores the site to its original state i.e. clean rehabilitate the site. Inspection to be held and signed off by the *Supervisor*.

Under no circumstances is the *Contractor* or his employees allowed to connect to any piped services or electrical supply without the permission from the *Project Manager*.

5.1.12 Facilities provided by the *Contractor*

Contractor provides:

- All the necessary machinery/equipment and facilities to provide the Works. This includes machinery/equipment and facilities not issued by the *Employer*.
- Their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or theft of machinery and equipment.

Contractor keeps comprehensive records of the *Contractor's* equipment bought on and removed from site. *Contractor* complies with the *Employer's* site access procedures.

5.1.12.1 Electrical equipment/appliances, lighting, and power.

Any electrical equipment or appliances used by the *Contractor* must comply with all relevant safety regulations and requirements as detailed in OHS Act 85 of 1993 and be maintained in safe and proper working condition.

The *Employer* has the right to stop the *Contractor's* use of any electrical equipment or appliance which, in the *Employer's* opinion, does not conform to the foregoing.

The *Contractor* provides at his own expense any temporary local lighting equipment and ensures that it is in accordance with the requirements of the factory's inspector.

The *Contractor* provides, at his own expense, all temporary wiring and cabling to lead power from the point of supply to the various points where it is required, maintain same and remove on completion.

5.1.12.2 Security

The *Contractor* is responsible for all security on site, viz., fencing of, night watch and access control to secure all plant, materials, and the works itself. All these measures must be in accordance with any relevant regulations and standards and are subject to the *Project Manager's* acceptance.

It is also the *Contractor's* responsibility to ensure the security of all completed portions of the works prior to completion.

5.1.12.3 Accommodation of Employees

The *Contractor* is responsible for the provision of accommodation and meals of his own personnel, and the cost thereof to be included in their price list.

5.1.12.4 Sanitary facilities

The *Contractor* provides services, maintains, and removes on completion any facilities required and allow for same in their price list.

5.1.12.5 Housekeeping

The working areas shall be always kept clean. All cables are to be routed so as not to cross over floors and walkways. All equipment is packed neatly without interference to access. Where applicable, all excess scaffolding material is removed from working areas after the scaffolding has been erected. The bins can be requested from the *Employer* should the need arise.

The *Contractor's* equipment must not impair the operation of the surrounding plant or access to the surrounding plant.

5.1.13 Existing premises, inspection of adjoining properties and checking work of Others

Inspection with the owners of adjacent buildings and properties, before commencing with the works, are required that have the potential to damage surrounding buildings and property. *Contractor* inspects the work of others to which he/she is required to connect but he/she inspects in the presence of others.

5.1.14 Survey control and setting out of the works

Contractor provides all the necessary equipment and facilities to execute the works.

It is the responsibility of the *Contractor* to verify and rectify the survey information where provided. The *Contractor* is responsible for the setting out of the works.

5.1.15 Excavations and associated water control.

Contractor ensures all excavations are barricaded and sufficient signage placed around excavated areas.

Contractor provides equipment to deal with any groundwater.

5.1.16 Underground services, other existing services, cable, and pipe trenches and covers

This contract may include certain work relating to the moving and reinstating of existing services that may be affected by the construction of the works.

The *Employer* will, in the contract documents, provide information regarding the location of existing utility services, but the *Employer* does not accept responsibility for the accuracy of this information.

The *Contractor* responsible for the detection and protection of underground and above ground services.

The *Contractor* shall check and determine on the site the positions of any services shown on the drawings. This shall be done by visual inspections, using detecting apparatus, and by making excavations to expose the position of the service at critical points. This shall also be done where no services are shown on the drawings but where such services are nevertheless believed to be present. The positions of all services so detected shall be marked carefully and then drawn in on the drawings. These services will then be defined as known services. The *Contractor* shall take all reasonable precautions not to damage the services during the search, when the onus shall rest with him to prove that, in the event of damage being done to such services during the search, it was not his fault that they had been damaged.

The *Contractor* will be held responsible for any damage caused by him to known services, unless he can prove that he has taken all the above precautions and that the damage has nevertheless been caused because the position of the known service had deviated by more than one metre from the position as may reasonably have been deduced from the investigation made by him.

The *Contractor* shall take all reasonable precautions to protect existing services during construction and during the relocation of such services. Where protective measures involve the construction of permanent work, the *Contractor* shall execute the work in accordance with the engineer's instructions, and payment shall be made as provided in the project specifications.

All pipes, cables, conduits, or other known services of any nature whatsoever damaged as a result of the *Contractor's* operations shall be repaired and reinstated forthwith by the *Contractor* or by the authority concerned, all at the expense of the *Contractor* and to the satisfaction of the engineer

It shall be clearly understood that, in certain instances, existing services can be relocated only after the *Contractor* has advanced sufficiently on or has completed certain sections of earthworks or certain structures.

Whenever services are encountered which interfere with the execution of the works and which require to be moved and relocated, the *Contractor* shall advise the engineer, who will determine the extent of the work, if any, to be undertaken by the *Contractor* in moving, relocating, and reinstating or protecting such services.

Any work required to be undertaken by the *Contractor* in protecting, moving, and relocating the services for which no provision has been made in the contract documents, or for which there are no appropriate tender rates, will be classed as a variation, as provided in the general conditions of contract

5.1.17 Control of noise, dust, water, and waste

- *Contractor* disposes waste as per Hendrina power station waste management procedure-HSPPIN003 latest revision. No stockpiling will be permitted.
- Misuse of water is not tolerated.
- Usage of noisy machinery is tested by the Occupational Hygienist to assess if noise level is acceptable. *Contractor* suppresses dust by applying dust suppression in the form of watering and application of Dust-A-side.

5.1.18 Sequences of construction or installation

Refer to scope of work and drawings issued.

5.1.19 Giving notice of work to be covered up

Contractor notifies *Project Manager* within 3 days of works to be covered up.

5.1.20 Hook ups to existing works

Contractor complies with working at heights requirements, of hook up heights above ground level during the execution of the works.

Where there is potential for a fall, a risk assessment must be conducted, and suitable control measures must be implemented.

5.2 Completion, testing, commissioning, and correction of Defects

5.2.1 Work to be done by the Completion Date

The *Project Manager* cannot certify completion until all the works has been done and is also free of defects which would have, in his opinion, prevented the *Employer* from using the works and others from doing their work.

The *Contractor* shall have done everything required to provide the works after the QIP assessment of every task is done by both the *Employer* and *Contractor*.

The completion of the works is certified after QIP assessment of every task is approved by *Employer*, authorised by *Employer* and *Contractor*.

5.2.2 Use of the *works* before Completion has been certified

Not applicable.

5.2.3 Materials facilities and samples for tests and inspections

The *Contractor* is required to perform a slump test and cube tests on the same batch of concrete every time a sample is taken, and the result recorded

5.2.4 Commissioning

After the completion of the cable tests, the *Contractor* begins commissioning in the presence of the *Employer/Employer's* representatives.

The *Contractor* prepares the check sheet to record the findings during commissioning.

Commissioning includes energising and deenergising of the plant and its auxiliaries (loads):

- Ensures all interlocks are functional.
- Ensures that the locking devices are functional.

- Ensures that the plant is stable.
- Ensures that all latching devices are functional.
- Ensures that there are no hot spots on the connection points of the RMUs (use thermal imaging camera). The *Employer* provides the services of thermal scans. No parts of the switchgear should read 40°C and above.
- Ensures that operating mechanism and indication is functional.
- Demonstrates procedure to access fuses and switching chambers of RMUs
- Ensures that all the labelling is in place.
- The *Employer* provides pad locks for locking.

5.2.5 Start-up procedures required to put the *works* into operation

Site Integration Test (SIT) Procedure

The *Contractor* prepares a detailed test procedure for the SIT

As a minimum, the proposed SIT procedure identifies the following;

- Major test activities.
- Comprehensive list and description of the individual tests to be performed.
- How the tests are to be prepared and conducted.
- Test dates and durations.
- Checklists – how the test results will be documented.
- Acceptance Criteria.
- How the identified discrepancies will be processed.
- Retesting requirements.

Completion of the works is certified after quality inspection is conducted of every task.

5.2.6 Take over procedures

The Works is not deemed to be in operation until the commercial operation date. The Works is taken over on that date and the defects period runs from that date. Takeover by the *Project Manager* is dependent on successful completion of the Works, commissioning and testing, Works of plant labelling and all required documentation handed over and all known defects corrected. Take-over is after or at the same time as completion as per agreed schedule on sections completed but before the end date as per contract for all drains.

The QCP/QIP will be used as a takeover procedure, once all the tasks contained on QC documents have been completed and approved by the quality control personnel. The Works will be signed off once the QC personnel have approved the QCPQIP.

5.2.7 Access given by the *Employer* for correction of Defects

Contractor submits defect correction method statement, programme, and QCP/QIP, *Project Manager* approves. *Project Manager* provides *Contractor* access to and use of a part of the works, which has been taken over if needed to correct a defect.

5.2.8 Performance tests after Completion

Contractor refers to Section 3.1 and 3.2 of the issued Part 3: scope of work.

Contractor refers to section 5.2.4 of the issued Part 3: scope of work

5.2.9 Training and technology transfer

Refer to section 2.13 of the issued Part 3: scope of work.

5.2.10 Operational maintenance after Completion

Not applicable for this contract.

6 Plant and Materials standards and workmanship

Applicable standards that the *Contractor* is to adhere to are as follows:

240-56227573	Air-Insulated Withdrawable AC Metal-Enclosed Switchgear and Control Gear for Rated Voltages above 1kV up to and including 52kV Standard
240-76366372	Specification or a Platform Mounted Ring Main Unit Switchboard for Systems with Nominal Voltage of 11kV up to 22kV
240-56030406	Free Standing Metal Enclosed Ring Main Units for Systems with Nominal Voltages from 11kV to 33kV Standard
240-56227443	Requirements for Control and Power Cables for Power stations Standard
240-56357424	MV and LV Switchgear Protection Standard
240-56355815	Field Instrument Installation Standard-Junction Boxes and Cable Terminations
240-56356396	Earthing and Lightning Protection
SANS 1874	Switchgear – Metal-enclosed ring main units for rated A.C. voltages above 1kV and to and including 36 kV
34-2123	Tele control requirements for ring main units
SANS62271-103	High-Voltage Switchgear and control gear Part 103: Switches for rated voltages above 1 kV up to and including 52 kV
SANS876	Cable terminations and live conductors within air-filled enclosures (insulation co-ordination) for rated A.C. voltages from 7,2 kV up to and including 36 kV
SANS1019	Standard voltages, currents and insulation levels for electricity supply
SANS62271-100	High-Voltage Switchgear and control gear Part 100: Alternating current circuit breakers
240-53902499	Standard for The Transport, Handling, Storage and Preservation of HV and MV Switchgear
240-54937450	Fire Protection & Life Safety Design Standard

Table 3: Table of standards

6.1 Investigation, survey and Site clearance

The *Contractor* surveys the area to establish the ground profiles.

6.2 Building works

All construction work to be done as per SANS 1200.

6.3 Civil engineering and structural works

The *Contractor* is responsible for the construction of the plinths in accordance with the *Contractor's* detailed drawings and *Employer's* specifications.

The *Contractor* disposes of all construction waste at a licenced waste disposal site to be accepted by the *Project Manager*. The waste disposal site is selected to suit the classification of the materials to be disposed of certificates of disposal are submitted to the *Employer*.

The *Contractor* is required to confirm all site dimensions, levels, and cast-in items positions on site prior to any fabrication of steel or casting of concrete.

The *Contractor* is required to submit a comprehensive method statement of the works to the *Project Manager* for acceptance prior to the start of the works.

The *Contractor* is responsible for the design, erection, maintenance and removal of all temporary bracing or propping required for the execution of the works.

All concrete work is required to be in accordance with SANS 2001-CC1 and SANS 10100-2 unless otherwise stated.

All concrete surfaces and cast-in items are required to be inspected and accepted by the *Project Manager* in writing before casting of concrete may commence.

The *Contractor* is required to obtain written acceptance from the *Project Manager* for the use of any admixture or the use of ready mixed concrete, to pump concrete, or to use cement or cement blends other than Ordinary Portland Cement (OPC).

Compaction of concrete is required to be done by means of mechanical vibrators only.

The *Contractor* is required to submit the concrete mix design to the *Project Manager* for acceptance.

The *Contractor* is required to demonstrate, by means of a report from an approved laboratory, that the aggregates do not exhibit excessive shrinking properties in accordance with SANS 1083 and is also required to demonstrate that the aggregates do not have a potential alkali silica reaction.

All concrete is required to have a maximum water/cement ratio of 0.45 with a minimum cement content of 420 kg/m³.

The *Contractor* is required to perform a slump test on the same batch of concrete every time a sample is taken, and the result recorded.

Concrete – Strength characteristics

Concrete Grade is required to be:

- Class 15 MPa/ 19 mm for Blinding Concrete (28 days),
- Class 35 MPa/ 19 mm for Structural Concrete (28 days).

Reinforcement

All reinforcement is stamped with a SANS quality assurance mark

Cast in-situ concrete cover is required to be a minimum of 50 mm for exposed to earth or water.

Quality of Concrete

- *Contractor* submits to the Supervisor full details and samples of all materials, which he proposes to use for making concrete, at least 28 days before the concreting of the works is due to commence.
- All angled corners are chamfered 20 mm x 20 mm, unless such other larger size is detailed on the drawings.

6.4 Electrical & mechanical engineering works

Contractor refers to Section 3.1 and 3.2 of the issued Part 3: scope of work.

6.5 Process control and IT works

Not applicable.

6.6 Other [as required]

Not applicable.

7 List of drawings

7.1 Drawings issued by the *Employer*

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

Note: Some drawings may contain both Works Information and Site Information.

Drawing number	Revision	Title
0.15/686	16	Hendrina power station unit and station MV & LV electrical diagram.
D-DT 0863	9	11kV 3-way RMU Plinth details (Pre-cast) 11kV 3-way RMU Plinth details (Cast on site)
D-DT 0854	8	MV Power cable trench details

C3.2 *CONTRACTOR'S WORKS INFORMATION*

This section of the Works Information will always be contract specific depending on the nature of the *works*. It is most likely to be required for design and construct contracts where the tendering contractor will have proposed specifications and schedules for items of Plant and Materials and workmanship, which once accepted by the *Employer* prior to award of contract now become obligations of the *Contractor* per core clause 20.1.

Typical subheadings could be

- a) *Contractor's design*
- b) Plant and Materials specifications and schedules
- c) Other

This section could also be compiled as a separate file.

PART 4: SITE INFORMATION

Document reference	Title	No of pages
C4	This cover page Site Information	1
Total number of pages		

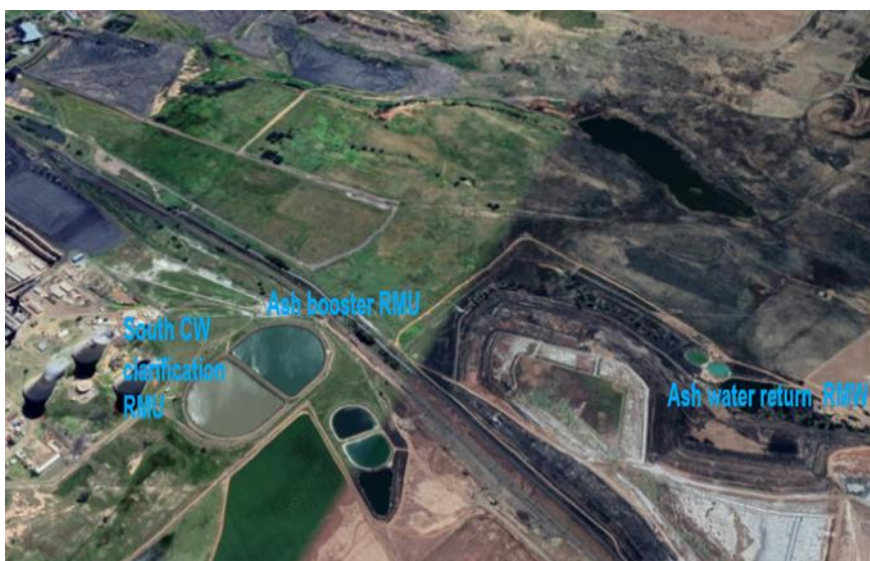
PART 4: SITE INFORMATION.

1. General description

Hendrina Power Station came into operation by the end of 1976. It is located on the farm Hendrina Power Station 162 IS on the N11 between Middelburg and Hendrina. The facility is situated south-west of Optimum Colliery, which historically supplied most of the coal to the power station.

The Ring Main Unit (RMU) switchgear is the main source of power supply to the one of the critical plants in the outside plant (older lower and the new lower dams). It offers great flexibility of the power system in maintaining continuity of supply. There are 4 RMUs, which form a ring feed network.

- **6.6kV Ash Water Booster RMU** is located inside the station and feeds the 6.6kV/380V transformer which then supplies the 380V ash water return plant booster pump board
- **6.6kV South CW Clarification RMU** is located inside the station and feeds the 6.6kV/380V transformer, which then supplies the 380V lime off-loading blower board.
- **6.6kV Ash Water Return (AWR) RMU 1** located at the old lower dams and feeds AWR RMU 1 feeds the 6.6kV ash water return board 1.
- **6.6kV Ash Water Return (AWR) RMU 2** located at the old lower dams and feeds AWR RMU 2 feeds the two 6.6kV/380V transformer which then supplies the 380V ash water return board 1 and 380V ash water return board 2



2. Existing buildings, structures, and plant & machinery on the Site

The infrastructure in the vicinity RMU includes the following:

- Ash delivery pipe lines
- Raw water dams
- Perimeter fence
- Cooling towers
- Workshops and offices
- Switch gear room
- Pump-houses
- Ash water return dams
- Roshcon site offices
- Water drains

3. Subsoil information

The contractor is responsible for the geotechnical investigation.

4. Hidden services

The existing services could not be determined. Cable and metal detection to be conducted before any excavation can take place.

C1.1 Form of Offer & Acceptance

Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

[The Replacement of 4 Oil-Filled Outdoor Ring Main Unit (RMU) MV Switchgears at Hendrina Power Station]

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

Options B	The offered total of the Prices exclusive of VAT is	R [●]
	Sub total	R [●]
	Value Added Tax @ 15% is	R [●]
	The offered total of the amount due inclusive of VAT is ¹	R [●]
	(in words) [●]	

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Contractor* in the *conditions of contract* identified in the Contract Data.

Signature(s)

Name(s) _____

Capacity _____

For the tenderer:

(Insert name and address of organisation)

Name & signature of witness

Date

Tenderer's CIDB registration number (if applicable)

¹ This total is required by the *Employer* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.

Acceptance

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the Employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

- Part C1 Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
- Part C2 Pricing Data
- Part C3 Scope of Work: Works Information
- Part C4 Site Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy signed between them of this document, including the Schedule of Deviations (if any).

Unless the tenderer (now *Contractor*) within five working days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the Parties.

Signature(s)

Name(s) _____

Capacity _____

**for the
Employer**

(Insert name and address of organisation)

Name &
signature of
witness

Date

Note: If a tenderer wishes to submit alternative tenders, use another copy of this Form of Offer and Acceptance.

Schedule of Deviations to be completed by the *Employer* prior to contract award

Note:

1. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
1	[•]	[•]
2	[•]	[•]
3	[•]	[•]
4	[•]	[•]
5	[•]	[•]
6	[•]	[•]
7	[•]	[•]

By the duly authorised representatives signing this Schedule of Deviations below, the Employer and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the Employer during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the tenderer:

For the Employer

Signature _____

Name _____

Capacity _____

On behalf of *(Insert name and address of organisation)*

(Insert name and address of organisation)

Name & signature of witness _____

Date _____

C1.2 ECC3 Contract Data

Part one - Data provided by the *Employer*.

Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option	
	dispute resolution Option and secondary Options	B: Priced contract with bill of quantities W1: Dispute resolution procedure X2 Changes in the law X5: Sectional Completion X7: Delay damages X15: Limitation of <i>Contractor's</i> liability for design to reasonable skill and care X16: Retention X18: Limitation of liability Z: <i>Additional conditions of contract</i>
	of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)	
10.1	The <i>Employer</i> is (Name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state-owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg

10.1	The <i>Project Manager</i> is: (Name)	Phephisani Dlamini
	Address	Hendrina Power Station Impala Road / P/Bag X1003 Pullenshope 1096
	Tel	+27 13-296-3973
	Fax	N/A
	e-mail	<u>DlaminPE@eskom.co.za</u>
10.1	The <i>Supervisor</i> is: (Name)	Phathutshedzo Mababo
	Address	Hendrina Power Station Impala Road / P/Bag X1003 Pullenshope 1096
	Tel No.	013 296 3722
	Fax No.	N/A
	e-mail	<u>MababoPM@eskom.co.za</u>
11.2(13)	The <i>works</i> are	Design, Manufacture, Transport, Install and Commissioning of oil filled RMU switchgear.
11.2(14)	The following matters will be included in the Risk Register	<p>Develop risk time allowance for the following:</p> <ol style="list-style-type: none"> 1. Lapsing of the contract date whilst completion has not been achieved. 2. ORHVS requirements delays. 3. Inability to meet contract requirements during commissioning. 4. Interfacing activities 5. Plant access and Permit To Work delays. <p>And any other matter posing a risk to the contract is notified and discussed amongst the Parties and agreed upon before inserted on the Risk Register.</p>
11.2(15)	The <i>boundaries of the site</i> are	Hendrina Power Station (Only allocated sections of the works)
11.2(16)	The Site Information is in	Part 4: Site Information
11.2(19)	The Works Information is in	Part 3: Scope of Work (all relevant documents)
12.2	The <i>law of the contract</i> is the law of	the Republic of South Africa
13.1	The <i>language of this contract</i> is	English
13.3	The <i>period for reply</i> is	1 week

2 The Contractor's main responsibilities

Data required by this section of the core clauses is provided by the *Contractor* in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data.

3 Time

11.2(3)	The <i>completion date</i> for the whole of the works is	November 2023															
11.2(9)	The <i>key dates</i> and the <i>conditions</i> to be met are:	<table border="1"> <thead> <tr> <th></th> <th><i>Condition to be met</i></th> <th><i>key date</i></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>RMU 1 Completion</td> <td>12 - 07 - 2024</td> </tr> <tr> <td>2</td> <td>RMU 2 Completion</td> <td>26 - 07 - 2024</td> </tr> <tr> <td>3</td> <td>RMU 3 Completion</td> <td>12 - 08 - 2024</td> </tr> <tr> <td>4</td> <td>RMU 4 Completion</td> <td>26 - 08 - 2024</td> </tr> </tbody> </table>		<i>Condition to be met</i>	<i>key date</i>	1	RMU 1 Completion	12 - 07 - 2024	2	RMU 2 Completion	26 - 07 - 2024	3	RMU 3 Completion	12 - 08 - 2024	4	RMU 4 Completion	26 - 08 - 2024
	<i>Condition to be met</i>	<i>key date</i>															
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2	RMU 2 Completion	26 - 07 - 2024															
3	RMU 3 Completion	12 - 08 - 2024															
4	RMU 4 Completion	26 - 08 - 2024															
30.1	The <i>access dates</i> are:	<table border="1"> <thead> <tr> <th></th> <th>Part of the Site</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>RMU 1 Access</td> <td>01 - 07 - 2024</td> </tr> <tr> <td>2</td> <td>RMU 2 Access</td> <td>15 - 07 - 2024</td> </tr> <tr> <td>3</td> <td>RMU 3 Access</td> <td>29 - 07 - 2024</td> </tr> <tr> <td>4</td> <td>RMU 4 Access</td> <td>13 - 08 - 2024</td> </tr> </tbody> </table>		Part of the Site	Date	1	RMU 1 Access	01 - 07 - 2024	2	RMU 2 Access	15 - 07 - 2024	3	RMU 3 Access	29 - 07 - 2024	4	RMU 4 Access	13 - 08 - 2024
	Part of the Site	Date															
1	RMU 1 Access	01 - 07 - 2024															
2	RMU 2 Access	15 - 07 - 2024															
3	RMU 3 Access	29 - 07 - 2024															
4	RMU 4 Access	13 - 08 - 2024															
31.1	The <i>Contractor</i> is to submit a first programme for acceptance within	5 days after the Contract Start Date.															
31.2	The <i>starting date</i> is	TBA															
32.2	The <i>Contractor</i> submits revised programmes at intervals no longer than	2 days.															
35.1	The <i>Employer</i> is not willing to take over the works before the Completion Date.	Only after the completion of the hole works as per the program															
4	Testing and Defects																
42.2	The <i>defects date</i> is	52 weeks after Completion of each section of the works.															
43.2	The <i>defect correction period</i> is	Within 7 working days upon notification for general defects.															
	except that the <i>defect correction period</i> for	Urgent matters related to safety, production and/or environmental contraventions															
	and the <i>defect correction period</i> is	1 working day upon notification															
5	Payment																
50.1	The <i>assessment interval</i> is	between the 20th and 25th day of each successive month.															
51.1	The <i>currency of this contract</i> is the	South African Rand.															

51.2	The period within which payments are made is	30 days upon tax invoice submission.
51.4	The <i>interest rate</i> is	<p>the publicly quoted prime rate of interest (calculated on a 365-day or year) charged from time to time by the Standard Bank of South Africa Limited (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands and</p> <p>(ii) the LIBOR rate applicable at the time for amounts due in other currencies. LIBOR is the 6 month London Interbank Offered Rate quoted under the caption "Money Rates" in The Wall Street Journal for the applicable currency or if no rate is quoted for the currency in question then the rate for United States Dollars, and if no such rate appears in The Wall Street Journal then the rate as quoted by the Reuters Monitor Money Rates Service (or such service as may replace the Reuters Monitor Money Rates Service) on the due date for the payment in question, adjusted <i>mutatis mutandis</i> every 6 months thereafter and as certified, in the event of any dispute, by any manager employed in the foreign exchange department of The Standard Bank of South Africa Limited, whose appointment it shall not be necessary to prove.</p>

6 Compensation events

60.1(13)	<p>The place where weather is to be recorded is:</p> <p>The <i>weather measurements</i> to be recorded for each calendar month are,</p> <p>The <i>weather measurements</i> are supplied by</p> <p>The <i>weather data</i> are the records of past <i>weather measurements</i> for each calendar month which were recorded at:</p> <p>and which are available from:</p>	<p>Hendrina Power Station SOR control room</p> <p>The cumulative rainfall (mm)</p> <p>The number of days with rainfall more than 10 mm</p> <p>The number of days with minimum air temperature less than 0 degrees Celsius</p> <p>The number of days with snow lying at 09:00 hours South African Time</p> <p>and these measurements:</p> <p>Refer to Part C4 of site information</p> <p>Hendrina Power Station, Pullenshope, Mpumalanga</p> <p>the South African Weather Bureau and included in Annexure A to this Contract Data provided by the <i>Employer</i></p>
60.1(13)	Assumed values for the ten year return	As stated in Annexure A to this Contract Data

weather data for each *weather measurement* for each calendar month are:

provided by the *Employer*.

7	Title	The Contractor has no title to site materials purchased by the <i>Employer</i> for the project.
8	Risks and insurance	
80.1	These are additional <i>Employer's</i> risks	1. Are as referenced by the Risk Register
9	Termination	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
10	Data for main Option clause	
B	Priced contract with bill of quantities	
60.6	The <i>method of measurement</i> is	SANS 1200 for Civil and SANS 1874 for electrical works published by SANS and amended as stated in Part C2.1, Pricing Assumptions.
11	Data for Option W1	
W1.1	The <i>Adjudicator</i> is	The person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).
W1.2(3)	The <i>Adjudicator nominating body</i> is:	The Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body.
W1.4(2)	The <i>tribunal</i> is:	Arbitration.
W1.4(5)	The <i>arbitration procedure</i> is	The latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	Johannesburg South Africa
	The person or organisation who will choose an arbitrator	
	- if the Parties cannot agree a choice or	The Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.
	- if the arbitration procedure does not state who selects an arbitrator, is	
12	Data for secondary Option clauses	
X2	Changes in the law	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.
X5	Sectional Completion	
X5.1	The <i>completion date</i> for each <i>section</i> of	

	the works is:	Section	Description	Completion date
		1	All Works	Is as per the agreed Programme of Works
X5 & X6	Sectional Completion and bonus for early Completion used together			
X7	Delay damages (but not if Option X5 is also used)			
X7.1	Delay damages for late Completion of the	section	Description	Amount per day
		1	RMU 1 Completion	R 10 000
		2	RMU 2 Completion	R 10 000
		3	RMU 3 Completion	R 10 000
		4	RMU 4 Completion	R 10 000
	Remainder of the works			
	The total delay damages payable by the Contractor does not exceed:	10% of the contract value		
X15	Limitation of the Contractor's liability for his design to reasonable skill & care	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.		
X16	Retention (not used with Option F)			
X16.1	The retention free amount is	R0.00		
	The retention percentage is	10 %		
X18	Limitation of liability			
X18.1	The Contractor's liability to the Employer for indirect or consequential loss is limited to:	R0.0 (zero Rand)		
X18.2	For any one event, the Contractor's liability to the Employer for loss of or damage to the Employer's property is limited to:	The amount of the deductibles relevant to the event		
X18.3	The Contractor's liability for Defects due to his design which are not listed on the Defects Certificate is limited to	The greater of <ul style="list-style-type: none"> • the total of the Prices at the Contract Date and • the amounts excluded and unrecoverable from the Employer's assets policy for correcting the Defect (other than the resulting physical damage which is not excluded) plus the applicable deductible as at contract date. 		
X18.4	The Contractor's total liability to the Employer for all matters arising under or in	The total of the Prices other than for the additional excluded matters.		

connection with this contract, other than excluded matters, is limited to:

The *Contractor's* total liability for the additional excluded matters is not limited.

The additional excluded matters are amounts for which the *Contractor* is liable under this contract for

- Defects due to his design which arise before the Defects Certificate is issued,
- Defects due to manufacture and fabrication outside the Site,
- Loss of or damage to property (other than the *works, Plant and Materials*),
- Death of or injury to a person and
- Infringement of an intellectual property right.

X18.5 The *end of liability date* is

(i) 2 years after the *defects date* for latent Defects and

(ii) the date on which the liability in question prescribes in accordance with the Prescription Act No. 68 of 1969 (as amended or in terms of any replacement legislation) for any other matter.

A latent Defect is a Defect which would not have been discovered on reasonable inspection by the *Employer* or the *Supervisor* before the *defects date*, without requiring any inspection not ordinarily carried out by the *Employer* or the *Supervisor* during that period. If the *Employer* or the *Supervisor* do undertake any inspection over and above the reasonable inspection, this does not place a greater responsibility on the *Employer* or the *Supervisor* to have discovered the Defect.

regarded as such until notified otherwise by the *Project Manager*.

- Z4.3 In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.
- Z4.4 The taking of images (whether photographs, video footage or otherwise) of the *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Project Manager*. All rights in and to all such images vests exclusively in the *Employer*.
- Z4.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z5 Waiver and estoppel: Add to core clause 12.3:

- Z5.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Project Manager*, the *Supervisor*, or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z6 Health, safety and the environment: Add to core clause 27.4

- Z6.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *works*. Without limitation the *Contractor*:
- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Site;
 - warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of *works*; and
 - undertakes, in and about the execution of the *works*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.
- Z6.2 The *Contractor*, in and about the execution of the *works*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z7 Provision of a Tax Invoice and interest. Add to core clause 51

- Z7.1 Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer's* procedures stated in the Works Information, showing the amount due for payment equal to that stated in the payment certificate.
- Z7.2 If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms

of core clause 51.2 is then calculated from the delayed date by when payment is to be made.

Z7.3 The *Contractor* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer's* VAT number 4740101508 on each invoice he submits for payment.

Z8 Notifying compensation events

Z8.1 Delete from the last sentence in core clause 61.3, "unless the *Project Manager* should have notified the event to the *Contractor* but did not".

Z9 Employer's limitation of liability

Z9.1 The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand)

Z9.2 The *Contractor's* entitlement under the indemnity in 83.1 is provided for in 60.1(14) and the *Employer's* liability under the indemnity is limited.

Z10 Termination: Add to core clause 91.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":

Z10.1 or had a business rescue order granted against it.

Z11 Addition to secondary Option X7 Delay damages (if applicable in this contract)

Z11.1 If the amount due for the *Contractor's* payment of delay damages reaches the limits stated in this Contract Data for Option X7 or Options X5 and X7 used together, the *Employer* may terminate the *Contractor's* obligation to Provide the Works using the same procedures and payment on termination as those applied for reasons R1 to R15 or R18 stated in the Termination Table.

Z12 Ethics

For the purposes of this Z-clause, the following definitions apply:

Affected Party means, as the context requires, any party, irrespective of whether it is the *Contractor* or a third party, such party's employees, agents, or Subcontractors or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,

Coercive Action means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,

Collusive Action means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,

Committing Party means, as the context requires, the *Contractor*, or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractor or the Subcontractor's employees,

Corrupt Action means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,

Fraudulent means any unlawfully or illegally intentional act or omission that misleads, or attempts to

- Action** mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
- Obstructive Action** means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and
- Prohibited Action** means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

- Z12.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.
- Z12.2 The *Employer* may terminate the *Contractor's* obligation to Provide the Services if a Committing Party has taken such Prohibited Action and the *Contractor* did not take timely and appropriate action to prevent or remedy the situation, without limiting any other rights or remedies the *Employer* has. It is not required that the Committing Party had to have been found guilty, in court or in any other similar process, of such Prohibited Action before the *Employer* can terminate the *Contractor's* obligation to Provide the Services for this reason.
- Z12.3 If the *Employer* terminates the *Contractor's* obligation to Provide the Services for this reason, the amounts due on termination are those intended in core clauses 92.1 and 92.2.
- Z12.4 A Committing Party co-operates fully with any investigation pursuant to alleged Prohibited Action. Where the *Employer* does not have a contractual bond with the Committing Party, the *Contractor* ensures that the Committing Party co-operates fully with an investigation.

Z13 Insurance

Z 13.1 Replace core clause 84 with the following:

Insurance cover 84

- 84.1** When requested by a Party, the other Party provides certificates from his insurer or broker stating that the insurances required by this contract are in force.
- 84.2** The *Contractor* provides the insurances stated in the Insurance Table A.
- 84.3** The insurances provide cover for events which are at the *Contractor's* risk from the *starting date* until the earlier of Completion and the date of the termination certificate.

INSURANCE TABLE A

Insurance against	Minimum amount of cover or minimum limit of indemnity
Loss of or damage to the works, Plant and Materials	The replacement cost where not covered by the <i>Employer's</i> insurance. The <i>Employer's</i> policy deductible, as at Contract Date, where covered by the <i>Employer's</i> insurance
Loss of or damage to Equipment	The replacement cost
Liability for loss of or damage to property	<u>Loss of or damage to property</u> <u><i>Employer's</i> property</u>

(except the works, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the Contractor) caused by activity in connection with this contract	<p>The replacement cost where not covered by the Employer's insurance.</p> <p>The Employer's policy deductible, as at Contract Date, where covered by the Employer's insurance.</p> <p><u>Other property</u> The replacement cost.</p> <p><u>Bodily injury to or death of a person</u> The amount required by applicable law</p>
Liability for death of or bodily injury to employees of the Contractor arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law

Z 13.2

Replace core clause 87 with the following:

The Employer provides the insurances stated in the Insurance Table B.

INSURANCE TABLE B

Insurance against or name of policy	Minimum amount of cover or minimum of indemnity
Assets All Risk	Per the insurance policy document
Contract Works insurance	Per the insurance policy document
Environmental Liability	Per the insurance policy document
General and Public Liability	Per the insurance policy document
Transportation (Marine)	Per the insurance policy document
Motor Fleet and Mobile Plant	Per the insurance policy document
Terrorism	Per the insurance policy document
Cyber Liability	Per the insurance policy document
Nuclear Material Damage and Business Interruption	Per the insurance policy document
Nuclear Material Damage Terrorism	Per the insurance policy document

Z15 Asbestos

For the purposes of this Z-clause, the following definitions apply:

AAIA means approved asbestos inspection authority.

ACM means asbestos containing materials.

AL	means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
Ambient Air	means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means occupational exposure limit.
Parallel Measurements	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
Safe Levels	means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
Standard	means the <i>Employer's Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles.</i>
SANAS	means the South African National Accreditation System.
TWA	means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4 hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA.

Z15.1 The *Employer* ensures that the Ambient Air in the area where the *Contractor* will Provide the Services conforms to the acceptable prescribed South African standard for asbestos, as per the regulations published in GNR 155 of 10 February 2002, under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) ("Asbestos Regulations"). The OEL for asbestos is 0.2 regulated asbestos fibres per millilitre of air as a 4-hour TWA, averaged over any continuous period of four hours, and the short term exposure limit of 0.6 regulated asbestos fibres per millilitre of air as a 10-minute TWA, averaged over any 10 minutes, measured in accordance with HSG248 and monitored according to HSG173 and OESSM.

Z15.2 Upon written request by the *Contractor*, the *Employer* certifies that these conditions prevail. All measurements and reporting are effected by an independent, competent, and certified occupational hygiene inspection body, i.e. a SANAS accredited and Department of Employment and Labour approved AAIA. The *Contractor* may perform Parallel Measurements and related control measures at the *Contractor's* expense. For the purposes of compliance the results generated from Parallel Measurements are evaluated only against South African statutory limits as detailed in clause Z15.1. Control measures conform to the requirements stipulated in the AAIA-approved asbestos work plan.

Z15.3 The *Employer* manages asbestos and ACM according to the Standard.

Z15.4 In the event that any asbestos is identified while Providing the Services, a risk assessment is conducted and if so required, with reference to possible exposure to an airborne concentration of above the AL for asbestos, immediate control measures are implemented and relevant air monitoring conducted in order to declare the area safe.

Z15.5 The *Contractor's* personnel are entitled to stop working and leave the contaminated area forthwith until such time that the area of concern is declared safe by either Compliance Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.

- Z15.6 The *Contractor* continues to Provide the Services, without additional control measures presented, on presentation of Safe Levels. The contractually agreed dates to Provide the Services, including the Completion Date, are adjusted accordingly. The contractually agreed dates are extended by the notification periods required by regulations 3 and 21 of the Asbestos Regulations, 2001.
- Z15.7 Any removal and disposal of asbestos, asbestos containing materials and waste, is done by a registered asbestos contractor, instructed by the *Employer* at the *Employer's* expense, and conducted in line with South African legislation.

Annexure A: One-in-ten-year-return weather data obtained from SA Weather Bureau for [weather station]

If any one of these *weather measurements* recorded within a calendar month, before the Completion Date for the whole of the *works* and at the place stated in this Contract Data is shown to be more adverse than the amount stated below then the *Contractor* may notify a compensation event.

Month	Weather measurement				
	Cumulative rainfall (mm)	Number of days with rain more than 10mm	Number of days with min air temp < 0 deg.C	Number of days with snow lying at 08:00 CAT	[Other measurements if applicable]
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

Only the difference between the more adverse recorded weather and the equivalent measurement given above is taken into account in assessing a compensation event.

C1.2 Contract Data

Part two - Data provided by the *Contractor*

[Instructions to the contract compiler: (delete this note before issue to tenderers with an enquiry)

Whenever a cell is shaded in the left-hand column it denotes this data is optional. If not required select and delete the whole row, otherwise insert the required Data.]

Notes to a tendering contractor:

1. Please read both the NEC3 Engineering and Construction Contract (April 2013) and the relevant parts of its Guidance Notes (ECC3-GN)¹ in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on pages 156 to 158 of the ECC3 (April 2013) Guidance Notes.
2. The number of the clause which requires the data is shown in the left-hand column for each statement however other clauses may also use the same data
3. Where a form field like this [] appears, data is required to be inserted relevant to the option selected. Click on the form field **once** and type in the data. Otherwise, complete by hand and in ink.

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

Clause	Statement	Data
10.1	The <i>Contractor</i> is (Name): Address Tel No. Fax No.	
11.2(8)	The <i>direct fee percentage</i> is The <i>subcontracted fee percentage</i> is	% %
11.2(18)	The <i>working areas</i> are the Site and	
24.1	The <i>Contractor's</i> key persons are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job Responsibilities: Qualifications: Experience:	

¹ Available from Engineering Contract Strategies Tel 011 803 3008, Fax 011 803 3009 or see www.ecs.co.za

		CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .		
11.2(3)	The <i>completion date</i> for the whole of the works is			
11.2(14)	The following matters will be included in the Risk Register			
11.2(19)	The Works Information for the <i>Contractor's</i> design is in:			
31.1	The programme identified in the Contract Data is			
B	Priced contract with bill of quantities			
11.2(21)	The <i>bill of quantities</i> is in	(in figures) (in words), excluding VAT		
11.2(31)	The tendered total of the Prices is			
	Data for Schedules of Cost Components	<i>Note "SCC" means Schedule of Cost Components starting on page 60, and "SSCC" means Shorter Schedule of Cost Components starting on page 63 of ECC3 (April 2013).</i>		
B	Priced contract with bill of quantities	Data for the Shorter Schedule of Cost Components		
41 in SSCC	The percentage for people overheads is:	%		
21 in SSCC	The published list of Equipment is the last edition of the list published by The percentage for adjustment for Equipment in the published list is	Minus %		
22 in SSCC	The rates of other Equipment are:	Equipment	Size or capacity	Rate
61 in SSCC	The hourly rates for Defined Cost of design outside the Working Areas are Note: Hourly rates are estimated 'cost to company of the employee' and not selling rates. Please insert another schedule if foreign resources may also be used	Category of employee		Hourly rate

62 in SSCC	The percentage for design overheads is	%
63 in SSCC	The categories of design employees whose travelling expenses to and from the Working Areas are included in Defined Cost are:	

C1.3 Forms of Securities

Pro forma Retention Money Guarantee (may be used when Option X16 applies)

(to be reproduced exactly as shown below on the letterhead of the Bank providing the Guarantee)

Eskom Holdings SOC Limited
Megawatt Park
Maxwell Drive
Sandton
Johannesburg

Date:

Dear Sirs

Reference No. [●] [Drafting Note: Bank reference number to be inserted]

Retention Money Guarantee: [Drafting Note: Name of Contractor to be inserted]

Project [] : Contract Reference: [Drafting Note: Contractor contract reference number to be inserted]

1. In this Guarantee the following words and expressions shall have the following meanings:-
 - 1.1 "Bank" - means [●], [●] Branch, (Registration No. [●]); [Drafting Note: Name of Bank to be inserted]
 - 1.2 "Bank's Address" - means [●]; [Drafting Note: Bank's physical address to be inserted]
 - 1.3 "Contract" – means the written agreement relating to the Project, entered into between Eskom and the Contractor, on or about the [●] day of [●] 200[●] (Contract Reference No. as amended, varied, restated, novated or substituted from time to time; [Drafting Note: Signature Date and Contract reference number to be inserted])
 - 1.4 "Contractor" – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]. [Drafting Note: Name and details of Contractor to be inserted]
 - 1.5 "Eskom" - means Eskom Holdings SOC Limited, a company registered in accordance with the laws of the Republic of South Africa under Registration Number 2002/015527/30
 - 1.6 "Expiry Date" - means the date on which the Defects Certificate is issued in terms of the Contract.
 - 1.7 "Guaranteed Sum" - means the sum of R [●] ([●] Rand); [Drafting Note: Insert amount of Retention Money Guarantee.].
 - 1.8 "Project" - means the.....
2. At the instance of the Contractor, we the undersigned _____ and _____, in our respective capacities as _____ and _____ of the Bank, and duly authorized thereto, confirm that we hold the Guaranteed Sum at the disposal of Eskom, as security for the proper performance by the Contractor of all of its obligations in terms of and arising from the Contract and hereby undertake to pay to Eskom, on written demand from Eskom received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.

3. A demand for payment under this guarantee shall be made in writing at the Bank's address and shall:
 - 3.1 be signed on behalf of Eskom by a director of Eskom or his authorised delegate.
 - 3.2 state the amount claimed ("the Demand Amount");
 - 3.3 state that the Contractor has failed to carry out his obligation(s) to rectify certain defect(s) for which he is responsible under the Contract (and the nature of such defect(s)) alternatively that the Demand Amount is payable to Eskom in the circumstances contemplated in the Contract.
4. Notwithstanding the reference herein to the Contract the liability of the Bank in terms hereof is as principal and not as surety and the Bank's obligation/s to make payment:
 - 4.1 is and shall be absolute provided demand is made in terms of this bond in all circumstances; and
 - 4.2 is not, and shall not be construed to be, accessory or collateral on any basis whatsoever.
5. The Bank's obligations in terms of this Guarantee:
 - 5.1 shall be restricted to the payment of money only and shall be limited to the maximum of the Guaranteed Sum; and
 - 5.2 shall not be discharged and compliance with any demand for payment received by the Bank in terms hereof shall not be delayed by the fact that a dispute may exist between Eskom and the Contractor.
6. Eskom shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting our liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Contract.
7. Should Eskom cede its rights against the Contractor to a third party where such cession is permitted under the Contract, then Eskom shall be entitled to cede to such third party the rights of Eskom under this Guarantee on written notification to the Bank of such cession.
8. This Guarantee:
 - 8.1 shall expire on the Expiry Date until which time it is irrevocable;
 - 8.2 is, save as provided for in **Error! Reference source not found.** above, personal to Eskom and is neither negotiable nor transferable;
 - 8.3 shall be returned to the Bank upon the earlier of payment of the full Guaranteed Sum or expiry hereof;
 - 8.4 shall be regarded as a liquid document for the purpose of obtaining a court order; and
 - 8.5 shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the Courts of the Republic of South Africa.
 - 8.6 Any claim which arises or demand for payment received after expiry date will be invalid and unenforceable.
9. The Bank chooses domicilium citandi et executandi for all purposes in connection with this Guarantee at the Bank's Address.

Signed at _____

Date _____ Bank's seal or stamp

For and behalf of the Bank

Bank Signatory: _____

Bank Signatory: _____

Witness: _____

Witness: _____