NEC3 Engineering & Construction Contract

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

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

for **Design, Manufacture. Installation and Commissioning of the new Sulphuric Acid Bulk Tank at Duvha Power Station for a period of 10 Months**

Contents:		**No of pages**
Part C1	**Agreements & Contract Data**	**02 - 24**
Part C2	**Pricing Data**	**25 - 37**
Part C3	**Scope of Work**	**38 - 65**
Part C4	**Site Information**	**66 - 81**

CONTRACT No. **[Insert at award stage]**

Part C1: Agreements & Contract Data

Contents:

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:

Design, Manufacture. Installation and Commissioning of the new Sulphuric Acid Bulk Tank at Duvha 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

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*

Clause	Statement	Data
1	**General**	
	The *conditions of contract* are the core clauses and the clauses for main Option	
		B: Priced contract with bill of quantities
	dispute resolution Option	**W1: Dispute resolution procedure**
	and secondary Options	
		X2 Changes in the law
		X7: Delay damages
		X15: Limitation of *Contractor's* liability for design to reasonable skill and care
		X16: Retention
		X17: Low performance damages
		X18: Limitation of liability
		Z: *Additional conditions of contract*
	of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)	
10.1	The *Employer* 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 *Project Manager* is: (Name)	**Nokwazi Base**
	Address	**Duvha Power Station PO Box 2199 Witbank 1035**
	Tel	**+27 13 690 0310**
	Fax	**+27 867 516 274**
	e-mail	**BaseN@eskom.co.za**
10.1	The *Supervisor* is: (Name)	**Mapule Mogashoa**
	Address	**Duvha Power Station**

		PO Box 2199 **Witbank** **1035**
	Tel No.	**+27 013 690 0283**
	Fax No.	**+27 867 516 274**
	e-mail	**MogashMC@eskom.co.za**
11.2(13)	The *works* are	**Design, Manufacture. Installation and Commissioning of the new Sulphuric Acid Bulk Tank at Duvha Power Station**
11.2(14)	The following matters will be included in the Risk Register	• **Slipper due to wet surfaces** • **Acid fumes** • **Unavailability of the RP (Responsible Person) / AP (Appointed Personnel)** • **Electrocution** • **Scaffolding requirements**
11.2(15)	The *boundaries of the site* are	**Duvha Power Station - North Acid Tank**
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 and all documents and drawings to which it makes reference.**
12.2	The *law of the contract* is the law of	**the Republic of South Africa**
13.1	The *language of this contract* is	**English**
13.3	The *period for reply* is	**3 Working Days**
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 *completion date* for the whole of the *works* is	**30th January 2026**
11.2(9)	The *key date*s and the *condition*s to be met are:	

	***Condition* to be met**	***key date***
1	**Kick off meeting**	**5 (five) days after contract awarded**
2	**Safety Approval**	**7 days after kick off meeting**
3	**Submission of a Baseline Programme**	**7 days after kick-off meeting**

		4	**Site Establishment**	**7 days after Safety file approval**
		5	**QCP and Methodology approval**	**7 days after Safety file approval**
		6	**Submission of Pre-design**	**As per the accepted programme**
		7	**Submission of final design**	**As per the accepted programme**
		8	**Delivery of material and execution as per the scope of works**	**As per the accepted programme**
		9	**Testing and commissioning**	**As per the accepted programme**
		10	**Training**	**As per the accepted programme**
		11	**Handover and de-establishment**	**As per the accepted programme**
30.1	The *access dates* are:	**Part of the Site**		**Date**
		1	**Access site (WTP North Tank) as per access certificate issued by PM**	**After safety file approval**
31.1	The *Contractor* is to submit a first programme for acceptance within	**1 (One) week of the Contract Start Date.**		
31.2	The *starting date* is	**1st February 2025 (Subject to change)**		
32.2	The *Contractor* submits revised programmes at intervals no longer than	**3 (Three) weeks.**		
35.1	The *Employer* is not willing to take over the *works* before the Completion Date.	[No data needed if this statement is included]		
4	**Testing and Defects**			
42.2	The *defects date* is	**52 (Fifty-Two) weeks after Completion of the whole of the *works*.**		
43.2	The *defect correction period* is	**4 weeks after the contractor is being notified about the defect.**		
5	**Payment**			

50.1	The *assessment interval* is	**between the 25 days of each successive month.**
51.1	The *currency of this contract* is the	**South African Rand.**
51.2	The period within which payments are made is	**3 (Three) weeks.**
51.4	The *interest rate* is	**the publicly quoted prime rate of interest (calculated on a 365 day 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** **(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 *mutatis mutandis* 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.**

6 Compensation events

60.1(13)	The place where weather is to be recorded is:	**Duvha Power Station**
	The *weather measurements* to be recorded for each calendar month are,	**the cumulative rainfall (mm)** **the number of days with rainfall more than 10 mm** **the number of days with minimum air temperature less than 0 degrees Celsius** **the number of days with snow lying at 09:00 hours South African Time** **and these measurements:**
	The *weather measurements* are supplied by	**The Contractor**
	The *weather data* are the records of past *weather measurements* for each calendar month which were recorded at:	**Witbank Area**
	and which are available from:	**the South African Weather Bureau and**

		included in Annexure A to this Contract Data provided by the *Employer*
60.1(13)	Assumed values for the ten year return *weather data* for each *weather measurement* for each calendar month are:	**As stated in Annexure A to this Contract Data provided by the *Employer*.** **Note: If this arrangement is used, delete the rows above for 60.1(13) and delete this note.**
7	**Title**	**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.**
8	**Risks and insurance**	
80.1	These are additional *Employer*'s risks	**1. Damage of underground cables and piping not detected.** **2. Loss of contract material during execution due to theft.** **3. A permit to work will be issued and proper isolations achieved.**
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 *method of measurement* is**	**[•] published by [•] and amended as stated in Part C2.1, Pricing Assumptions.**
W1.1	The *Adjudicator* 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).**
	Address	**TBA**
	Tel No.	**[•]**
	Fax No.	**[•]**
	e-mail	**[•]**
W1.2(3)	The *Adjudicator nominating body* 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 *tribunal* is:	**arbitration.**

W1.4(5)	The *arbitration procedure* 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	**[●] South Africa**	
	The person or organisation who will choose an arbitrator - if the Parties cannot agree a choice or - if the arbitration procedure does not state who selects an arbitrator, is	**the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.**	
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.**	
X7	**Delay damages (but not if Option X5 is also used)**		
X7.1	Delay damages for Completion of the whole of the *works* are	**Design submission – R50 000,00 per day to a maximum of 10%** **Procuring of material – R30 000,00 per day to a maximum of 10%** **Delivery of material – R30 000,00 per day to a maximum of 10%** **Execution Phase – R20 000,00 per day to a maximum of 10%**	
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)**		
	The *retention percentage* is	**10% of the contract value amount**	
X17	**Low performance damages**		
X17.1	The amounts for low performance damages are:	**Amount**	**Performance level** **For the following:**
	1% per total value of the Purchase Order(s) per day. Limited to 10% of the total value of the Purchase Order(s) of the spares item.		No Submission of Quality control documents as per agreed upon Contract Document Submittal Schedule in this contract agreement.
	1% per total value of the Purchase Order(s) per day. Limited to 10% of the		NCR raised on item defects are not corrected within agreed

	total value of the Purchase Order(s) of the spares item.	timeline.
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** • **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 connection with this contract, other than excluded matters, is limited to:	**the total of the Prices other than for the additional excluded matters.** **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) 1 year 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.**
Z	**The *Additional conditions of contract* are**	**Z1 to Z15 always apply.**

Z1 Cession delegation and assignment

Z1.1 The *Contractor* does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer.*

Z1.2 Notwithstanding the above, the *Employer* may on written notice to the *Contractor* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.

Z2 Joint ventures

Z2.1 If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Employer* for the performance of this contract.

Z2.2 Unless already notified to the *Employer*, the persons or organisations notify the *Project Manager* within two weeks of the Contract Date of the key person who has the authority to bind the *Contractor* on their behalf.

Z2.3 The *Contractor* does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the *Employer* having been given to the *Contractor* in writing.

Z3 Change of Broad Based Black Economic Empowerment (B-BBEE) status

Z3.1 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.

Z3.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Project Manager* within thirty days of the notification or as otherwise instructed by the *Project Manager*.

Z3.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor*'s obligation to Provide the Works.

Z3.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are P1, P2 and P3 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.

Z4 Confidentiality

Z4.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.

Z4.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be 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 Action means any unlawfully or illegally intentional act or omission that misleads, or attempts to 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 minim

	limit of indemnity
Loss of or damage to the *works*, Plant and Materials	The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible, as at Contract Date, where covered by the *Employer*'s insurance
Loss of or damage to Equipment	The replacement cost
Liability for loss of or damage to property (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	Loss of or damage to property *Employer*'s property The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible, as at Contract Date, where covered by the *Employer*'s insurance Other property The replacement cost Bodily injury to or death of a person The amount required by applicable law
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 l 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

Z14 Nuclear Liability

Z14.1 The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.

Z14.2 The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or resulting from nuclear damage, as defined in Act 47 of 1999, save to the extent that any liabilities are incurred due to the unlawful intent of the *Contractor* or any other person or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.

Z14.3 Subject to clause Z14.4 below, the *Employer* waives all rights of recourse, arising from the aforesaid, save to the extent that any claims arise or liability is incurred due or attributable to the unlawful intent of the *Contractor* or any other person, or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.

Z14.4 The *Employer* does not waive its rights provided for in section 30 (7) of Act 47 of 1999, or any replacement section dealing with the same subject matter.

Z14.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

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 *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.

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.

The area experiences thunderstorms during the summer months, which usually occur in the late afternoons. The annual average precipitation (millimetres) is show below. Weather Data for 2011-2014 to be provided as an addendum

Month	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jan	176	207	77.5	296	223.5	173	-	-	-	-	65
Feb	59	102	17	17	63.5	53	-	-	-	-	21.8
March	54	46	26	121	55	40	-	-	-	-	30.6
April	53	42	6	0	0	126	-	-	-	-	29.4
May	0	4.5	0	44	14	83	-	-	-	-	0
June	0	0	30	0	17	0	-	-	-	-	0.8
July	0	0	0	0	0	0	-	-	-	-	1
Aug	2	40	0	0	30.5	0	-	-	-	-	0.4
Sept	0	0	0	0	8	0	-	-	-	-	46.2
Oct	35.5	17.5	163	47	82.5	46.5	-	-	-	-	34.2
Nov	142	80	179	138.6	153	59.5	-	-	-	-	54.2
Dec	65	148.5	127.3	174	148	237	-	-	-	-	135.2
							-	-	-	-	
Total	**586.5**	**687.5**	**625.8**	**837.6**	**795**	**818**	-	-	-	-	**418.8**

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*

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)[2] 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 *Contractor* is (Name): Address Tel No. Fax No.	
11.2(8)	The *direct fee percentage* is The *subcontracted fee percentage* is	**%** **%**
11.2(18)	The *working areas* are the Site and	
24.1	The *Contractor's* key persons are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job Responsibilities: Qualifications: Experience:	**CV's (and further key persons data including CVs) are appended to Tender Schedule entitled.**

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

11.2(3)	The *completion date* 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 *Contractor*'s design is in:			
31.1	The programme identified in the Contract Data is			
B	**Priced contract with bill of quantities**			
11.2(21) 11.2(31)	The *bill of quantities* is in The tendered total of the Prices is	**(in figures)** **(in words), excluding VAT**		
	Data for Schedules of Cost Components	*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).*		
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:	

PART 2: PRICING DATA
ECC3 Option B

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option B	
C2.2	The *bill of quantities*	

C2.1 Pricing assumptions: Option B

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 *bill of quantities* 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

- the quantity of the work which the *Contractor* 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 *Contractor* 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.

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.

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.

Measurement and payment

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)

General assumptions

Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance has been made in the quantities for waste.

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.

An item against which no Price is entered will be treated as covered by other Prices or rates in the *bill of quantities*.

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.

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.

Departures from the *method of measurement*

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.

C2.2 the *bill of quantities*

ACID TANK REPLACEMENT					
Item	**Description**	**Unit**	**Quantity**	**Rate**	**Amount**
	-				
1	**PRELIMINARY & GENERAL**				
1.1	**Fixed Charge Items**				
1.1.1	Site Establishment	Sum	1		
1.1.2	Site De-establishment	Sum	1		
1.2	**Time Related Items**				
1.2.1	Office and storage sheds	Month	10		
1.2.2	Ablution and latrine facilities	Month	10		
1.2.3	Accommodation	Month	10		
1.2.4	Water supplies, electrical power and communication	Month	10		
1.2.5	Supervision of the works including all the labour for the duration of the contract	Month	10		
1.2.6	Transport for the duration of the project	Month	10		
1.2.7	Provision of Responsible (Engineer/QC) person as per the scope of work for contract duration	Month	10		
1.3	**Compliance with OHS Act and Regulations (including the Construction Regulations, 2003)**				
1.3.1	Health and Safety Requirements for duration of the contract				
1.3.1.1	Health and safety plan and all requirements	Sum	1		

1.3.1.2	Safety officer	Sum	1		
1.3.1.3	Medicals	Sum	1		
1.3.1.4	Safety file	Sum	1		
1.3.1.5	Allow for the supply and installation of the cranage for the constructability of the new Bulk Sulphuric Acid Tanks	Sum	1		
1.3.2	Compliance to Environmental requirement, Acts and Regulation	Sum	1		
	-				
2	**Alteration works**				
2.1.1	Breaking existing concrete slab(100-200mm) thick concrete slab and cart way rubble to the nearest depo	m3	8,64		
2.1.2	Excavate and break existing concrete to remove the clay/UPVC pipe about 400mm deep	m	72		
2.1.3	Removal of services (cables, pipes and steel acess platform) attachment from the bund.	sum	1		
2.1.4	Break and removal the tank concrete plinths rubbles, saw cut the damaged concrete slab of (estimated depth of 440mm). Break and remove all concrete rubbles from the area including catch pit and concrete manhole outside the bund.	m3	12		
2.1.5	Removal of existing access platforms, set-aside for later re-use	M2	54		
3	**<u>Mechanical work</u>**				
3.1.1	Remove the existing damage tank from the position including all the accessories.Neutralizing the current acid tank system (Section 3.1) the dismantling and safe disposal of the old bulk acid tank (Section 3.1.1.5).	sum	1		

3.1.2	Design of PD5500 (PD 5500, SANS 347, and the PER (Section 3.1.2) vessel in accordance with all requirements of Section 3.11 in line with employer documentation requirements of Section 3.12. This design will be inclucsive of the design report (inclusive of calculations) in line with all requirements of the PD5500 requirements.Detailed design drawings of vessel as per Section 3.15.2. Design calculations and information report as per Section 3.15.2. The design to include the structural steel support of the vessel tank	Sum			
3.1.3	Supply ,Installation and Fabrication of steel vessel including the structural steel support PD5500 (PD 5500, SANS 347, and the PER (Section 3.1.2) vessel in accordance with all requirements of Section 3.11 in line with employer documentation requirements of Section 3.12	No	1		
3.1.4	Supply and Install the Sulphuric tank (20UE51G001) accessories as indicated from drawing number 057/21873 Rev1 and all mechanical components including valves as demarcated inside Figure 2 of the battery limits and listed in Section 3.1.2 with the accociated piping that will include: • The emergency drain and outlet plug valves. Plug valves and overflow valve with safety data sheet for plug valve components Drain stop plug valves (20UE51S525) Outlet stop plug valves (20UE51S524) • Earthing lug • Tank insulation and cladding • Storage tank breather NRV 25NB (20UE51S003) • Breather isolation valve 65NB (20UE51S002) • Level transmitter (20UE51L001) • Drain line connecting to the drainage system leading to the sludge system. • Bund wall drain valve 100NB (20UE51S401) • Storage tank vent drain NRV (20UE51S006) • Storage tank inlet acid top op valve 80NB (20UE51S001) • Supply line drain valve 25NB (20UE50S005) • Storage tank drain valve (20UE51S007) • Storage tank to reciprocating pumps isolation valve 50NB (20UE51S008) • Storage tank to reciprocating pump line (20UE51S008) • Barometric pressure isolation valve (20UE51S004) • Top overflow valve (20UE51S005)	Sum	1		
3.1.5	Supply, sizing and installation of the desiccant drier inclusive on all of the requirements and components of Section 3.1.4. This is inclusive of the isolation valves, air release valves,	Sum	1		

	perforated trays and connection piping to the vessel.				
3.1.6	Supply and installation of a hydrostatic level probe/transmitter with local display (Section 3.1.5).	No	1		
3.1.7	Calibration of level probe and local display as per Section 3.1.6.4 including the certificate	Sum	1		
3.1.8	Supply and installation of all pipe work (pipework to EN 13480) as marked by the battery limits of Figure 2 and listed in Section 3.1.2.	Sum	1		
3.1.9	Inspect and test for any defect and leaks in accordance with PD 5500. Pressure test	Sum	1		
3.1.9.1	Label of all newly installed equipment as per Section 3.13 requirements.	Sum	1		
3.1.9.2	Data book -(Welding Procedure Specifications (WPS) as per Section 3.15.2 and Section 3.9). Welding Qualifications (WPQR) as per Section 3.15.2 and Section 3.9HAZOP Study Report as per Section 3.15.2 and Section 3.10.1.1. Handover packacge as per Section 3.15.2 inclusive off all documentation as per the scope. Data books for all newly installed valves.	Sum	1		
3,2	Non-destructive Testing (NDT) plan and reports as per Section 3.15.2 and Section 3.9	**Sum**	**1**		
3.2.1	Quality control and Inspection plan as per Section 3.15.2 and Sectgion 3.10	Sum	1		
3.2.2	Testing and Commissioning Plan as per Section 3.15.2	**Sum**	**1**		
3.2.3	Operating and maintenance manuals as per Section 3.15.2	Sum	1		
3.2.4	Supply and installation of acid resistent conduit between the level transmitter and the local display.	Sum	1		
3.2.5	The supply and installation of extended spindles and supports for all valves situated within the acid tank bund wall area.	Sum	1		

3.2.6	Supply all manholes with davit covers.	Sum	1		
3.2.7	Painting of the vessel in accordance with GE/MAT/24/089 Duvha P/S Corrosion Specification of Acid Bund Structural Steel Elements.	Sum	1		
3.2.8	Painting of all newly installed pipes in accordance with 240-145581571 Standard for the Identification of the Contents of Pipelines and Vessels.	Sum	1		
3.2.9	**Level indicator and Pressure Transmitter**				
3.2.9.1	Remove the exisiting pressue transmitter is a Hartman&Braun AMD220 pressure transmitteto ABB acquired Hartman & Braun.	No	1		
3.2.9.2	Supply and install hydrostatic level measurement sytem for measuring the level of sulphuric acid in the bulk storage tank	No	1		
3,3	**Civils and Structural Works**				
	Reinforced Concrete bund (including concrete plinths, catch pits, offloading bay and concrete manholes)				
	-				
	Excavation in earth not exceeding 2m deep and dispose in prescribed stockplies on site:				
3.3.1	Excavate the contaminated soil inside the bund, The rubble to be disposed into a designated skip. Due to waste being hazardous, the hazardous waste disposal process shall be followed.	m3	22		
3.3.2	Contaminated material to be disposed into a licenced haazardoud dumping site.	m³	22		
	Filling of G5 gravel-soil material supplied by the contractor, compacted to 98% Mod AASHTO density.				
3.3.3	Supply gravel material (G5) and compact it in layers of 150mm to 98% Mod AASTHO at 2% moisture content to complete terrace	m³	15		
	Compaction of ground surfaces:				

3.3.4	Compaction of ground sub-surface, etc. including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 99% Mod AASHTO density.	m2	45		
3.3.5	Supply and lay one layer of 500 µm (0,5 mm) polyolefin waterproof sheeting that complies with SANS 952 type C.. The water proofing sheeting shall be placed between the blinding and the topsoil layer work	m2	30		
	15Mpa concrete for blinding				
	-				
3.3.6	Supply and cast blinding of 50mm thick using 15mpa concrete.	m3	5		
	Formwork				
	-				
3.3.7	Supply and install smooth surface formwork	m2	25		
	-				
	30MPa/19mm reinforced concrete:				
3.3.8	Supply and cast fresh concrete for the tank foundation, floor slab, collecting sump as well as the tank plinthsConcrete of compressive strength of 30MPa/19mm aggregate. Concrete cover shall be 50mm	m3	15		
3.3.9	Supply and apply a cement-based epoxy anti-corrosion bonding agent to the affected surface to ensure proper adhesion between the old and new concrete as per detailed scope of work.	m2	25		
3.3.9.1	Allow for 40Mpa concrete grout mix for repairs on the concrete wall and bunds around	m2	108		
	Finishing top surface of concrete smooth with a wood float:				
3.3.9.2	Tank base.	m2	45		
	High tensile steel reinforcement:				
3.3.9.3	Supply and install Y12 reinforcement steel bars for the tank foundation slab, bund slab, collecting sump and for tank plinths, see reinforcement details on drawing 0.57/32568	t	1,5		
	Fabric reinforcement:				

3.3.9.4	Supply and install Type 395 fabric reinforcement for bottom and top reinforcement in concrete slab, see reinforcement details on drawing 0.57/32568	m2	50		
	Bund wall repairs				
3.3.9.5	Repair all damaged surface area using polymer modified cement mortar. Patch the area, layer of up to 40mm-70mm should be applied to match the existing level.	m2	45		
	Corrossion protection system				
3.3.9.6	Supply and install a lining system as per GE/MAT/24/088: Duvha P/S Corrosion Specification for Acid Proofing of Sulphuric Acid Bund.	m2	60		
	Catch pit covers for bund and offloading area				
3.3.9.7	Supply and install catchpit covers indicated in drawing 0.57/19885	No	4		
	Structural Steel refurbishment				
3.3.9.8	Prepare, sandblast and refurbish the access platform. Corrosion protection to comply with GE/MAT/24/089 specification	sum	1		
3.3.9.9	Supply, assemble, erect, and install the refurbished structural steel, Installation shall be done after the tank new tank has been installed in position. Supply and installed new gratings of the same specification	sum	1		
3,4	**Gratings and handrails**				
3.4.1	Supply and install new RS 40 GRATING - Stairtreads and walkway access/platforms	m2	120		
3.4.2	Supply and install new handrail, knee rail and stainchions	m	54		
3,5	**Paint work**				

3.5.1	Prepare and sandblast the steel structures, Apply corrosion protection as per specification CPS 01 stipulated in the Eskom Standard 240-106365693 - Standard for External Corrosion Protection of Plant Equipment and Associated Piping with Coatings. The contractor shall ensure that the corrosion protection standard mentioned herein is adhered to, it is the contractor's responsibility that they study and understand the standard. All clarification required shall be done prior to execution of the works.	m2	180		
3,6	**Drainage pipeline**				
3.6.1	Pressure clean to remove dirt, mud and other debris. The flushing of the pipeline shall be conducted from the offloading bay up to the discharge point at sludge launder.	m	90		
3.6.2	Conduct a camera inspection for the full length of the pipeline to determine the condition and integrity of the pipe. Provide a report together with the video to the client.	m	90		
3.6.3	Underground services detection scan for present within the pipe route	m	200		
3.6.4	Removal of pavement bricks on the pipe route	m2	200		
3.6.5	Excavate the damage section of the pipe for manhole to manhole or connection point. Remove the damaged section of the drainage pipe.	m3	74,1		
3.6.6	Supply bedding from commercial sources and lay as per SANS 1200	m3	8		
3.6.7	Supply and install a new 100mm diamiter pipe section, the new pipe shall be of the same material or with similar properties.	m	90		
3.6.8	Backfill material using stockpiled material, compact to 95% Mod AASTHO at 2% moisture content to complete terrace	m3	80		
3.6.9	Reinstate the pavement bricks and make good.	m2	200		
3.6.9.1	Construction of a new manhole system n.e 1m deep, including benching and cover slab	No	2		
3.6.9.1	Refurbishment/upgrade the exisiting manhole of the catch pit connecting the manholes	No	1		

3,7	**Sludge Launder repair works**				
3.7.1	Removal of damaged concrete section of approximately 40mm to 70mm of the identified areas on the concrete wall and floor to expose reinforcement steel. Remove all loose aggregate and concrete particles, all rubbles to be dumped on a designated skip which will be provided through the PM as per section 3.2.4 of the scope of work.	m2	70		
3.7.2	Repair all damaged surface area using polymer modified cement mortar. Patch the area, layer of up to 40mm-70mm should be applied to match the existing level (refer to section 3.2.4 on the scope of work) Reinstate a channel semi-circular floor of approximately using 30/19MPa concrete in all launder channel.	m3	15		
3.7.3	Remove all damaged sealing joint identified during the inspection and reinstate sealing joint (refer to detailed scope) Supply and install Sulphuric resistant Portland cement with acid resistant protective coating on the concrete floors as well as the walls	m	40		
4	**TESTS**				
4,1	Compaction test results	sum	1		
4,2	Allow for concrete compressive strength testing	sum	1		
5,0	**Training**				
	Training of the staff				
6,0	EC&I	Sum	1		
Total Amount					

PART 3: SCOPE OF WORK

Document reference	Title	No of pages
	This cover page	1
C3.1	*Employer*'s Works Information	
C3.2	*Contractor*'s Works Information	
	Total number of pages	

C3.1: EMPLOYER'S WORKS INFORMATION

1 Description of the *works*

1.1 Executive overview

The scope to reinstate the North acid dosing plant requires to fabricate, install, and commission the new sulphuric acid bulk tank for Duvha Power station in accordance with the BS1515 part 1- 1965 including the pipe work for the plant. The scope also includes the civil and structures work for inspection, repairs, and replacement.
The detailed scope of the North acid dosing plant to be performed by the Contractor is as follows:
Remove the existing damage tank from the position including all the accessories.
Design and manufacture the Sulphuric acid bulk tank in accordance with the drawing number 057/21873 Rev1 and 0.57 02649 Rev 5 using the BS1515 part 1- 1965 standard.
Transport the new Sulphuric acid bulk tank to Duvha power station.
Supply all the relevant pipes that will be installed with the tank.
Install the Sulphuric tank from the position including all the accessories as indicated from drawing number 057/21873 Rev1.
Install the all the pipe work required for the North acid dosing plant.
Inspect and test for any defect and leaks.
Commission the new North acid dosing plant.

To manufacture a new tank as per the drawing provided in Appendix A. All work will be conducted in accordance with the standards and guidelines prescribed in this document as well as on the supplied drawing. The fabrication includes all the tank's accessories as depicted in the figure 2 below.

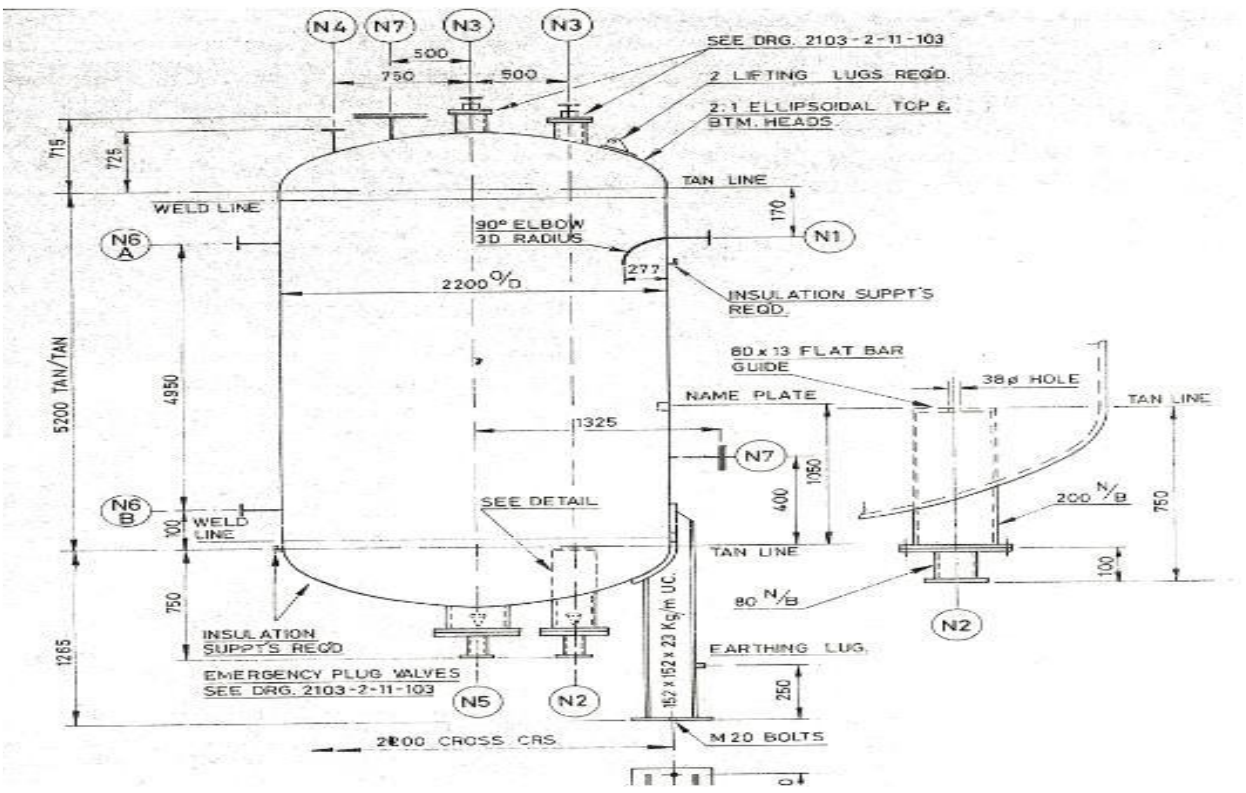

Figure 1: Sulphuric Acid Bulk storage tank

This vessel as indicated in figure 1 can be design and manufactured using latest standard PD5500 that has replaced the BS1500 and BS1515.

Note: The design code for this tank is BS1515 part 1- 1965.

1.1.1 EMPLOYER'S DESIGN REQUIREMENTS

Table 1: Sulphuric acid storage tank design specification Parameter	Value	Unit
Height	5200	mm
Diameter	2220 ID	mm
Test hydraulic Pressure	498	kPa
Working Temperature	ATM	°C
Volume	22	m3
Design Pressure	250	kPa
Design Temperature	50	°C
Design Code	BS 1515 part 1 or	PD5500

The contractor will be responsible for removing and scrapping away the old storage tank.

1.1.2 CIVIL AND STRUCTURES SCOPE OF WORK

The acid tank is surrounded by a reinforced concrete bund to contain accidental spillages to prevent ground contamination. The bund drainage system consists of a catch pit that connects to a manhole outside of the bund with a drainage pipe underneath the concrete floor slab (form offloading area to the sludge launder). There are two manholes within the drainage system, one located outside of the bund area the other located downstream towards the discharge point at the sludge launder. The state of the tank has deteriorated over the years, this resulted in acid spillages to the bund area. Although the bund area was acid lined for corrosion protection, the acid managed to damage the liner and find a way to corrode the concrete bund walls and mostly the floor slab. The corrosion is also evident on the catch pit, manholes and the sludge launder.
The access platforms for the tank and bund access as well as the offloading access platform requires refurbishment for the structural steel frame and replacement of gratings. Concrete repair, structural steel and corrosion protection works shall be carried out to reinstate the plant to good conditions.

Steel structures works (Access Platforms)
Refer to Drawing 0.57/19886 for access platforms

- Remove the access platforms structure from position
- Prepare and sandblast the steel structures
- Apply corrosion protection as per specification CPS 01 stipulated in the Eskom Standard 240-106365693 - Standard for External Corrosion Protection of Plant Equipment and Associated Piping with Coatings. o The contractor shall ensure that the corrosion protection standard mentioned herein is adhered to, it is the contractor's responsibility that they study and understand the standard. All clarification required shall be done prior to execution of the works.

- All fasteners shall be replaced with new ones of the same specification.
- Conduct NDTs (Magnetic Particle testing) on the welds connections and repair any defect found.
- NDTs shall be conducted as per 240-83539994 - Standard for Non-Destructive Testing (NDT) on Eskom Plant
- Welding shall be conducted as per 240-106628253 Standard for Welding Requirements on Eskom Plant
- Supply, assemble, erect, and install the refurbished structural steel
- Installation shall be done after the tank new tank has been installed in position.
- Supply and installed new gratings of the same specification

Reinforced concrete Bund (including Concrete plinths, catch pit, offloading bay and concrete manholes)
Refer to drawings 0.57/32568 and 0.57/32569 for reinforced concrete bund

- Remove all attachments from the bund
- Break and remove the tank concrete plinths rubble
- Conduct rebound hammer test the entire area and mark out all areas for repair

Saw cut the damaged concrete slab of (estimated depth of 440mm). Break and remove all concrete rubbles from the area including catch pit and concrete manhole outside the bund.

- Repair concrete with fresh concrete of compressive strength of 30MPa/19mm aggregate.
- Should it be found the contamination goes beyond the concrete floor to the layer works underneath the following activities shall be done:

Entirely remove the concrete floor slab
Remove reinforcement steel
Ensure the linking reinforcement steel bars between the bund wall and the floor are exposed and care for during re removal of the floor slab
Clean the linking reinforcement bars with wire brush, ensure all dirt are removed
Excavate the contaminated soil inside the bund
Clean and remove the old acid lining on the concrete bund walls
The rubble to be disposed into a designated skip. Due to waste being hazardous, the hazardous waste disposal process shall be followed.

Supply gravel material (G5) and compact it in layers of 150mm to 98% Mod AASTHO at 2% moisture content to complete terrace.
Supply and cast blinding of 50mm thick using 15mpa concrete.
Supply and lay one layer of 500 µm (0,5 mm) polyolefin waterproof sheeting that complies with SANS 952 type C must be used. The water proofing sheeting shall be placed between the blinding and the topsoil layer work
Supply and install reinforcement steel bars as well as mesh wire for the tank foundation slab, bund slab, collecting sump and for tank plinths, see reinforcement details on the drawings mentioned in this section.
The new reinforcement steel shall be spliced with the existing reinforced steel on the bund walls
Supply and apply a cement-based epoxy anti-corrosion bonding agent to the affected surface to ensure proper adhesion between the old and new concrete (see specification on section 3.8).
Supply and cast fresh concrete for the tank foundation, floor slab, collecting sump as well as the tank plinths.
Concrete of compressive strength of 30MPa/19mm aggregate.
Concrete cover shall be 50mm
Supply and apply a cement-based epoxy anti-corrosion bonding agent to the affected surface to ensure proper adhesion between the old and new concrete (see specification on section 3.8).
Repair all damaged surface area using polymer modified cement mortar. Patch the area, layer of up to 40mm-70mm should be applied to match the existing level (see specification on section 3.7)
The walls shall be thoroughly cleaned before repairs are conducted
Apply moisture sealant between the bund wall and the chemical dosing room wall
Supply and install Sulphuric resistant Portland cement with acid resistant protective coating on the concrete floors as well as the walls.

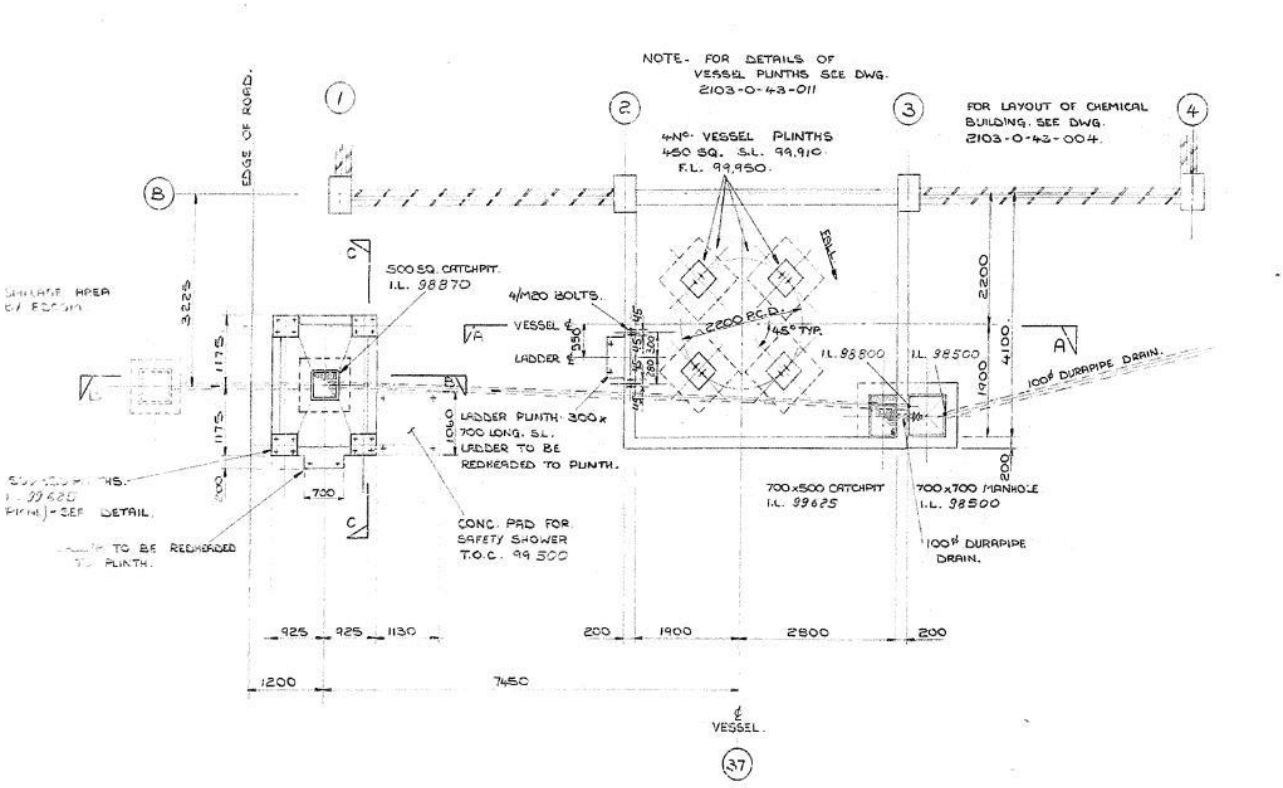

Figure 3: Showing the layout of the North WTP offloading area as well as the bund area

Sludge Launder repair works

- Open the trench covers to gain access to the launder
- Conduct rebound hammer test the entire area and mark out all areas for repair
- Saw cut, break and remove damaged section of approximately 40mm to 70mm of the identified areas on the concrete wall and floor to expose reinforcement steel
- Remove all loose aggregate and concrete particles, all rubbles to be dumped on a designated skip which will be provided through the PM
- Clean the concrete surface area using pressure wet cleaning method.

- Supply and apply a cement-based epoxy anti-corrosion bonding agent to the affected surface to ensure proper adhesion between the old and new concrete (see specification on section 3.8).
- Repair all damaged surface area using polymer modified cement mortar. Patch the area, layer of up to 40mm-70mm should be applied to match the existing level (see specification on section 3.7)
- Reinstate a channel semi-circular floor of approximately using 30/19MPa concrete in all launder channel. Formwork will be required for proper shaping of channel benching.
- Remove all damaged sealing joint identified during the inspection and reinstate sealing joint (see sealing joint specification on section 3.9)
- Supply and install Sulphuric resistant Portland cement with acid resistant protective coating on the concrete floors as well as the walls.

1.1.3 CONCRETE SPECIFICATION

Concrete should have adequate flexural strength and good dimensional stability. The concrete should be placed, compacted, and finished to acceptable dimensional tolerances and surface texture.

General requirements

Materials for the concrete are covered by SANS 10100-2,

- Cement shall comply with the requirements of SANS 50197-1.of cement 42,5N or 52,5N. Superplasticiser type CHRYSO Fluid L or similar shall be use to improve workability of the concrete ONLY if necessary. Superplasticiser shall be the chloride free type.
- Aggregates shall comply with the requirements of SANS 1083.

NOTE: In certain conditions, additional tests might be necessary to determine the suitability of aggregates (see SANS 1083)

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Admixtures

- Please Note: Admixtures shall ONLY be used with the approval of the Engineer.
- Admixtures shall be chloride free.

Concrete mix proportioning

General

Ready mix concrete 15Mpa for blinding and 30Mpa shall be used for this application. The contractor shall provide a mix design to the Engineer. No placing of concrete shall commence without the prior approval of the mix design.

Proportioning

The concrete mix should be proportioned to try and provide a smooth and as continuous an overall grading as possible. Where more than one size of coarse aggregate is used, the sizes should be chosen to avoid particle interference between the two sizes.

Fresh concrete

- The concrete should be designed to ensure adequate consistence as measured by the slump test (see SANS 5862-1). Suitable slumps are in the range of 75 mm to 120 mm depending on the equipment to be used.
- The concrete should be cohesive enough to ensure complete compaction and to avoid segregation. This can be assessed by tapping the base plate in the slump test after the slump has been determined. A cohesive mix should settle gradually without the concrete falling apart.
- The bleeding of the fresh concrete should be minimized as excessive bleeding can result in zones of weakness when trapped below aggregate particles and reinforcing steel and also interfere with finishing operations. Care shall be taken not to reduce bleeding too much as this will significantly increase the risk of plastic shrinkage cracking.
- The effect of admixtures, when used, on setting and bleeding should be assessed.
- The amount of paste on the surface after compaction should be assessed in the laboratory. Too little paste could result in difficulty in finishing the surface and disturbance of the coarse aggregate near the surface. Too much paste could result in durability problems such as dusting and crazing of the surface area.
- Concrete should be thoroughly compacted in terms of SANS 10100 /2 by using suitable concrete vibrators.
- Damp curing of the topping should start immediately after surface finishing by covering the patch with polyurethane or damp hessian. Damp curing should be maintained for at least 3 days
- The construction area is to be barricaded for at least 3 days.

Finishes:
Finishes shall be a smooth finish.
Hardened concrete
The 28-d compressive strength for concrete should be as specified on section6.1 of the scope of work.
Quality Control
All work is carried out under the supervision of an experienced supervisor. The Contractor complies with the Employer's Quality Requirements as specified in Eskom Generation Standard QM58. All quality control documentation is submitted to the Project Manager within 7 days of Contract date. Quality Control:

- The contractor to provide a Quality Control Plan to Eskom Duvha for approval prior to construction. The contractor shall also assure that the following quality control documentation are available during construction and are submitted to ESKOM on completion.
- Ready Mix Concrete delivery note (if ready mix concrete will be used)
- QCP plan with signed off witness and hold points by Eskom's Engineer
- Slump test to be done in terms of SANS 5862-1
- Cube Testing in terms of SANS 5860, SANS 5860 – 2&3:
- Cube test samples to be taken and tested by an approved laboratory which will be agreed upon prior to execution of work
- Testing of cubes shall be done on 7 and 14 as well as 28 days.

Formwork
All formwork to be provided with a smooth finish

1.1.4 CORROSION PROTECTION REQUIREMENT FOR STRUCTURAL STEEL WORK

- The Contractor complies with the requirements in the Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings (240-106365693).
- Sandblasting and cleaning of existing structural elements shall be performed for coating surfacing preparations.
- Apply one coat of red oxide and two coats of oil enamel-based paint, colours to match exiting colours on site. o All structural beams, columns, kick plates, stanchions and cat ladders to be painted black.
- All handrails and knee rails to be painted yellow
-
- The required blast profile height are carefully considered and be within the range of the specified coating system and as recommended in the Product Data Sheets. It is important that the blast profile does not exceed the specified thickness of the primer or first coat, especially where delays in overcoating are expected / encountered. Any primed or coated surfaces showing signs of "measle" corrosion are considered defective and are re-blasted."
- Coatings are not applied when the ambient air temperature or the steel temperature is outside the coating manufacturer's recommended range, for additional requirements on temperature refer to 240-106365693
- All edges, corners, bolt holes, mouse holes, cut ends and weld beads are stripe coated by brush application, prior to the application of the intermediate coat. The stripe coating is an additional coat of the specified intermediate coat. In order to assist in its identification, the stripe coat is of a different colour to both the specified intermediate coat and finishing coat. Under no circumstances is stripe coating carried out by roller or spray-application
- The method of cleaning and preparing the substrate of steelwork prior to the application of the coating system are in accordance with the applicable provisions of SANS 10064, unless otherwise noted, and takes place at a location proposed by the Contractor and reviewed and accepted by the Supervisor."

1.1.5 Steel structures material specification

- All structural steelwork is manufactured using grade S355JR steel
- Structural fasteners are of the following grades and types: o "All structural bolts and holding down bolts are of class 8.8 and nuts are of class 8

- The chemical composition and mechanical properties of all steel incorporated into structures is stated in the mill test certificates and submitted to the Project Manager for acceptance
- Where required and prior to fabrication, test certificates or cast analysis certificates, or both, pertaining to the steel to be used, are supplied to the Supervisor by the Contractor

- Fabrication drawings are prepared by the Contractor. The drawings are issued to the Project Manager for acceptance in the form of two paper prints and in “PDF” electronic format and in Native Format (dgn or dwg). The Contractor does not commence with fabrication until written acceptance from the Project Manager is received
- Handling have sufficient capacity to ensure that steelwork is placed in its final position without distortion or undue stressing of members
- Welds to comply with 240-106628253: Standard for Welding Requirements on Eskom Plant

GRATING SPECIFICATIONS
- Grating sizes to be RS40: 25 x 4.5
- Gratings to be hot dipped galvanised for corrosion protection
- Gratings to be secured to the platform structure using galvanised clips
- Fabrication shall be in accordance with SANS 1200H

HANDRAILS SPECIFICATIONS
- Stanchions to be fixed on the kick plates by means of bolts or welding depending on the existing connection onsite
- Handrail height to be 1000mm from the floor level
- Knee rail to be 500mm from the floor level
- Spacing from centre to centre for stanchions shall maintain existing on site

1.1.6 POLYMER MODIFIED CEMENT MORTAR

Product Description
The product shall be a high strength, shrinkage compensated, fibre reinforced, rapid set structural repair mortar that includes corrosion inhibitors

Characteristics and Mechanical / Physical Properties
- Easy to use pre-blended product (just add clean water) with superb placing and finishing characteristics.
- Very low permeability protects steel and resists carbonation and chloride attack.
- Excellent high early and initial strengths, with high build allows for efficient application

- Very good placement and finishing characteristics.
- Shrinkage compensated – Minimises tendency of repairs to cracks and allow ingress of water and chlorides, especially in harsh environments.
- Protects steel from corrosion with migrating corrosion inhibitors
- Compressive Strengths: ≥75Mp after 28 days (must comply to SANS 50196 – 1)
- E-Modulus: ≥20MPa after 28 days
- Adhesion: ≥2Mpa after 28 days
- Capillary absorption: ≤0.6kg/m²h0.5
-

CEMENT-BASED EPOXY ANTI-CORROSION BONDING AGENT

Product Description
Use whenever new concrete or plaster is to be placed over existing concrete or plaster surfaces to ensure a complete bond between the two materials
Characteristics and Mechanical / Physical Properties
- Tensile Adhesion Strength ≥ 1.5 N/mm2 (MPa) (after 28 days)
- Contains corrosion inhibitor
- Certified for application under dynamic load conditions
- Good resistance to water and chloride penetration
- Suitable in concrete repair as corrosion protection for reinforcement.
- Suitable as a bonding primer on concrete and mortar

SEALING JOINTS
Product Description
Elastic sealant for joints exposed to chemicals
Characteristics and Mechanical / Physical Properties

- Secant Tensile Modulus: 0.60 N/mm2 approx. at 100% elongation (23 °C) (ISO 8339) and 1.10 N/mm2 approx. at 100% elongation (−20 °C)
- Tear Propagation Resistance; ≥ 5.0 N/mm approx.
- Chemical Base: Polyurethane
- The joint width must be designed to suit the joint movement required and the movement capability of the sealant. The joint width shall be > 10 mm and < 35 mm. A width to depth ratio of 1:0.8 must be maintained (for exceptions, see table below)

1.1.7 WELDING REQUIREMENTS

- All welding activities shall be in-line with the Standard for Welding Requirements on Eskom Plant, doc. no.: 240-106628253 attached under Appendix C.
- Welding procedure qualification for welds shall be in accordance with the appropriate welding standard incorporated into the relevant design and construction code. Combination or mixing of different codes shall not be permitted.
- A WPS supported by a valid WPQR/PQR, approved by a registered IWE or IWT, shall be submitted to Eskom for review.
- Welders and welding operators shall be qualified in accordance with the requirements of the latest applicable construction code or engineering specification relevant to the plant.
- NDT on welds shall be performed according to the requirements of the relevant design and construction codes, applicable (additional) engineering or product specifications and Eskom standard 240-83539994.
- Company to perform welding shall have accreditation to ISO 3834 Part 2 as minimum (for Eskom Level 1 plant). The ISO 3834-2 Certificate shall have as a minimum accreditation to the following codes: BS EN ISO 13445, PD5500 and ASME 8 applicable to pressure vessels.
- Records pertaining to the repairs or modifications shall be compiled as per the requirements of QM 58.
- All welding conforms to the following:
- 240-56246601 – Personnel and Entities Performing Welding Related Special Processes on Eskom Plant
- 240-56241933 – Control of Plant Construction, Repair and Maintenance Welding Activities
- •
- 240-83539994 - Eskom NDT Personnel Approval (NPA) for Quality Related Special Processes on Eskom Plant Standard
- 240-83540088 - Requirements for Non-Destructive Testing (NDT) on Eskom Plant Standard
- 240-56247788 - Weld Defects Classification and Reporting Standard
- All welding taking place off site is witnessed and approved by the Contractor’s Approved Inspection Authority (AIA) and communicated to the Employer’s AIA for approval.
- All welds are 100% Dye Penetration/MPI (Magnetic Particle Index) tested after back grinding.
- All welds are to be visually inspected for any issues.
- All welds are to be x-rayed.
- The Contractor provides a test certificate for each test as mentioned above. The Project Manager accepts the format of this certificate. The Contractor indicates the details of tests he proposes to perform and the way the results of tests will be documented. Specimen tests used by the Contractor are also submitted.

1.2 EMPLOYER’S OBJECTIVES AND PURPOSE OF THE WORKS

The sulphuric acid dosing in cooling water plant is needed to minimize the scale formation. The scale formed in the CW system affect the efficiency of the condenser and the heat transfer of the cooling tower. This has been confirmed at the units with poor vacuum that lack of treatment of the CW system will continue to cause scaling on heat exchange equipment which reduces efficiency and result into partial load loss (PLL). It will also imply the cooling water is allowed to concentrate up with salts and solids that result is scale. Currently no acid dosing is happening at the north side on the station due to unavailability of the sulphuric acid bulk storage tank.

The sulphuric acid bulk storage tank on the North cooling water plant was installed and commission in 1979 and it is currently out of service due to material corrosion as indicated in figure 1 below. The tank was design according to the BS1515 part 1- 1965 which covers the corrosion and erosion protection for the acid tank.

Due to aging and the lack of maintenance of the tank the corrosion protection deteriorated of which has resulted in the severe degradation of the tank hence there is a need to procure a new tank.

The state of the tank has deteriorated over the years, this resulted in acid spillages to the bund area. The degradation of the tank affected the reinforced concrete bund that contain accidental spillages due severe acid leakage from the tank. The acid tank is surrounded by a reinforced concrete bund to contain accidental spillages to prevent ground contamination. The bund drainage system consists of a catch pit that connects to a manhole outside of the bund with a drainage pipe underneath the concrete floor slab (form offloading area to the sludge launder). There are two manholes within the drainage system, one located outside of the bund area the other located downstream towards the discharge point at the sludge launder. Although the bund area was acid lined for corrosion protection, the acid managed to damage the liner and find a way to corrode the concrete bund walls and mostly the floor slab. The corrosion is also evident on the catch pit, manholes and the sludge launder. There is also evident corrosion on the offloading area concrete floor slab as well as the drainage system which also require remedial works.

1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
SANS	South African National Standards
SABS	South African Bureau Standards
SE	System Engineer
SHEQ	Eskom Safety, Health, Environment and Quality
QA	Quality Assurance
QM	Quality Manual
QC	Quality Control
NDT	Non-destructive test
IWE	International Welding Engineer registered with IIW
IIW	International Institute of Welding
IWP	International Welding Practitioner registered with IIW
IWS	International Welding Specialist registered with IIW
IWT	International Welding Technologist registered with IIW

2. Management and start up

2.1 Management meetings

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:
Kick off meeting, implementation strategy	One off 60 minutes (Time to be announced by Project Manager)	Project Managers office	PM, System Engineer and contractor
Risk registers and	As and when required	Project Managers office	PM, System Engineer

compensation events			and contractor
Overall contract progress and feedback	Monthly on Monday at 09:00am	Project Managers office	PM. Contractors' Manager
Commissioning	Once off	Project Managers office and Site	PM. Contractors' Manager & Supervisor

1) 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.
2) Records of these meetings shall be submitted to the Project Manager by the person convening the meeting within five days of the meeting.
3) All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting.
4) Such minutes or register as in point 3) 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

1) All formal communication between the Employer and the Contractor shall take place through the Employer's Buyer prior contract awarding stage. Once the contract is awarded communication shall take place through the Project Manager (PM)
2) All formal communication shall be marked with the date and a reference code in the form DVP-XXX-nnn where:
    i. XXX is the acronym of the Contractor
    ii. nnn is the sequential number of the communication
3) All formal communication must be acknowledged by the recipient
4) The Contractor 's site manager must keep a daily log, which needs to be signed by the Employer's Supervisor daily

2.3 Health and safety risk management

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

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

The Contractor's personnel is to undergo Safety Induction Training at Duvha prior to commencement of this contract and all the relevant Documentation is to be approved by Safety Officials and the Project Manager before any activities can be started on site.

1) The Contractor complies with the requirements of the Duvha Power Station Safety, Health & Environmental Specifications SAS 0012: Duvha Power Station Contractors safety manual
2) The documents are completed by the Contractor's and submitted to the Employer before taking possession of the works.
3) These documents are valid for the duration of the works.
4) The Contractor and all his personnel attend a Health and Safety Induction Course prior to starting with the works.
5) The induction course is presented by the Safety Risk Department at Duvha Power Station.
6) The Contractor makes arrangements with Safety Risk Management at telephone number 013-690-0143.
7) The Contractor submits all the documents as indicated in the Safety, Health & Environmental Specifications relevant to the work to Safety Risk Management before the induction course.
8) The Contractor completes all appointments required and ensures that the appointee and appointees fully understand their responsibilities and are competent and trained to execute their duties.

9) The appointees/appointee ensures that all duties are carried out and records are kept by the Contractor for review/audit by the Employer or Inspector of Machinery.
10) Management has the right and authority to visit and inspect the Contractor's workplace or Site establishment.
11) The Contractor supplies and ensures that his employees wear the necessary PPE according to the risk assessments performed on the specific tasks to be carried out.
12) The Contractor ensures that everyone entering Duvha Power Station under his supervision is medically, physically and psychologically fit to enter Duvha Power Station.
13) The medical examination, at the Contractors cost, is carried out by a Registered Professional Occupational Health Practitioner and the examination shall include the following tests:
    i. Eye Test, Blood Pressure,
    ii. Heart Function,
    iii. Hearing Test and
    iv. Lung Function.
14) A thorough examination is done and previous physical injuries, as well as occupational diseases/complications are covered.
15) If at any point in time during the execution of the works, the Contractor has a radiation-related incident/exposure, the onus is on the Contractor to immediately notify the Employer, the Medical Station, the Risk Manager and the Safety Risk Management Department.
16) The onus thereafter is for the Contractor to immediately arrange, at his/her cost, for blood samples to be taken by a Registered Laboratory and for this sample to be sent to the Accelerator Laboratory in Cape Town for full radiation exposure tests. This test results are then to be discussed with the Duvha Occupational Health Practitioners, who will then advise the Power Station Management on the risk, if any, of the incident/exposure.
17) The Contractor takes full responsibility and accountability for all other people/staff/personnel/labour that he/she employs or utilises, whether in full-time/part-time/contract basis, in executing the works or other work whilst on the Employers premises.
18) The Contractor ensures that Safety Harnesses are used for all work carried out in elevated positions, as defined in the Occupational Health and Safety Act, No 85 of 1993 or any other Code of Practice or standard or the Construction Regulations.
19) All safety equipment or Machinery used complies with the SANS Codes of Quality and Practice or any Code as stipulated in the Occupational Health and Safety Act, No 85 of 1993, and any amendments thereto.
20) The Contractor at all times consider himself as "Employer" as defined in the Occupational Health and Safety Act, No 85 of 1993 and do not consider himself as under supervision or management of the Employer with regard to Health and Safety Requirements but only from a Commercial Contractual Condition of Contract. Under no circumstances does the Contractor consider himself a sub-ordinate or being given supervision.
21) The Contractor provides and maintains his own facilities as required in the Occupational Health and Safety Act, No 85 of 1993 or any other Code of Practice or standard or the Construction Regulations, if not agreed contractually or arranged by the Employer.
22) The Contractor has Safety Systems in place at his premises for the total contract period and these shall include the following:
    i. Safety Management Structure and Compliance to these
    ii. Statutory Appointments
    iii. Records and documentation of all Risk and Hazard Analyses.
    iv. Planned Job Observations Records and Documents.
    v. Employment history and records of all personnel, part-time or full-time or contract labour.
    vi. Medical History of all personnel, part-time or full-time or contract labour
    vii. Training and Competency Records with regard to Safety, Health and Environment.
    viii. Training and Competency Records with regard to the skills he uses to carry out the works or any other works in the Employers premises.
    ix. Compensation Commissioner Records and proof of registration.
    x. Records and documentation with regard to any sub-contractor or labour-only contracts he places or uses to carry out the works or any other works in Employers premises.
    xi. Personal Protective Equipment and Safety Equipment Inspection, training and competency records and documentation.
    xii. Employment contracts for all sub-contractor or labour-only contracts.
    xiii. Compliance to a Safety System, such as NOSA or any other system that is similar in nature.

xiv. Records of all incidents or accidents, and vehicle accidents, incurred during execution of this works or any other works in the Employers premises.
xv. Records of all man-hours, including sub-contractors or labour-only contracts, the Contractor spends on the Employers premises.
xvi. Written Safe Work Procedures for all hazardous tasks the Contractor executes on the Employers premises.
xvii. A Fall Protection Plan for all elevated work the Contractor does on the Employers premises.
xviii. Environmental plan and awareness training.
xix. Induction training records of his staff by himself/herself.
xx. Minimum wage compliance for the different skills and to which Bargaining Council compliance is made to and proof of membership, if any.
xxi. Risk Assessment of this type of works
xxii. Proof of authorisation/accreditation from Department of Labour and or other Statutory Body for this type of works, if applicable
xxiii. Emergency Evacuation and Rescue Plan for the hazardous tasks related to the works.

23) The contractor shall appoint a person, qualified and competent in accordance with the SHEQ requirements, as the liaison with the Eskom safety officer/delegated person for all matters related to health and safety, this person is contactable 24hours a day.
24) The contractor shall comply with the following:
i. Form 74 – SHE specification.
ii. Eskom Safety, Health, Environmental and Quality Policy: 32-727
iii. Eskom Life Saving Rules, Directive: 32-421
iv. Eskom Procedure on Smoking: 32-36
v. Eskom Incident Management Procedure 32-95 Rev 3
vi. Eskom Plant safety regulations 36-681.
vii. Eskom Integrated Risk management and Standards 32-391
viii. PGZ 45-24 HAZOP study guidelines
ix. Eskom Standard SAS0012 Safety, Health & Environmental Specifications For Contractors

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

2.4 Environmental constraints and management

1) The Contractor shall comply with Eskom Environmental procedure waste management procedure 32-245
2) The Contractor is responsible to keep the work area clean of any rubble.
3) All waste introduced and/or produced on the Employer's premises by the Contractor for this contract, is handled in accordance with the minimum requirements for the Handling and Disposal of Hazardous Waste in terms of Government Legislation as proclaimed by the Department of Water Affairs and Forestry Act 1994 Ref: ISBN0621 - 16296-5.
4) The Employer will provide special colour coded bins for refuse disposal. The Employer will empty these bins.
5) The Contractor ensures that all workers under his control strictly adhere to the correct use of refuse bins:
   i. Maroon bins: - Scrap metal only
   ii. White bins: - Lagging and general household rubbish
   iii. Yellow bins: - Ash, dust, coal dust and sand
6) For the full duration of the Works, the Contractor is responsible to keep the work area clean of any rubble, and to place all refuse into the bins provided.
7) Removal of scrap and waste, including concrete/ash/refractory material to a location within the Duvha Power Station security gates and/or the ash dams must be included in the Price Schedule or Bill of Quantities. This must be inclusive of labour and equipment i.e., forklifts spades, shovels, transport,

The Contractor shall comply with the environmental criteria and constraints stated in this Work Information

2.5 Quality assurance requirements

1) All work is carried out under the supervision of an experienced supervisor. The Contractor complies with the Employer's Quality Requirements as specified in Eskom Generation Standard QM-38 for Supplier Contract Quality Requirements Specification.
2) All quality control documentation is to be submitted to the Project Manager within 7 days before the work can commence to be approved by system engineer.
3) The contractor to provide a Quality Control Plan to Eskom Duvha for approval prior to commencement with the works. The contractor shall also assure that the following quality control documentation are available during the work and are submitted to ESKOM on completion.
4) The QCP must align with key required point from BS 15115 standard including o NDT inspection reports done during manufacturing.

Material certificates for the plates, flanges, consumables,
Welder qualifications, WPQR and WPS

QCP plan with signed off witness and hold points by Eskom's Engineer and Eskom's AIA.

2.6 Programming constraints

1) The Contractor submits a programme within 1 week of the Contract Date.
2) The program shall be in Microsoft Projects format or Primavera.
3) The programme indicates:
   i. The hour duration of each activity,
   ii. The working calendar (number of work hours per day, days per week),
   iii. The exact quantity of people per day
   iv. All phases and interfaces

2.7 Contractor's management, supervision and key people

1) The contractor shall provide a site Supervisor or Project Manager to supervise, monitor, control and coordinate all activities during the execution of the works.
2) Contractor shall also provide the following staff:
   i. Quality control supervisor
   ii. Site Safety representatives
   iii. Design and Testing Engineer
   iv. Responsible Person (RP)
   v. Boilermaker

2.8 Invoicing and payment

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 showing the amount due for payment equal to that stated in the Project Manager's payment certificate.
2) The Contractor shall address the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:
   i. Name and address of the Contractor and the Project Manager;
   ii. The contract number and title;
   iii. Contractor's VAT registration number;
   iv. The Employer's VAT registration number 4740101508;
   v. Description of service provided for each item invoiced based on the Price List;
   vi. Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;

Add procedures for invoice submission and payment (e. g. electronic payment instructions)

2.9 Insurance provided by the Employer

Refer to the contract data.

2.10 Contract change management

(1) The Contractor or the Project Manager formally notifies each other of any event which may lead to a change in agreed terms as per NEC 3.

2.11 Provision of bonds and guarantees

1) 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.
2) 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*

1) The Contractor may keep records of payment and assessments of compensation events if deemed necessary.

2.13 Training workshops and technology transfer

1) The Contractor provides manuals to the project manager and will offer training to relevant departments as instructed by the Project Manager
2) Training should be given to the following employees initially:
   i. Operating Department (Water Treatment Plant, Performance and Testing)
   ii. C&I Outside Plant Maintenance.
   iii. Electrical Maintenance Department (EMD)
   iv. Mechanical Heavy Maintenance Department (HMD)
   v. Engineering Department (Civil. Electrical, Mechanical, Process & Instrumentation).

2.14 Project Execution Methodology

General Requirements

1) The Contractor is responsible for carrying out all activities and supplying everything to provide the works.
2) This includes clarification and co-ordination with process plant engineers, other equipment manufacturers/suppliers and the Project Manager.
3) All documentation submitted by the Contractor is in an adequate state of completeness.

3. ENGINEERING AND THE CONTRACTOR'S DESIGN

1) In a case whereby the Contractor is task to develop a design solution the below points will apply

i. The Contractor develops the detail design for the execution of works.
ii. Any item of the conceptual design that is not feasible is corrected in the Contractor's detail design.
iii. The Contractor's design includes schedule detailing the plant location code, size, type and make of all instrumentation and equipment utilised.
iv. Design is approved when the Project Manager certifies sectional completion of the design activity.
v. The Employer may use the Contractor's design for any purpose related to the Employer's operational activities.

3.1 Employer's Design

1) Engineering design is defined as being all activities required to translate the Contractor's scope of works, into a fully functional data capturing system
2) All Engineering design activities are executed by the Contractor in active co-operation with the Project Manager
3) The engineering design activities are phased to suit the Accepted Programme
4) A plant walk is performed including, but not limited to:
   i. Verification of location and suitability of hardware installation points
   ii. Verification of location and suitability of cable routing paths.
5) As a minimum, Engineering design consists of the development, technical clarification and acceptance of the following:
   i. Engineering programme
   ii. Index and master register of documents
   iii. Documentation synopsis
   iv. OEM best practices
   v. Cable Routing Diagrams
   vi. Cable & Termination schedules
   vii. Engineering and maintenance procedures
   viii. Cabling concept
   ix. Bill of Materials (make, model, rating, quantity etc…)
6) The Contractor and the OEM identify any discrepancies that would lead to shortcomings in the design and makes the Employer aware of such discrepancies and provides recommendations, where applicable. The Contractor takes action on such discrepancies.
7) The design to be comply with the following standards

3.1.1 CIVIL AND STRUCTURAL

1) SANS 10400 Application of the National Building Regulations
2) SANS 10400 Application of the National Building Regulations
3) GAM/MAT/21/146: Corrosion Protection Specification – Duvha Power Station - Water Treatment Plant Acid Regeneration Bays – Acid Proof Tiling
4) GAM/MAT/21/181: Corrosion Protection Specification – Duvha Power Station - Sulphuric Acid Storage and Dilution System Structural Steel Work and Plinths
5) GAM/MAT/21/185: Corrosion Protection Specification – Duvha Power Station: Water Treatment Plant Acid Regeneration Piping – Rubber Lined.
6) GAM/MAT/21/189: Corrosion Protection Specification - Duvha Power Station Water Treatment Plant Corrosion Protection of Effluent Channels by Thermoplastic Sheeting.

3.1.2 MECHANICAL STANDARDS

1) 32-632 Requirements for Non-Destructive Testing (NDT) on Eskom Plant
2) 240-56241933 Control of Plant Construction, Repair and Maintenance Welding Activities
3) 240-56355225 Welding of High Pressure, Temperature Tube and pipework
4) 240-56246601 Personnel and Entities Performing Welding Related Special Processes on the Employer's Plant
5) SANS 1091 National colour standards of paint
6) SANS 10140 Identification colour markings
7) 240-123801640 Standard for Low Pressure Pipelines
8) 240-106628253 Standard for Welding Requirements on Eskom Plant
9) 240-150642762 Generation Plant Safety Regulations
10) GAM/MAT/21/185: Corrosion Protection Specification – Duvha Power Station: Water Treatment Plant Acid Regeneration Piping – Rubber Lined

3.1.3 CHEMISTRY STANDARDS

1) 240-55864792 Chemistry standard for once through boilers above 16MPa

2) 240-88257914 Chemistry Guideline for Demineralised Water Production Using Ion Exchange Resins

OTHER STANDARDS

ENS0002 Duvha Power Station AKZX Plant Location Coding Manual
1) 240-71432150 Plant Labelling Standard
2) Occupational Health and Safety, Act Number 85 of 1993
3) 240-49230111 Hazard and Operability Analysis (HAZOP) Guideline (Rev 1)
4) 240-30008949 Safety, Health and Environmental Specifications for Contractors
5) 240-105658000 Supplier Quality Management Specification (QM 58)
6) 240-28463367 SHE Organization
7) 240-62196227 Life Saving Rules
8) 240-101712128 Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings
9) 240-106365693 Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings

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

1) The Contractor provides all equipment and services and executes all works to fulfil all requirements specified in this Works Information.
2) The works complies with professional engineering practice and standards for fossil fuel power plants
3) The works is designed for the environmental conditions prevailing at Duvha Power Station Site

3.3 Procedure for submission and acceptance of Contractor's design

1) The Contractor submits any drawing or documentation that will fulfil the requirements of this works
2) All drawings or documentation are submitted to the Project Manager in a formal communication.
3) Statement of design acceptance or a list of design faults will be issued within one week of design receipt by the Project Manager
4) The Contractor submits a written design change request to the Project Manager for any modification the contractor wants to make to the as built status of the FTG.
5) The Contractor supplies a written modification description, reason for modification, drawings, method statement, cost estimate and time estimate for the proposed change.
6) The Contractor does not implement the modification before he obtains written approval for the design change from the Employer.

3.4 Other requirements of the Contractor's design

Physical Characteristics
1) The Contractor is to ensure that all components installed are consistent and standardised, where possible, with existing plant components. The equipment should be protected from corrosion (acid induced and other) and external ingress.

3.5 Use of Contractor's design

1) The Contractor's design is considered property of the Employer
2) The Contractor's design is made use of during future operation and expansion of the system
3) Eskom Pr Eng. (Civil & Structural) will be responsible for acceptance of the structural integrity of North Acid Tank.

3.6 Design of Equipment

To be supplied by the Contractor prior the execution and approve by Eskom Specialist.

3.7 Equipment required to be included in the works

The Contractor must submit a project Inspection and Test Plan for all equipment included in the scope. The Contractor must only use ISO 9001 accredited suppliers for the equipment used in this project. The ISO 9001 certification should be supplied with the delivery documentation. Failure to do so will result in rejection of the equipment by Eskom. The Contractor should specify which pieces of equipment are of a proprietary nature; where standard documentation and certificates of conformity are the only forms of certification. If any components are to be manufactured, the Contractor must ensure that the manufacturer is ISO 9001 certified. The Contractor must supply Inspection and Test Plans for each phase of the project and submit to Eskom for review and approval.

3.8 As-built drawings, operating manuals and maintenance schedules

1) 'As Built' documentation is supplied by the Contractor to the Project Manager upon completions of works.
2) Hard copies and soft copies of As Built documentation is provided by the Contractor as part of the works
3) Acceptance of the ‘As Built’ documentation is a pre-requisite for the completion of the works
4) The documents are reviewed by the Project Manager for correctness and conformance to the accepted design.
5) Soft copies must be in Microsoft Office 2010 format
6) Drawings must be in Bentley MicroStation or similar CAD 2D format

4. Procurement

The Contractor is responsible for all procurement of materials required for the construction, installation and commissioning of the Works. The Contractor must:

i. Ensure that all equipment and materials are inspected. The Contractor must also inform the Project Manager to arrange for the Eskom representatives to inspect the equipment and materials before it is delivered to Site.
ii. Ensure that all the relevant factory tests are conducted on the equipment and that these tests are witnessed by both the Contractor as well as Eskom representatives.
iii. Submit calibration certificates to the Project Manager for all equipment used for testing.
iv. Spares and Consumables
v. The Contractor will provide all the critical spares for the plant as part of the Works. (refer to Employer’s Engineering Design for the critical spares list)
vi. Prior to handover of the plant, the Contractor must ensure that Eskom has all the critical spares (as per the critical spares list) on hand.

4.1 People

4.1.1 Minimum requirements of people employed on the Site

People providing the works will have been declared competent in writing to carry out the works. They will abide by all the rules and regulations as set out by Duvha Power Station. They are prohibited from being or going to any other site other than the one where the work is being executed..

4.1.2 BBBEE and preferencing scheme

Eskom’s policy is to maximise purchases from Black or Black Empowering Enterprises (BEE’s) whether Black Woman-owned, small or Large Black or Black empowering suppliers. The purpose is to promote entrepreneurship in black communities and give black business access to the mainstream of business opportunity.

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 IT 1.2 ASGI-SA requirements.

4.2 Subcontracting

4.2.1 Preferred subcontractors

1) No Subcontractor shall be appointed without the written acceptance of the Project Manager, refer to clause 11 and 26 of the Engineering Construction Contract (ECC).
2) The Contractor must inform the Project Manager when intending to subcontract some of the works from the contract scope
3) The Contractor shall provide the necessary facilities in order to manage a subcontractor to ensure that the works are carried out in accordance with :
   i. The programme of the works;
   ii. The conditions of the contract; and
   iii. The Works Information and in particular, the requirements of the Safety Plan , Environmental Management Plan, Quality Management Plan and Operational procedures

4.2.2 Subcontract documentation, and assessment of subcontract tenders

1) The Contractor submits the proposed contract data for each subcontracting for acceptance to the Project Manager.
2) The Contractor prepares a subcontracting document as according to the NEC Contract.
3) The Contractor takes note that their Subcontractors Safety Files will be accepted by the Contractor's Safety Manager before it is handed to the Employer's SHE practitioner/Officers for verification of compliance before any work commences.
4) Proof of acceptance by the Contractor Safety Manager needs to be in the Safety file when handed over to Employer's SHE Practitioners for verification.

4.2.3 Limitations on subcontracting

1) The Contractor does not sub-contract more that 30% of the contract value to another enterprise that does not have equal or higher B-BBEE status level, unless the intended sub-contractor is an Exempted Micro Enterprise that has the capability and ability to execute the sub-contract.
2) In relation to a designated sector, the Contractor will not be allowed to sub-contract in such a manner that the local production and content of the overall value is reduced below the stipulated minimum threshold (Percentage of the specific contract).
3) The Contractor does not subcontract with his subsidiary companies as this may be interpreted as subcontracting with himself and / or using their subsidiaries for fronting. Where the Contractor subcontracts with a subsidiary this must be declared in tender documents.

4.2.4 Attendance on subcontractors

Not Applicable

4.3 Plant and Materials

4.3.1 Quality

The Contractor is required to submit a comprehensive Quality Management System (QMS) for all phases of the project. This QMS must comply with the requirements of 240-105658000. The Contractor and all of the Contractor's suppliers must hold a compliance certificate for their QMS to the requirements of ISO 9001:2015. The Employer reserves the right to conduct any audits in this regard.
Documents are to be submitted for review by the Employer after the Contract Date and before commencement of work.

The Contractor must submit a detailed Quality Manual and Quality Control Plan which will be reviewed and accepted/rejected by Eskom.

4.3.2 Plant & Materials provided "free issue" by the *Employer*

No free issue plant and materials will be available. All plant and materials are to be provided by the Contractor.

4.3.3 Contractor's procurement of Plant and Materials

The Contractor is responsible for all procurement of materials required for the construction, installation and commissioning of the Works. The Contractor must:

i. Ensure that all equipment and materials are inspected. The Contractor must also inform the Project Manager to arrange for the Eskom representatives to inspect the equipment and materials before it is delivered to Site.
ii. Ensure that all the relevant factory tests are conducted on the equipment and that these tests are witnessed by both the Contractor as well as Eskom representatives.
iii. Submit calibration certificates to the Project Manager for all equipment used for testing.

4.3.4 Spares and consumables

The Contractor will provide all the critical spares for the plant as part of the Works. (refer to Employer's Engineering Design for the critical spares list)
Prior to handover of the plant, the Contractor must ensure that Eskom has all the critical spares (as per the critical spares list) on hand.

4.4 Tests and inspections before delivery

Eskom and its representatives will carry out inspections at their own discretion. All inspections and testing are to be performed in accordance with the QCP developed by the Contractor and accepted by Eskom and its representatives. A factory release inspection does not release the Contractor from their obligations.

4.5 Marking Plant and Materials outside the Working Areas

Not applicable

4.6 *Contractor's* Equipment (including temporary works)

The Contractor is liable for all plant and equipment under their control. Eskom will not take responsibility for any loss or damage to the plant and/or equipment of the Contractor.

4.7 Cataloguing requirements by the Contractor

Not applicable

5 Construction

5.1 Temporary works, Site services & construction constraints

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

All the Contractor's employees are to attend a mandatory site safety induction course before they are allowed to work on site. It is the responsibility of the Contractor to ensure that all of their staff has attended the induction. The Contractor must compile their own safety file which has to be approved by Eskom's safety officer. This file must be approved before the Contractor may attend the safety induction course.
The Contractor must provide a list of all employees, along with the dates and times of arrival, at least 2 days prior to arrival on site.
All individuals entering Duvha Power Station will be subject to alcohol testing daily. No person found to be intoxicated will be admitted on the premises. All Covid-19 protocols must be followed by all individuals prior to entering and throughout their entire duration on Site. It is the responsibility of the Contractor to ensure that their staff is compliant.

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

In addition to the above there may be other restrictions once on the Site, plus rules relating to roads, walkways and the provision of barricades

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

The Limited Access Register (LAR) will used by the Eskom personnel who are in charge of the plant. It is used to maintain control over the individuals in the plant as well as activities taking place on the plant that are not covered by the Plant Safety Regulation and Operating Regulations for High Voltage Systems.
The Project Manager or Supervisor will accompany the Contractor for the first instance of working under the LAR of the specific plant area. Thereafter, the Contractor is expected to know and abide the rules and regulations which are set out.
The works must be executed under normal working hours should there be overtime requirements, the contractor must submit a request to work overtime to the project manager for acceptance.
Contractor keeps records of his people on Site, including those of his/her Subcontractors 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

5.1.4.1 Local Safety Procedures

The Contractor must abide by all Local Safety Procedures, available from Eskom on request.

5.1.4.2 Incidents

In accordance with '32-136 Safety, Health and Environmental Requirements for Contractors', all incidents must be investigated by the Contractor and reported to Eskom within 24 hours of the incident occurring. The Contractor is advised to have a first aid station on site. Eskom's medical centre will be available to the Contractor on request and at a fee.

5.1.4.3 Safety

The design, manufacture and installation of equipment are to comply with SABS and all other local by-laws. All safety devices are to be installed to prevent damage to personnel, equipment and property and are to be tested by the Contractor. The Contractor must testify that these safety devices are in proper working order, in the form of inspection reports. Test certificates from accredited laboratories are required to confirm the fire

hazard ratings for all equipment and materials. In accordance with '32-136 Safety, Health and Environmental Requirements for Contractors', fire prevention and protection must be adhered to.

5.1.4.4 Inspection of Equipment

The Contractor's equipment will be inspected by a suitable Eskom employee upon arrival on site.
Where applicable, copies of all test certificates and maintenance records are to accompany the Contractor's equipment. Non-compliance will result in Eskom removing the equipment in question, from site.

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

No fauna or flora will be collected or removed from any farm by any visitor without written permission of the landowner, in which case cognizance will be taken of appropriate provincial legislation pertaining to fauna and flora.
Under such cases Eskom Holding's ethical policies and guidelines will be strictly applied.

5.1.6 Title to materials from demolition and excavation

All pipe offcuts and scrap metal should be sent by the Contractor for recycling, unless otherwise specified by Eskom. It is the responsibility of the contractor to ensure that all acid and water spills are routed to the effluent sump. The Contractor is responsible for the ethical and environmentally conscious disposal of any waste generated by the Contractor.

5.1.7 Cooperating with and obtaining acceptance of Others

1) The Contractor shall co-operate with others in obtaining and providing information which they need in connecting with the works.
2) The Contractor shall share the working area with others in executing the works.

The contractor cooperates with others in obtaining and providing information which they need in connection with the works.

5.1.8 Publicity and progress photographs

Should publicity and or progress photographs be required an application shall be made via the Project Manager

5.1.9 *Contractor's* Equipment

a) The Contractor's attention is drawn to the applicable regulation framed under the Machinery and Occupational Safety Act, 1983 (Act No. 6 OF 1983)
b) When working in built-in areas , the contractor shall provide and use suit able and effective silencing devices for pneumatic tools and other plant would otherwise cause a noise level exceeding 85 Db(A) during excavation and other works.
c) Alternatively the Contractor shall by means barriers, effectively isolate the source of any such noise in order to comply with the said regulation.

5.1.10 Equipment provided by the *Employer*

a) Should the Contractor require using of any of the Employer's Equipment, including compressed air, electricity, water supply and crane age, it must be specified in the Works Information supplied by the Contractor. The Employer does not guarantee continuity of supply of any of these items.
b) The Employer shall be entitled to withdraw use of the said Equipment, should proper maintenance and cleanliness not be ensured. In that event, the Contractor shall be obliged to provide the necessary Equipment at his own cost.
c) The Contractor is responsible for the repair, replacement or correction as necessary of all pieces of tools and equipment supplied by the Employer which are damaged and / or lost whilst in the Contractor's custody and control.

5.1.11 Site services and facilities

1) **Potable Water Supply**
   - Potable water is available at the existing points.
2) **Electrical Power Supply**
   - Power is available at the existing points.
3) **Toilet Facilities**
   - The Employer provides the Contractor access to existing toilet facilities.
4) **Catering Facilities**
   - The Contractor are not allowed to use the Employer's dining facilities, unless a specific agreement has been made between the Contractor and Eskom Catering and Accommodation Services (ECAS).
   - The Contractor may buy take away meals from the fast foods outlet on Site.
5) **Medical Facilities**
   - The Contractor provides a First Aid service to his 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.
   - Outside the Employer's office hours, the Employer's First Aid Services are only available for serious injuries and life threatening situations.
   - The Employer recovers the costs incurred, in the use of the above Employer's facilities, from the Contractor

5.1.12 Facilities provided by the *Contractor*

The contractor should provide facilities they deem necessary in executing the work. This must be discussed with the Project Manager prior to commencement of work.
The Contractor shall supplies all the necessary equipment and material required to execute the works, including portable ablution facilities and proper eating facilities for their employees.

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

The Contractor will cooperate with others who might be working in adjacent premises.

5.1.14 Survey control and setting out of the *works*

Regular plant walks on safe work execution and production will be carried out by the Project Manager randomly.

5.1.15 Excavations and associated water control

The Contractor is responsible for the ethical and environmentally conscious disposal of any waste generated by the Contractor

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

- In the case where piping might have to be laid underground, it is the Contractors' responsibility to ensure that no electrical, signalling cables or any other underground piping is damaged during the installations of works.
- The Contractor is responsible for scanning of the pipeline route to identify existing underground services on the path using Electromagnetic detection equipment capable of detecting underground cables and pipes. The Contractor compiles a report of underground services and issue it to the Employer. The Contractor ensures that all identified services and servitudes are protected (not damaged) throughout the construction.

5.1.17 Control of noise, dust, water and waste

Earplugs should be worn if excessive noise will be generated by machinery. Dust masks will be worn to prevent dust inhalation.

5.1.18 Sequences of construction or installation

The implementation of this project must coincide with the project which aims to resolve the uneven floor in the WTP. The mixed bed and cation eductor systems should only be installed once the floor where the systems will be installed on is repaired.

5.1.19 Giving notice of work to be covered up

Project Manager to be notified about any issues that poses a risk to the plant or employees before any specific task in relation to that risk is undertaken.

5.1.20 Hook ups to existing works

1) The Contractor must inform the project manager and the engineer if a need arise of hooking up on existing work.
2) The project engineer will then verify the safe use of any existing structure as a support.

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Work to be done by the Completion Date

All work and documentation, except those listed below, must be completed by the Contractor before the Completion Date of the Works. The Project Manager cannot certify that the work is complete until all work and documentation (except those listed below) has been done and the work is free of defects.
As built drawings of the Works – Completion date is within 14 days of completion of the Works.

	Item of work	To be completed by
	As built drawings of	Within 14 days after Completion
	Performance testing of the works in use as specified in paragraph of this Works Information.	See performance testing requirements.

5.2.2 Use of the works before Completion has been certified

The Employer will take over the completed tank after commissioning without any defects.

5.2.3 Materials facilities and samples for tests and inspections

All signed test reports/results (concrete, layer works compaction, weld test) are to be submitted to the Project Manager within 3 days of the completion of the test.

5.2.4 Commissioning

- The Contractor shall conduct commissioning under the supervision of the Project Manager and Engineer.
- The Contractor shall carry out sufficient checks to satisfy himself that the material use and the workmanship comply consistently with the specified requirement.

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

The plant is to only be put in operation after the safety clearance and functional testing of all systems.

5.2.6 Take over procedures

Handover of plant will be initiated only after the system has successfully completed all functional tests.

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

The Project Manager issues the defects certificate at the later defect date and the end of the last defect correction period. The Employer's right in respect of the defect which the supervisor has not found and notified are not affected by the issue of the defect certificate.
The Contractor contacts the Project Manager to gain access to the site to correct defects.

5.2.8 Performance tests after Completion

Duvha Quality department together with the Project Manager, Engineer and Contractor will sign off the works as having met all the requirements as set out in the works information after completion.

5.2.9 Training and technology transfer

All operating and maintenance requirements must be included in the training manuals. The contractor must provide training on operating and maintaining the system (in all scenarios) to the Eskom operators and maintenance staff. The operator must also provide training on the system to the engineering staff.

5.2.10 Operational maintenance after Completion

The contractor accepts full responsibility once he executes the works that the product will last for the minimum operational duration as stated in the data packs after project completion and commissioning.

6 Plant and Materials standards and workmanship

6.1 Dealt with in the scope of work Investigation, survey and Site clearance

Thorough site inspection will take place with Contractor, Project Manager and System Engineer in attendance prior to commencement of work on site.

6.2 Investigation, survey and Site clearance

The Contractor must evaluate whether these existing components are suitable for their design as stipulated on the technical specification 382-169378 section 3.1.5. For the components that do not fall within the battery limits, the Contractor must design the system such that these components are suitable.

6.3 Building works

Not applicable

6.4 Civil engineering and structural works

All civil and structural design work and components are to be performed, supplied and installed by the Contractor, if these are deemed necessary in the Contractor's detailed design.

6.5 Electrical & mechanical engineering works

All engineering works, electrical and mechanical will be carried out according to Plant Safety Regulations (Permit to Works System) and any other station specific rules and regulations.

6.6 Process control and IT works

The C&I scope includes installation of field instruments/equipment that will interface with the WTP Distributed Control System (DCS). Design and Engineering of the new operating and control philosophy (section 3.2 and 3.3 technical specification) in the WTP Symphony Infi90 DCS. Development of new graphics in the WTP 800xa Human Machine Interface (HMI).

6.7 Other [as required]

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

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 sub headings 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

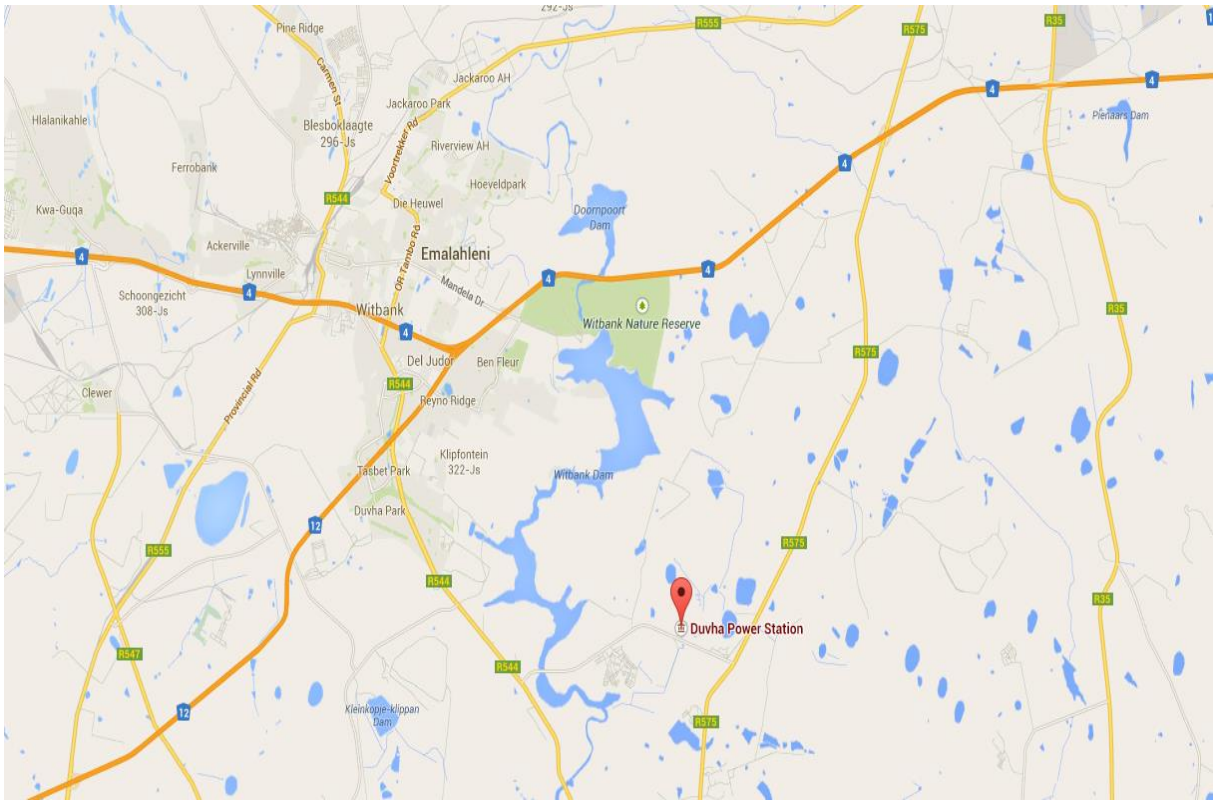
Document reference	Title	No of pages
	This cover page	1
C4	Site Information	
	Total number of pages	

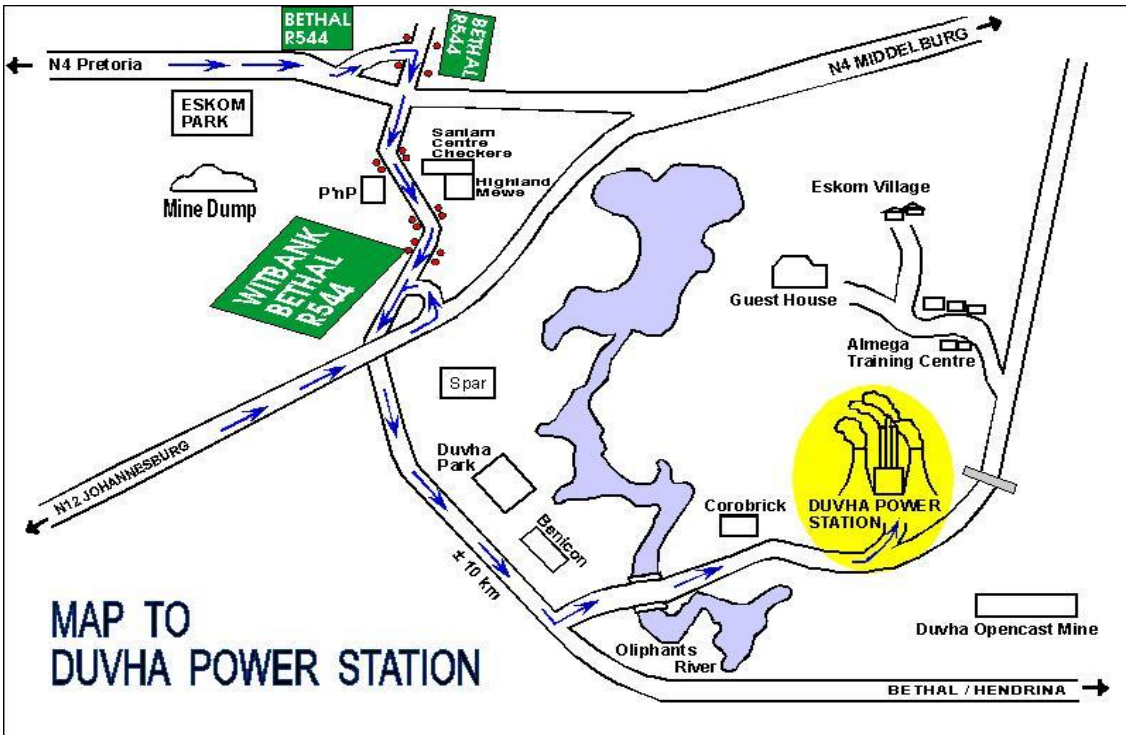
PART 4: SITE INFORMATION

Core clause 11.2(16) states

1. Site Location

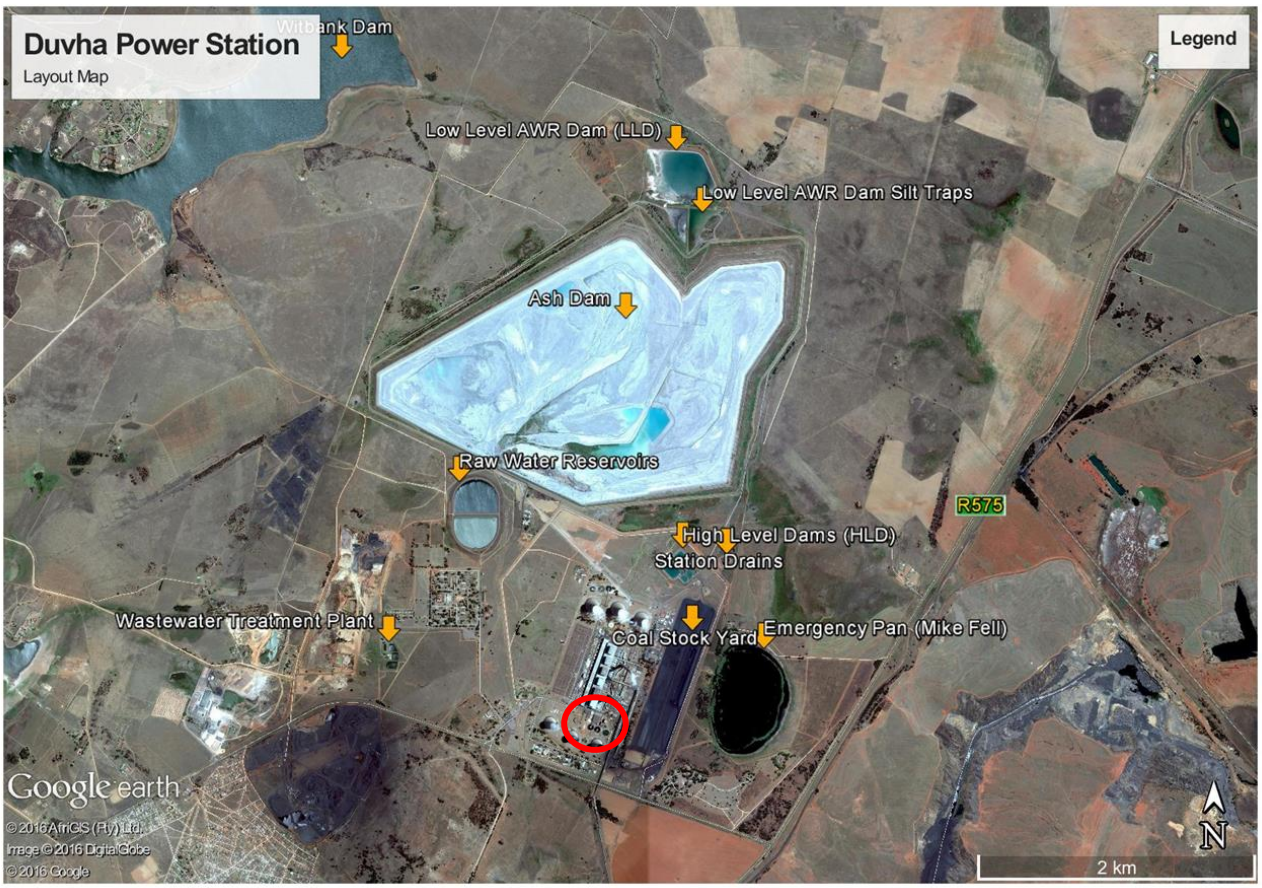
Duvha Power Station is located approximately 15km from Emalahleni, Mpumalanga Province and at an elevation of 1 600m above sea level. The location and access roads are shown in the diagrams below.





2. General description

Location of working area: circled in red, Duvha Power Station South cooling towers, Water treatment Plant, Unit 4 22m level equipment room.



3. Wetland and No go Areas

Green polygon - is an artificial wetland likely caused by altered drainage and associated infrastructure causing ponding and the establishment of wetland vegetation.

Works in the red highlighted circle will require a method statement and Risk Assessment. No work to be carried within the orange area unless is 50 meters away. The area is marked as a no go area for construction activities.

Area E: Originally Proposed Fabrication Area
Area E2: Alternative Fabrication Area (Area E2 selected as suitable option)
Access Road: Proposed one way connecting road to Area E2 (Traffic Management)

Fig A

FIG B

4. Maintenance and Housekeeping

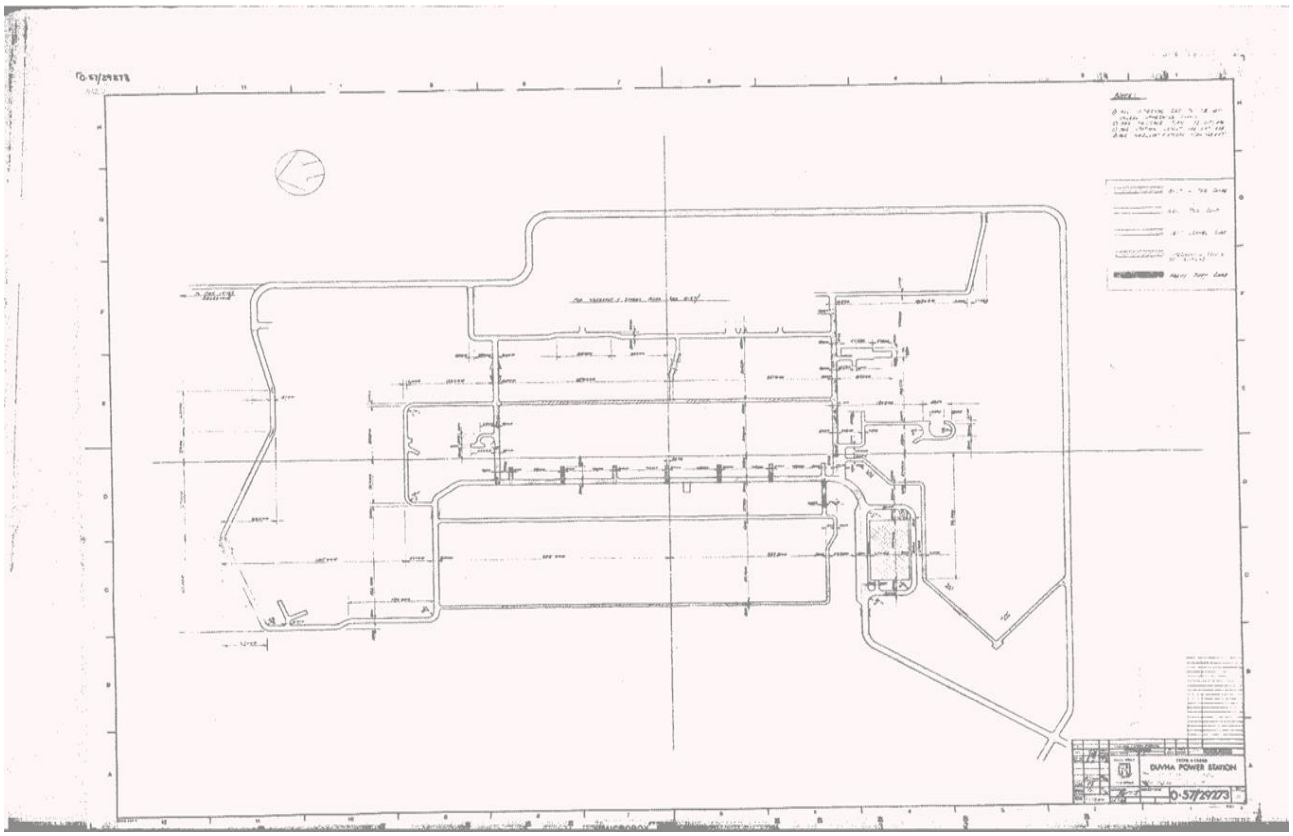
Maintenance of and within the Laydown Area and housekeeping of the Laydown and Working Areas will be the sole responsibility of the Contractor. All waste will be managed in accordance with Eskom Waste Management Procedure 32-245

5. Roads

The Contractor is provided with the Station Roads Layout (0.57/ 29273) which indicates the position of roads, width and turning radii, in order to plan access and movement of vehicles to Duvha Power Station. The Contractor's proposed route is issued to the Employer for review and acceptance. The Contractor is also issued certain available long sections and cross sections of the access roads.

The Contractor identifies the type of vehicles (incl. loading capacity), number of vehicles, and frequency of vehicles required in order to complete the works. The Contractor takes note that all existing available roads drawings are provided for information only. The Contractor is responsible for verifying the information provided before use.

- *Drawings provided for information only:*
- *0.57/ 29273 - Duvha Power Station, Station Roads Layout*



Note: The employer will provide electronic format of the above drawings, at the contractor request.

6. Services

a) Air

The Contractor is responsible for the supply of compressed air as is necessary for the execution and completion of the Works and remedy of defects.

b) Water

The *Employer* is to supply free issue potable water for domestic use, at a designated supply point. For uses other than domestic, the Contractor is responsible for the supply of water. Supply is based on reasonable use. The Supply point information is as per the Laydown and Working Areas Schedule.

Contractor is responsible for connection to the designated supply point and routing to desired areas within Laydown and Working areas.

c) Electrical Power Supply

Power is available at the existing points as provided by the *Employer*.
The 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 complies with OHSA as referred to in the Electrical Installation Regulations and the Electrical Machinery Regulations.
Each board brought onto site must have a Certificate of Compliance issued by an accredited person.

The Contractors electrical distribution boards are installed at the works on a time negotiated with the Project Manager, prior to the access to the working site.
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 Contractors' Electrical Distribution Boards are earthed to the steel structure of the plant.

d) Sewage

The Contractor is responsible for either connecting to the local Sewage system or providing other means of managing sewage as required. The Contractor is responsible for connection to the designated supply points.

e) Gas

The Contractor is responsible for supply of any Gas as is necessary for the execution and completion of the Works and remedy of defects.

f) Communications

The Contractor will be responsible to provide for all communications services, including but not limited to internet, telephone, radio, required for the execution and completion of the Works and the remedy of Defects.

g) Overhead lines

The *Contractor* is responsible for ensuring any activities on Site do not interfere, impede or in any way disrupt any overhead lines, pylons or other transmission and distribution equipment. This is including but not limited to the transportation of Contractor's Equipment, Materials, Plant and Temporary Works to and from the Laydown and Working Areas.

The Contractor will be notified by the Employer for any services interruptions longer than 24 hours.

Planned interruptions may include strikes, maintenance and repairs activities etc.

7. Roads, facilities and Security

7.1 Access Road

The Contractor will be deemed to have been satisfied as to the suitability and availability of access routes to the Site (and other places, if any, as may be specified under the Contract as forming part of the Site).

7.2 Access to Site

Access to Site and continued use of the Site will be is in accordance with Duvha Access Control Procedure SCP0004 and the National Key Points Act, 1980 (Act No. 102 of 1980). The following must also be noted:

a) The *Contractor* applies for access permits for all works via the Employer's Representative.
b) The Contractor applies for Contractor's Permits for all his employees and/or subContractors at the Security gate, at least 72 hours prior to entry of the Duvha Power Station Security Area.
c) The Contractor submits his/her company's employee list to the Employers Safety Department listing all of the personnel that he intends using on Site when booking for SHE Induction as soon as the Contractor SHE File has been assessed and approved. At least 48 hours prior notice must be given to the Employer's Representative of the requirement to attend Site SHE inductions.
d) The completed list, identified with the Contractor's name, contains the following information:
    - Employee Name
    - Employee ID Number
    - Eskom Safety Co-ordinator signature
    - Employer's Representative's signature
    - Validity Date

a) No access permits are issued to personnel who have not attended SHE induction. A copy of proof of SHE induction attendance must be presented at Security when applying for employee access permits.
b) The Contractor photocopies the first page of the ID book of every one of his employees.
c) This completed list, together with the photocopies of the ID books / valid Passport / Work Permit is delivered to Protective Services for the preparation of the Contractor's Permits.
d) The Contractor allows at least 48 hours for the preparation of the security permits, before he collects the permits from the Protective Services offices.
e) The Contractor's personnel are required to be in possession of a Contractor's Permit at all times inside Duvha Power Station.
f) All Contractor permits are submitted back to Protective Services when the workers leave the site after completion of the works. The Contractor will ensure that all its employees/workers return such permits to the Employer. Failure to return the permits will result in a R100, 00 penalties for each non returned permit which will be deducted from the final payment.
g) The Contractor compiles detailed Tool Lists (obtainable from Protective Services) of all tools and equipment to be taken on site before arriving at the power station.
h) Authorised copies of these lists are retained to be used again when the tools and equipment is removed from site.
i) The Contractor's visitors and all personnel conform to the security arrangements in force at Duvha Power Station.
j) Application forms for visitors are filled in by the Contractor's Representative and approved by the Employer, and submitted to the Employer's Protective Services office one day prior to the visit.

k) Visitors will not be allowed on site if the necessary forms are not in the possession of security staff.
l) The Employer's Security Manager may, with valid cause, remove any of the Contractor's personnel from the site, either temporarily or permanently. They may deny access to the site to any person whom, in the opinion of the said manager constitutes a security risk.
m) No unauthorised vehicles will be allowed on site. Only Contractor vehicles with displayed Contract Vehicle Permits disks will be allowed on site. Contract Vehicle Applications are directed to the Employer's Representative for consideration and approval.
n) The Contractor is restricted to the Site. The Contractor is forbidden to enter any other areas, and ensures that his employees abide by these regulations.
o) No recruiting of casual labour may be done on Eskom premises, including the area outside the Power Station Security Gate.
p) Security personnel may search any premises, property or person within the security area of Duvha Power Station
q) No photographic equipment will be allowed within the security area of the Power Station without obtaining permission. Application forms for such permission is available from the Security Services offices at the main entrance. Any person found in possession of such equipment will be prosecuted in terms of the National Key Point Act.

7.3 Security of Working Areas

The Contractor is responsible for the security and safe keeping of all Working areas and any associated Contractor's Equipment, Materials, Plant, Temporary Works and Employer's Equipment as may be located within those areas.
The Contractor will at all times comply with the National Key Points Act, 1980 (Act No. 102 of 1980) within the parameters of the power station. The Contractor's proposal for achieving this will be submitted to the Employer for review within 14 days of the starting Date and the Employer will respond within 14 days of receipt.

The National Keys Point requirements will not be applicable to areas that fall outside the boundaries of the Duvha Power Station fence parameter. The Contractor will be responsible for security and access control for the Working areas. The access control must be a biometric type with capability to store all information, data retrievable, must be accessible and be able to indicate who is at the Working areas at any point in time.

The Contractor will be responsible for keeping unauthorised persons out of the Working Areas. Authorised persons will be limited to the Contractor's personnel, the Employer's personnel, Others and any other personnel notified to the Contractor by (or on behalf of the Employer), as authorised personnel. In addition, the Contractor will fully acquaint himself and strictly comply with all the Employer's security regulations particularly with regard to personnel, Plant, Material and the Contractor's Equipment entering or leaving the Site.

7.4 Welfare Facilities

The Contractor is responsible for provision, accessibility, maintenance, disposal of waste within, and housekeeping of all welfare facilities within the Working Areas, which include but are not limited to ablution, eating, changing, shower and rest areas. As a minimum the following will be provided:

- Shower facilities;

- Sanitary facilities;
- Changing facilities;
- Eating areas;

The Contractor is responsible for the provision and maintenance of the ablution facilities provided for his employees on the Working and Laydown areas. Additional sufficient temporary ablution facilities need to be put up by the Contractor on working area at various levels. These must be serviced and maintained as per health standard pertaining to the health and safety of these facilities.

The Contractor will provide sheltered eating areas for use of all Contractors' personnel on Site. Eating areas will provide adequate shelter and will be ventilated and lighted. Tables and backed seating will be provided. Suitable receptacles with lids for depositing waste will be provided at convenient points inside and outside the eating areas.

The Contractor will ensure compliance to all legislation Eskom's Food Hygiene and Safety Management - 39-113 procedure with respect to food management. Compliance will be verified during the client's audits and inspections on the Contractor.

Welfare, Ablution and Dinning facilities provided by the Contractor must be approved and be acceptable to the Employer.

The Contractor is responsible for provision of suitable Ablution facilities within the Working areas, which as a minimum will meet all relevant legislation. These facilities are to be provided in sufficient quantities and within sufficient proximity to the Works so as not to impede the Works or the operations of the Duvha Power Station.The Contractor shall provide his own permanent and temporal Ablution facilities. The permanent toilets shall be erected and fully functionally by the access to site date.

The Contractor is responsible for the provision of all meals for employees, in line with all relevant legislation and standards. The Contractor is responsible for the provision of suitable eating areas and these facilities are to be provided in sufficient quantities and within sufficient proximity to the Works so as not to impede the Works or the operations of the Duvha Power Station.

The Contractor is not allowed to use the Employer's dining facilities, unless a specific agreement has been made between the Contractor and Eskom Catering and Accommodation Services (ECAS). The Contractor may buy take away meals from the fast foods outlet on Site.

7.5 People and Equipment Movement

a) Passenger or Goods Lift

The Employer will not provide any passenger or goods lift services.

b) Meetings

All meetings are to be recorded using minutes or a register, prepared and circulated by the person convening the meeting. Such minutes or register are not used for the purpose of confirming actions, instructions or determinations under the Contract as these are done separately by the person(s) identified in the conditions of contract to carry out such actions,

instructions or determinations. All meetings will be as per the Employer's specified Project Control specification.

c) Permits

The Contractor will comply with the Generation Plant Safety Regulations 36-681 at all times. The Contractor will provide an acceptable number of authorised Responsible Persons in accordance with the Generation Plant Safety Regulations to ensure that no delays occur during the execution of the Works and removing of defects. Duvha Power Station Training will be the responsibility of the Contractor. Verification, examination and authorisation of the nominated persons will be the responsibility of the Employer and will be performed on dates nominated by the Employer. Should the Contractors nominated persons fail to achieve the required standards, any further training, verification, examination and approval will be the responsibility of the Contractor. The Contractor is to provide the proposed number of people to be authorised as a tender returnable.

8. Construction Rules

8.1 Works Stoppages

The *Contractor* will conduct a safety work stoppage for every LTI and fatality. Work Stoppages may include critical and high risk activities, suspension of work or part of the works by Eskom inspectorate Team or Department of labour inspectors. Suspension or withdrawal may be as a result of closure of Site/working area due to an accident/incident and non-compliance to procedure, legislative change and requirements. Activities may commence if the area is declared and certified safe for people to work. The Contractor shall have at least one work stoppage per quarter (every three months) for incident lessoned learn, risk analyses, review and incident reviews.

8.2 Critical activities

All rigging method statements, lift plans and other relevant documents will be reviewed by the Employer, prior to the relevant activity commencing. The review period for method statements is 14 days as provided on the Contract Data and if the Employer gives notice to the Contractor that a method statement fails to comply with the Contract, as per General Conditions Clause 5.2, it will be rectified and resubmitted within 7 days of notification. Compliance to the use of PPE, parking on designated areas, adherence to smoking policy, and trespassing, entry and exist to restricted areas will be monitored by the Contractor.

8.3 Electronic devise usage

Cell phone usage will be in accordance with Eskom procedure 36-583. No cellphone or any other electronic devices will be used whilst conducting critical work, and high risks activities unless otherwise authorized by the Employer. Such communication devise exclude two-way radios and devises used for the works.

8.4 Respecting the Working areas

In order to provide a safe working environment and to respect all persons on the Site, the following are strictly forbidden:

- Spitting
- Urination (other than in designated toilets)
- Defecation (other than in designated toilets)
- Sexual Activities

The Employer will be entitled to immediately remove, or instruct the Contractor to immediately remove, any person for whom the Contractor is responsible for who is in violation of the above, in accordance with applicable contract conditions and/or other rules and regulations.

9. Environmental

9.1 Environmental Policy

The Contractor will implement, and provide a copy of, an Environmental Policy which complies with Environmental Management System ISO 14001 requirements. A copy of the applicable policy will be provided as a tender returnable.

9.2 Method Statements

No activity will commence before Method statement is approved by the Employer. The Method Statement will be submitted for acceptance by the Employer. All Method Statements will include, but not be limited to include, the following environmental information:

Detailed scope of work

- List of equipment to be used
- List of chemicals to be used with complete MSDS's
- Risk Assessment of the Environmental Risks associated with the activities
- Management Plan of the identified significant risks
- Waste Management Plan
- Oil Spill Management Plan
- Incident reporting and management
- Layout plan approved by the Supervisor.
- Storm water management and erosion control plan

9.3 Environmental Management Programme

This Environmental Management Programme (EMPr) is prepared as part of the requirements of the 2010 Environmental Impact Assessment Regulations promulgated under the National Environmental Management Act (NEMA, Act 107 OF 1998) as amended 2010.

The purpose of this Construction EMPr is to provide an easily interpreted reference document that ensures that the project environmental commitments, safeguards and mitigation measures from the environmental planning documents, project approvals, and Scope of Works are implemented.

The objectives for the EMPr are:

a) To develop, implement and maintain effective management systems for the environmental aspects of the maintenance works;

b) To monitor effectiveness of controls aimed at preventing impacts associated with aspects

c) To ensure compliance with relevant legislation (National, Provincial and Local), regulatory requirements and environmental documents;

d) To maximise the value and outcomes of environmental monitoring activities so that the information can be applied to the planning and implementation of future projects;

e) To ensure that all Environmental Management considerations are implemented during the Construction only

The EMPr follows an approach of identifying an over-arching aim and objectives accompanied by management actions that are aimed at achieving these objectives. The EMPr is divided into five (5) phases of the project cycle:

- Planning and Design Phase;
- Construction and Site Preparation;
- Rehabilitation Phase;
- Operational Phase; and
- Project Closure.

Contractor to adhere with Project Environmental Management Plan (EMP), site information and other legislative requirements

9.4 Refuse Disposal

Waste disposal must be as per the ENV 0005

The Employer will provide special colour coded bins for refuse disposal. The Employer will be responsible for emptying these bins. The Contractor will ensure that all his personnel and SubContractors strictly adhere to the correct use of refuse bins, coloured coded as follows:

- Maroon bins:- Scrap metal only
- White bins: - Lagging and general household rubbish
- Yellow bins:- Ash, dust, coal dust and sand

For the entire duration of the Works, the Contractor is responsible for keep the Working Areas clean of any rubble, and to place all refuse into the bins provided.

10. Other reports and publicly available information

10.1 Weather Data

10.1.1 Geotechnical Data

Contractor is responsible for any Geotech required. The following geotechnical reports are provided as Appendices to this document:
Electricity Supply Commission- Report on the Additional Drilling for Proposed Remedial Works at the Main Station Building, Duvha Power Station November 1979, Parts 1 to 4
This is provided for information purposes only and the Contractor must verify before use.

a) General Weather Conditions

The climate of the site is typical of Highveld conditions, with high summer temperatures and moderate to cold winters. Temperature statistics for the climatically similar to Bethal was obtained from the South African Weather Service website (www.weathersa.co.za). The

Contractor will consider whether condition within all working site including areas where procurement outside the working site is considered. Measuring device is available at Duvha and to be agreed upon by both parties.

Climatic conditions will be defined as exceptionally adverse only when the measured condition deviates from the supplied average data by a margin of 30%, over the time period as stated within the average data (e.g. daily or monthly)

b) Temperature

During the summer months (October to March) average daily maximum temperatures are between 24°C and 35°C and average daily minimum temperatures are between 0°C and 14°C.

In the winter months (April to September) average daily maximum temperatures vary between 17°C and 23°C and average daily minimum temperatures are between 1°C and 9°C.

c) Snow and mist

Frost occurs frequently during the winter and spring months. Temperature statistics for the climatically similar to Bethal was obtained from the South African Weather Service website (www.weathersa.co.za).

The number of days with mist (no visibility) measuring in excess of a predetermined number of days, the Employer will make a proposal during contract negotiations

All records will be kept.

d) Rainfall

The area experiences thunderstorms during the summer months, which usually occur in the late afternoons. The annual average precipitation (millimetres) is show below. Weather Data for 2011-2014 to be provided as an addendum

Month	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jan	176	207	77.5	296	223.5	173	-	-	-	-	65
Feb	59	102	17	17	63.5	53	-	-	-	-	21.8
March	54	46	26	121	55	40	-	-	-	-	30.6
April	53	42	6	0	0	126	-	-	-	-	29.4
May	0	4.5	0	44	14	83	-	-	-	-	0
June	0	0	30	0	17	0	-	-	-	-	0.8
July	0	0	0	0	0	0	-	-	-	-	1
Aug	2	40	0	0	30.5	0	-	-	-	-	0.4
Sept	0	0	0	0	8	0	-	-	-	-	46.2
Oct	35.5	17.5	163	47	82.5	46.5	-	-	-	-	34.2
Nov	142	80	179	138.6	153	59.5	-	-	-	-	54.2
Dec	65	148.5	127.3	174	148	237	-	-	-	-	135.2
							-	-	-	-	
Total	**586.5**	**687.5**	**625.8**	**837.6**	**795**	**818**	-	-	-	-	**418.8**

e) Wind

The area is subject to winds predominantly from the north and northwest, with greatest frequency during the months of August to December. During the remainder of the year, the wind remains generally in a north/north westerly direction, but with a lesser frequency. Critical activities, carnage and working at height will be as per legislative requirements, equipment.