



NEC3 Engineering & Construction Contract

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

(Reg No.)

for **CPP regeneration plant refurbishment**

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CONTRACT No.

Part C1: Agreements & Contract Data

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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: **CPP regeneration plant refurbishment**

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 A B, C or D	The offered total of the Prices exclusive of VAT is	
	Sub total	
	Value Added Tax @ 15% is	
	The offered total of the amount due inclusive of VAT is ¹	
	(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)

Maserati Lesolang

Capacity

General Manager

for the
Employer

Eskom Matla Power Station

(Insert name and address of organisation)

Name &
signature of
witness

Date

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

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

Note:

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

No.	Subject	Details
1	CSI (Cooperate Social Investment)	The <i>Contractor</i> shall spend 2% of contract value on CSI. The list of CSI projects will be provided by Matla Power Station.
2	Skilled and non-skilled employees	The <i>Contractor</i> will develop local skilled labour at Kriel. The <i>Contractor</i> shall hire non-skilled employees from Kriel community. The list of potential employees from Kriel community will be provided by Matla Power Station.

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)

Name & signature of witness _____

Date _____

Maserati Lesolang

General Manager

Matla Power Station
Private Bag X5012
Kriel, 2271

C1.2 ECC3 Contract Data

Part one - Data provided by the *Employer*

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option	
	dispute resolution Option	A: Priced contract with activity schedule
	and secondary Options	W1: Dispute resolution procedure
		X2 Changes in the law
		X7: Delay damages
		X16: Retention
		X18: Limitation of liability
		Z: Additional conditions of contract
	of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)	
10.1	The <i>Employer</i> is (Name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa
10.1	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
10.1	The <i>Project Manager</i> is: (Name)	Betty Vilakazi
	Address	Matla Power Station Delmas Road Kriel 2271
	Tel	013 699 7871
	Fax	N/A
	e-mail	Vilakabf@eskom.co.za
10.1	The <i>Supervisor</i> is: (Name)	Thembi Sambo
	Address	Matla Power Station Delmas Road

**Kriel
2271**

Tel No.

017 612 6034

Fax No.

N/A

e-mail

khanyitb@eskom.co.za

11.2(13)	The <i>works</i> are		
11.2(14)	The following matters will be included in the Risk Register	1. Non-compliance to statutory SHE and legal requirement which could result to injuries, near misses and penalties. 2. Poor system performance due to poor workmanship 3. Excessive dust 4. Disease outbreak 5. Covid-19	
11.2(15)	The <i>boundaries of the site</i> are	Matla Power Station	
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 <i>law of the contract</i> is the law of	the Republic of South Africa	
13.1	The <i>language of this contract</i> is	English	
13.3	The <i>period for reply</i> is	3 working days	
2	The <i>Contractor's</i> main responsibilities	Data required by this section of the core clauses is provided by the <i>Contractor</i> in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data.	
3	Time		
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is		
11.2(9)	The <i>key dates</i> and the <i>conditions</i> to be met are:	<i>Condition to be met</i>	<i>key date</i>
		1 Site establishment	As per accepted programme
		2 Refurbishment Complete – 1st train	
		3 Refurbishment Complete – 2 nd train	
		4 Refurbishment Complete – Final train	
		5	

30.1	The <i>access dates</i> are:	Part of the Site	Date
		1 Matla Power station	After contract award
31.2	The <i>starting date</i> is		
32.2	The <i>Contractor</i> submits revised programmes at intervals no longer than	2 days during project execution and once a week during procurement and engineering	
35.1	The <i>Employer</i> is not willing to take over the <i>works</i> before the Completion Date.	Full takeover must be from commissioning of the works	
4	Testing and Defects		
42.2	The <i>defects date</i> is	52 weeks after Completion of the whole of the <i>works</i> .	
43.2	The <i>defect correction period</i> is	1 weeks	
	except that the <i>defect correction period</i> for	Production loss and SHE requirements is 24hrs	
	and the <i>defect correction period</i> for	Low risk (as determined by the <i>Employer</i>) is 1 week	
5	Payment		
50.1	The <i>assessment interval</i> is	By the 25 days of each successive month.	
51.1	The <i>currency of this contract</i> is the	South African Rand.	
51.2	The period within which payments are made is	30 days from the date of submission of the invoice	
51.4	The <i>interest rate</i> 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 <i>mutatis mutandis</i> every 6 months thereafter and as certified, in the event of any dispute, by any manager employed in the foreign exchange department of The	

Standard Bank of South Africa Limited, whose appointment it shall not be necessary to prove.

6	Compensation events	
60.1(13)	<p>The place where weather is to be recorded is:</p> <p>The <i>weather measurements</i> to be recorded for each calendar month are,</p> <p>The <i>weather measurements</i> are supplied by</p> <p>The <i>weather data</i> are the records of past <i>weather measurements</i> for each calendar month which were recorded at:</p> <p>and which are available from:</p>	<p>Matla Power Station main security area</p> <p>the cumulative rainfall (mm)</p> <p>the number of days with rainfall more than 10 mm</p> <p>the number of days with minimum air temperature less than 0 degrees Celsius</p> <p>the number of days with minimum air temperature more than 35 degrees Celsius</p> <p>the number of days with snow lying at 09:00 hours South African Time</p> <p>and these measurements:</p> <p>South African Weather Bureau</p> <p>Matla Power Station and surroundings</p> <p>the South African Weather Bureau and included in Annexure A to this Contract Data provided by the <i>Employer</i></p>
60.1(13)	<p>Assumed values for the ten year return <i>weather data</i> for each <i>weather measurement</i> for each calendar month are:</p>	<p>As stated in Annexure A to this Contract Data provided by the <i>Employer</i>.</p>
8	Risks and insurance	
80.1	These are additional <i>Employer's</i> risks	None
81	The Contractors risks	
81.1	From the starting date until the defect certificate has been issued, the risks which are not carried by the <i>Employer</i> are carried by the <i>Contractor</i>	
82	Repairs	
82.1	Until the defects Certificate has been issued and unless otherwise instructed by the <i>Project Manager</i> , the <i>Contractor</i> promptly replaces loss of and repairs damaged to the Works, Plant and Materials	
83	Indemnity	

83.1	Each Party indemnifies the other against claims, proceedings, compensation, and costs due to an event which is at his risk.	
83.2	The liability of each Party to indemnify the other is reduced if events at the other Party's risk contributed to the claims, proceedings, compensation and costs. The reduction is in proportion to the extent that the event which were at the other Party's risk contributed, taking into account each Party's responsibilities under this contract.	
84	Insurance Cover	
84.1	The <i>Employer</i> provides these insurances from the Insurance Table	Information available on the link below http://www.eskom.co.za/live/content.php?Item_ID=9248 (See Annexure C for basic guidance)
9	Termination	Termination of the contract is subject to clause 90 of NEC3 Engineering Construction Contract
10	Data for main Option clause	
A	Priced contract with activity schedule	As defined in clause 11 of NEC3 Engineering Construction Contract.
60.6	The <i>method of measurement</i> is	As stated in Part C2.1, Pricing Assumptions.
11	Data for Option W1	
W1.1	The <i>Adjudicator</i> is	the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).
W1.2(3)	The <i>Adjudicator nominating body</i> is:	the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body.
W1.4(2)	The <i>tribunal</i> is:	arbitration.
W1.4(5)	The <i>arbitration procedure</i> is	the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	Johannesburg South Africa
	The person or organisation who will choose an arbitrator	
	<ul style="list-style-type: none"> - 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	
X7.1	Delay damages for Completion of the whole of the <i>works</i> are	1% of total order value, of the delay per week up to the maximum of 5% of the order
X16	Retention	
X16.1	The <i>retention free amount</i> is	Nil
	The <i>retention percentage</i> is	5% of every payment made, 50% will be paid after the completion of the project and the remaining 50% will be paid after 52 weeks
X18.1	The <i>Contractor's</i> liability to the <i>Employer</i> for indirect or consequential loss is limited to:	R0.0 (zero Rand)
X18.2	For any one event, the <i>Contractor's</i> liability to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property is limited to:	The amount of the deductibles relevant to the event
X18.3	The <i>Contractor's</i> 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 <i>Employer's</i> 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 <i>Contractor's</i> total liability to the <i>Employer</i> for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	<p>the total of the Prices other than for the additional excluded matters.</p> <p>The <i>Contractor's</i> total liability for the additional excluded matters is not limited.</p> <p>The additional excluded matters are amounts for which the <i>Contractor</i> is liable under this contract for</p> <ul style="list-style-type: none"> • 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 <i>works</i>, Plant and Materials), • death of or injury to a person and • infringement of an intellectual property right.
X18.5	The <i>end of liability date</i> is	One years after the <i>defects date</i> 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 <i>Contractor</i> does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the <i>Employer</i> .	
Z1.2	Notwithstanding the above, the <i>Employer</i> may on written notice to the <i>Contractor</i> 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 <i>Contractor</i> 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 <i>Employer</i> for the performance of this contract.	
Z2.2	Unless already notified to the <i>Employer</i> , the persons or organisations notify the <i>Project Manager</i> within two weeks of the Contract Date of the key person who has the authority to bind the <i>Contractor</i> on their behalf.	
Z2.3	The <i>Contractor</i> does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the <i>Employer</i> having been given to the <i>Contractor</i> in writing.	
Z3	Change of Broad Based Black Economic Empowerment (B-BBEE) status	
Z3.1	Where a change in the <i>Contractor's</i> legal status, ownership or any other change to his business composition or business dealings results in a change to the <i>Contractor's</i> B-BBEE status, the <i>Contractor</i> notifies the <i>Employer</i> within seven days of the change.	
Z3.2	The <i>Contractor</i> is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the <i>Project Manager</i> within thirty days of the notification or as otherwise instructed by the <i>Project Manager</i> .	
Z3.3	Where, as a result, the <i>Contractor's</i> B-BBEE status has decreased since the Contract Date the <i>Employer</i> may either re-negotiate this contract or alternatively, terminate the <i>Contractor's</i> 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 <i>Contractor</i> , 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 minimum limit of indemnity
-------------------	-------------------------------------------------------

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

Z 13.2

Replace core clause 87 with the following:

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

INSURANCE TABLE B

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

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.

General

The Matla Power Station is situated approximately half way between Bethal and Ogies on the R545, being just over 30 km from each town and 13 km north-west of Kriel town.

Climate

Matla Power Station is situated in a summer rainfall area with an average annual precipitation of about 750-mm falling almost entirely during the months of October to April. The average rainfall per month generally exceeds 40 mm during this period, although drought periods do occur which can last for 20 days or longer. Drought periods occur most frequently during the months of October/November and March/April. January is statistically the highest rainfall month with an average monthly rainfall of about 130-mm. June has the lowest rainfall with an average monthly rainfall of about 7 mm.

Approximately 85% of the annual rainfall occurs in the summer months and heavy falls of 125 to 150 mm occasionally occur in a single day. The annual average number of thunderstorms is about 75. These storms are often violent with severe lightning and strong (but short-lived) gusty winds and are sometimes accompanied by hail. This region has among the highest hail frequencies in South Africa; about 4 to 7 occurrences (depending mainly on altitude) may be expected annually.

January is normally the hottest month with an average daily maximum temperature of 27°C with a mean daily temperature in winter being about 16°C. Winter average daily temperatures vary from 18, 5°C maximum to -1°C minimum. The extreme temperatures recorded range from 34, 7°C to minus 12, 4°C for the period 1920 - 1984. (Source: Weather Bureau, Pretoria)

Winds are generally light to moderate except during thunderstorms. Generally the prevailing wind directions are from the North West during the day and from the east at night. During daytime, the prevailing winds are from the north-western direction. During night-time, the prevailing winds are from the north-eastern direction. The highest recorded average wind speed is 17, 6 km/hour. The average wind velocity over the year is 14, 5 km/hour.

(Source: MSN weather & Weather 24, average records 2008 - 2009.)

Weather Data4

THE ASSUMED 1 IN 10 YEAR RAINFALL FIGURES ARE:

Month	Cumulative rain (mm)	No of days with rainfall > 10mm
January	200	6
February	150	6
March	120	5
April	110	4
May	40	3
June	20	2
July	30	2
August	30	2
September	60	3
October	140	6
November	160	7
December	170	6

Relative Humidity

Records for Bethal (2008 - 2009)

The average relative humidity on an annual base are as follows:

08:00 = 80%

14:00 = 52%

20:00 = 73%

Prevailing Winds

Records for Bethal (2008 - 2009)

Winds are mostly north-westerly except for February and March when they are easterly to south-easterly.

The highest wind speeds are recorded from the south-east: on average 14km/h.

Other Climatic Factors

Records for Bethal (2008 - 2009)

Thunder occurs mostly from November to January with average of 35.7 days annually.

- a) Hail occurs mostly in December with average of 2.8 days annually.
- b) Fog occurs mostly in the winter months with an average of 19 days annually.
- c) Snow rarely occurs
- d) Cloud coverage is highest in the summer months with annual average as follows:
 - 08:00 = 2.8/8
 - 14:00 = 3.8/8
 - 20:00 = 3.1/8

Evaporation for the area is in range of 75mm to 190mm per month. The highest evaporation occurs in December, and the lowest in June.

Topography

The surface topography of the Matla area is typical of the Mpumalanga Highveld consisting in the main of a gently undulating plateau. The flood plains of the local streams are at an average elevation of ± 1540 meters above mean sea level and drainage generally is a northerly direction.

Air Quality

The existing and potential sources of air pollution in Matla area are the following:

- Matla Power Station stack emissions
- Matla Power Station dry dust (fly ash) handling plant
- Dust blow from the Eskom coal stock yard
- Dust blow from the roads in the area
- Seasonal dust blow caused by ploughing of farmlands, and dust blow off denuded fields
- Dust blow from dried out exposed surfaces of the wet ash dam.

However, Eskom utilises the majority of the top surface of the ash dam as an evaporation pan for polluted water, which means that the exposed surface is constantly wet. The sides of the ash dam have largely been rehabilitated, with the result that dust blow from the ash dam.

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.

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

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

	Experience:	CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is	
11.2(14)	The following matters will be included in the Risk Register	
11.2(19)	The Works Information for the <i>Contractor's</i> design is in:	
31.1	The programme identified in the Contract Data is	
A	Priced contract with activity schedule	
11.2(20)	The <i>activity schedule</i> is in	
11.2(30)	The tendered total of the Prices is	
		(in words), excluding VAT
	Data for Schedules of Cost Components	<i>Note "SCC" means Schedule of Cost Components starting on page 60, and "SSCC" means Shorter Schedule of Cost Components starting on page 63 of ECC3 (April 2013).</i>
A	Priced contract with activity schedule	Data for the Shorter Schedule of Cost Components

C1.3 Forms of Securities

Pro formas for Bonds & Guarantees

For use with the NEC3 Engineering & Construction Contract

The *conditions of contract* stated in the Contract Data Part 1 include the following Secondary Options:

Option X16: Retention

The *Contractor* may provide a Retention Money Guarantee in the form stated here. When the *Employer* receives and accepts a Retention Money Guarantee exactly in the form stated he will instruct the *Project Manager* not to assess any amount be retained in terms of secondary Option X16.

The *Contractor* shall guarantee his SDL&I Obligations by providing the *Employer* with an SDL&I Guarantee in the form provided here.

The organisation providing the bond / guarantee does so by copying the pro forma document onto his letterhead without any change t the text or format and completing the required details. The completed document is then given to the *Employer* within the time stated in the contract.

PART 2: PRICING DATA
ECC3 Option A

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option A	
C2.2	The <i>activity schedule</i>	

C2.1 Pricing assumptions: Option A

1. How work is priced and assessed for payment

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

Identified and defined terms	11	
	11.2	(20) The Activity Schedule is the <i>activity schedule</i> unless later changed in accordance with this contract.

(27) The Price for Work Done to Date is the total of the Prices for

- each group of completed activities and
- each completed activity which is not in a group.

A completed activity is one which is without Defects which would either delay or be covered by immediately following work.

(30) The Prices are the lump sum prices for each of the activities on the Activity Schedule unless later changed in accordance with this contract.

This confirms that Option A is a lump sum form of contract where the work is broken down into activities, each of which is priced by the tendering contractor as a lump sum. Only completed activities are assessed for payment at each assessment date; no part payment is made if the activity is not completed by the assessment date.

2. Function of the Activity Schedule

Clause 54.1 in Option A states: "Information in the Activity Schedule 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 Activity Schedule 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 Activity Schedule. The Activity Schedule is only a pricing document.

3. Link to the programme

Clause 31.4 states that "The *Contractor* provides information which shows how each activity on the Activity Schedule relates to the operations on each programme which he submits for acceptance". Ideally the tendering *contractor* will develop a high level programme first then resource each activity and thus arrive at the lump sum price for that activity both of which can be entered into the *activity schedule*.

4. Preparing the *activity schedule*

Generally it is the tendering *Contractor* who prepares the *activity schedule* by breaking down the work described within the Works Information into suitable activities which can be well defined, shown on a programme and priced as a lump sum.

The *Employer*, in his Instructions to Tenderers or in a Tender Schedule, may have listed some items that he requires the *Contractor* to include in his *activity schedule* and be priced accordingly.

It is assumed that in preparing his *activity schedule* the *Contractor*:

- Has taken account of the guidance given in the ECC3 Guidance Notes pages 19 and 20;
- Understands the function of the Activity Schedule and how work is priced and paid for;
- Is aware of the need to link the Activity Schedule to activities shown on his programme;
- Has listed and priced activities in the *activity schedule* which are inclusive of everything necessary and incidental to Providing the Works in accordance with the Works Information, as it was at the time of tender, as well as correct any Defects not caused by an *Employer's* risk;
- Has priced work he decides not to show as a separate activity within the Prices of other listed activities in order to fulfil the obligation to complete the *works* for the tendered total of the Prices.
- Understands there is no adjustment to the lump sum Activity Schedule price if the amount, or quantity, of work within that activity later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the Prices is as a result of a compensation event.

An activity schedule could have the following format:

Item No.	Programme Reference	Activity description	Price

C2.2 the *activity schedule*

The Price List is as follows:

PART 3: SCOPE OF WORK

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

C3.1: EMPLOYER'S WORKS INFORMATION

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1 Description of the works

1.1 Executive overview

This document details the requirements for the refurbishment of Condensate Polishing Regeneration Plant Vessel at Matla Power Station water treatment plant as detailed in the scope of work.

The plant consists of 3 trains which each consist of 3 vessels which are utilised for transfer, regeneration, and storage of Condensate Polishing Plant mixed bed resin. Each train consists of 1 cation ,1 anion and 1 storage vessels. These vessels need to be re-rubber lining as well as welding repairs to be conducted on the shell, dome, nozzles, and internal support brackets.

1.2 *Employer's objectives and purpose of the works*

This contract is intended to refurbish and repair the Condensate Polishing Regeneration Plant vessels to full functionality and availability to ensure effective regenerations take place and that no resin is lost in the process.

1.3 Scope of the Works

GENERAL

- Data books, reviews, reports, and diagrams/drawings shall be submitted to Engineering after the completion of the work. Engineering to forward the data books to Quality Department (Document Control)
- All QCP's to be submitted to Engineering and Quality for approval prior to outage/project or maintenance work commencement.

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIBLE PARTY
1.1	Occupational Health and Safety	<ul style="list-style-type: none"> • Health and safety file should be approved by Safety risk management department prior to any work commences on site • All work is to be done in accordance with OHS Act 85 of 1993, Matla plant procedures and Plant Safety Regulations. (240-150642762). • Matla power station SHEQ induction must be done before access to site can be granted • The contractor should ensure that all employees have acquired the required competency for the task they are performing. • The contractor to ensure compliance to updated legal requirements and other requirements 	Eskom to witness.	Contractor
1.2	Environmental Management.	<ul style="list-style-type: none"> • All activities listed in the National Environmental Act 107 of 1998, EIA Regulations as amended, must have environmental AUTHORISATION before commencement of work. • The contractor shall comply with all applicable legal and other requirements. • The polluter pays principle will be applied. • The contractor manager shall ensure compliance with Eskom Matla Environmental procedures to ensure the prevention of pollution (refer: OMOP 4090 and 4402). • The last payment will be processed based on the status of the last housekeeping check sheet (Annexure C: OMOP 4402) of designated area. • EMS file based on ISO14001 will be required. 	Eskom to witness.	Contractor
1.3	Quality Management	<ul style="list-style-type: none"> • The contractor/executioner of work will be responsible for drawing up all QCP documentation and this must be approved by engineering and authorised by the Quality Department before commencing with the work. 	Hold point	Contractor

		<ul style="list-style-type: none"> Contractors/executioner to adhere to QM 58 and OMOP4497 requirements Number of NCR issued can affect your next tendering process. The QCP shall be signed progressively by the Engineer/Supervisor, Eskom QC Inspector, Contractor QC Inspector and/or AIA. No procuring of outage items without the approval of scopes by quality All outage scopes creep and scopes addition should be approved by quality No contractor should be in the possession of scopes for execution without the scopes approved by quality The contractor is subjected to quality auditing at any point in time during execution of scope 		
1.4	Inputs from other departments			
1.5	Commissioning reference			

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIBLE PARTY
1	Ensure that the cation, anion, and storage vessels are empty of the resin	1 train will be refurbished at a time of the 3 available trains		WTP
2	Ensure the train to be worked is offline and on PTW	As per PSR Requirements		Projects
3	Bottom and top manholes to be opened for ventilation	All three vessels		Contractor
4	Conduct gas test	This must be done before personnel get inside the vessel to ensure they are not inhaling toxic fumes		Projects
5	Build scaffolding outside the vessels			Project

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIB LE PARTY
6	Remove the sight glasses and all pipework connected to the vessel		Hold point	Contractor
7	Remove the retaining ring and associated nuts and bolts	Retaining ring surface must be smooth of Araldite (sealant). Should any deviation be observed a new one must be fabricated For the cation and anion vessels	Hold point	Contractor
8	Remove the Neva Clog filter underdrain floor in the cation and anion vessels	In sequence of appearance 1. Neva clog 2. Por-o-septa underdrain backing screen 3. Support grid Neva Clog filters to be inspected to determine if they need replacement. Contractor to cost for new Neva Clog Filters including provision of the relevant datasheets, drawings and specifications	Witness point	Contractor
9	Build scaffolding inside the vessels	All three vessels		Projects
10	Remove all internal manifolds and laterals the inlet distributor manifolds and regenerant distributor with the associated laterals	All three vessels. Inspect the removed laterals for any damage and correct if any damages are found on the laterals	Hold point	Contractor
11	Remove the existing rubber lining from the vessel walls, nozzles, man holes and covers by initial removal techniques such as cutting out, stripping and flapper disc grinding	All vessels. Total area of vessels = 30m ² per vessel Total area of beams = 3m ² per vessel (storage vessels has no beams) Material of construction: Shell: BS 150-150-15-28A Heads: BS 1501-151-28A Forgings: BS 1503 -161		Contractor
12	Inspection and NDTs	Metal surface must be free from any remaining rubber / contamination. Identify damaged areas on the vessel. The NDT's should be conducted by an entity which is an Eskom approved supplier and independent from the welding contractor	Hold point	Contractor

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIB LE PARTY
	<p>Conduct NDT (PT and MPI) on areas found with damage to quantify and correct the whole damage.</p> <p>Conduct MPI's on all Vessel welds (including welds on patches, Vessel Piping Welds) across the 9 Condensate Regeneration Plant vessels and submit the NDT reports to Engineering.</p> <p>Conduct MPI's on vessel stubs/nozzles and flanges (including their mating surfaces). Damaged stubs will need to be refurbished/replaced based on their damage.</p> <p>Conduct Wall thickness on shell body to ensure the wall thickness as still at an allowable thickness. Cut out damaged sections of the vessel shell and replace with new sound plate shell inserts.</p> <p>Conduct MPI's on all Vessel Legs including the welds on the Legs and vessels</p>	<p>in order to ensure unbiased inspections. All NDT work must be conform to the following Eskom standard:</p> <ol style="list-style-type: none"> (1) 240-106628253, "Standard for Welding Requirements on Eskom Plant" (2) 240-83539994, "Eskom NDT personnel approval for quality related special processes on Eskom plant standard" (3) 240-83540088, "Requirements for non-destructive testing on Eskom plant standard" <p>All indications from the NDT reports will need to be addressed through repair or possible replacements of the affected components.</p> <p>The extent of repairs that are required will be finalised after inspection of the vessel</p>		
13	<p>Conduct vessel repairs</p> <p>Correct any defects by means of weld repairs, replacement or repair of damaged nozzles, stubs, flanges and support brackets, and cutting of areas with reduced wall thickness on the vessel shell and dome and welding of new window patches, in order to eliminate the chance of experiencing leaks at a later stage while the vessel is in operation. The option of bottom dome replacement on cation vessel (drawing 0.47/3822) may be required dependent on the extend of damage found. Conduct NDT (PT and MPI) on all new or repaired welds.</p>	<p>All welding to be done by ISO 3834 Part 2 accredited suppliers since this is classified as level 1 plant</p> <p>The extent of repairs that are required will be finalised after inspection of the vessel</p> <p>240-106628253 Standard for Welding Requirements on Eskom Plant</p> <p>Vessel repair and insertion welding to comply to the requirements of the applicable design code.</p>	Hold point	Contractor
14	<p>Grit Blasting the inside of all the 9 CPR vessels using silica free sand blasting grit in order to remove any contaminants on the interior vessel internal of vessel</p>	<p>As per GAM/MAT/22/145: Matla Power Station Condensate Polisher Regeneration (CPR) Corrosion Protection Specification</p> <p>Silica free grit. Grade Sa 3; Dust rating 1; Surface profile as per coating manufacturers product requirements (or 25-50 microns where none is specified)</p> <p>Ensure that there is an installed system which will be able to remove the dust created during sandblasting which must be</p>		

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIB LE PARTY
		exhausted outside the building in a designated area. Cleanliness during Sandblasting is of utmost importance in order to eliminate contamination as this is a demineralisation plant.		
15	Primer application	<p>As per GAM/MAT/22/145: Matla Power Station Condensate Polisher Regeneration (CPR) Corrosion Protection Specification</p> <p>The rubber material manufacturer will advise on the adhesive/primer system for the operating conditions on the vessels</p> <p>Max temperature: 60°C Max Pressure: 973 kpa Fluid: demineralised water Chemicals: 6% H₂SO₄ for the cation vessel 5% NaOH for the anion vessel Demineralised water for the storage tank</p> <p>MSDS shall be provided for the chemicals to be used</p> <p>Note: C₂S will not be allowed in Eskom`s premises</p>	QCP required	Contractor
16	Adhesive system application	<p>As per GAM/MAT/22/145: Matla Power Station Condensate Polisher Regeneration (CPR) Corrosion Protection Specification</p> <p>The rubber material manufacturer will advise on the adhesive/primer system for the operating conditions on the vessels</p> <p>MSDS shall be provided for all the chemicals to be used</p>		Contractor

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIB LE PARTY
17	Rubber application to vessel, manholes, manhole covers and nozzles	<p>As per GAM/MAT/22/145: Matla Power Station Condensate Polisher Regeneration (CPR) Corrosion Protection Specification</p> <p>Pre-cured Butyl Rubber Lining (Grade B): 40 - 70 Shore A (IRHD) (I) (III) (V) (VI)</p> <p>Thickness of rubber to be applied on the walls = 6mm (30 m²) per vessel Thickness of rubber to be applied on the beams = 3mm (3 m²) per vessel</p> <p>Rubber lining to comply with SANS 1198 and SANS 1201 requirements Rubber material to be inspected for defects and tested for hardness before application</p>	Surveillance point	Contractor
18	Rubber inspection	<p>The Rubber should undergo the below testing:</p> <ul style="list-style-type: none"> - Spark testing after application before strapping joints. - Hardness testing pre and post application. - Visual examination for application defects. - Hammer Tap testing for any non-adherent rubber lining. <p>Rubber material batch and testing equipment Calibration certificates to be provided. Specify the voltage to be used for testing</p>	Hold point	Contractor and Chemical Engineering
19	Re-install the removed laterals	The lateral distribution holes to face the correct direction.	Surveillance point	Contractor
20	Re-install the vessel Neva Clog filter underdrain floor	<p>In the correct sequence</p> <ol style="list-style-type: none"> 1. Support grid 2. Por-o-septa underdrain backing screen 3. Neva Clog Filter 4. Retaining ring 	Surveillance point	Contractor
21	Apply Araldite 2014 or flowcrete 319 TAQ epoxy adhesive and activator combination, or Araldite® AV 138M-1 / Hardener HV 998 or any equivalent product to seal the gaps/clearances between the rubber lined wall and underside of the retaining ring, between retaining ring and neva clog filter as well as winding the sealant into and around the bolts and bolt hole.	Remove all surface dirt and contamination from the neva clog filter and rubber lined wall before sealing or else the adhesion of the sealant will be impaired	Surveillance point	Contractor

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIBLE PARTY
		The Sealant shall be evenly applied to form a smooth, continuous, unbroken layer free from misses, sags, runs, tears and other defects that could affect the seal integrity.		
22	Allow sealant to cure	Sufficient curing time shall be provided as per the product data sheet. Accelerated curing will not be permitted. All sealed off surfaces shall be adequately ventilated until full cure has been achieved.	Hold point	Contractor
23	Clean and Re-install the sight glasses. Any defective sight glasses to be replaced.	The use of Stanley knife is prohibited. Buffer rubber to the required smoothness during this activity Supply new side glass if required based on the damage found on the current sight glass.	Hold point	Contractor
24	Close the bottom and top manholes and reconnect all pipework to the vessel	All three vessels		Contractor
25	Acceptance test for the Neva clog filter floor	Load small amount of resin and initiate rinse or flush step. Install clean Y strainer or catch any resin leakage at vessel outlet using appropriate bag. If no resins are present then floor installation was a success.	Hold point	WTP Ops & Process Engineering
26	Soak and flush the vessels and repeat till TOC's are within specification	TOC's to be between 250 and 400ppb	Hold point	WTP Ops & Chemical Engineering
27	Hand grind and recoat the exterior of the vessels in the same colour as their current colour (which resembles colour hex #FFFF89 (RGB – 252 252 137) (exact colour to be confirmed onsite). Label vessels using black paint.	As per GAM/MAT/22/145: Matla Power Station Condensate Polisher Regeneration (CPR) Corrosion Protection Specification. Coating to be applied on all the 9 CPR Vessels using the same exterior coating as the current coating found on the vessels. Surface preparation: Mechanical clean (by rotary bristle tool) to Grade Sa 2.5 (ISO 8501-1) Primer and Intermediate coats = Twin Pack Polyamide Cured Epoxy. Finishing coat = High Build Re-coatable Polyurethane Acrylic	Hold point	Contractor
28	Bolt Replacement	Replace bolts as follows: Replace all the Internal bolts with Stainless Steel 316 bolts of the same size as the old bolts.		Contractor

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIB LE PARTY
		<p>Replace all the external bolts with BS 4190 bolts off the same size as the old ones. Replace all forgings with BS 1503-161 forgings off the same size as the replaced ones.</p> <p>Replace all bolts, nuts, washers and rubber gaskets on the CPR vessel exterior with components of the same dimension and properties as the ones which will be removed. Replace all rubber grommets inside the Cation and Anion vessels.</p>		
29	Drawings	Take measurements of the Cation Vessels And Internals and all 9 vessel internal manifolds, distributors and laterals during stripping and produce drawings of the vessel and its Internal components. These drawings should be issued to the employer in an electronic format as a PDF/TIF and native CAD (DWG) format and must not be "write protected" or encrypted. These drawings should be part of the work pack which should be submitted upon completion of the work.		Contractor

BILL OF MATERIAL

	Full description of Material/Spares/Equipment	Specifications of Material/Spares/Equipment	Stock No	Part Number	Required Quantity
1	Rubber lining system	<p>Pre-cured Butyl Rubber Lining (Grade B): 40 - 70 Shore A (IRHD) (I) (III) (V) (VI)</p> <p>6mm 30m² per vessel 3mm 3m² per vessel</p>			270m ² 18m ²
2	Sight glasses	As per drawing in appendix below			39
3	Vessel Shell Plate	BS 1501 – 151 -28 Plate (2000 x 2000 mm x 10 mm)			4
4	Bolts and nuts	Refer to drawings in Appendix below			
5	Nevaclog filter cation	To ensure the following type of resins does not pass through:			3

		<ul style="list-style-type: none"> - Ambersep 900 OH⁻ (Harmonic mean diameter of 0,5 – 0,70mm) - Amberjet 1600 H+ (Bead size range = Min: 300 – 1,200µm and Max: <300µm) <p>SS316, 140 µm, 1424mm OD. With holes as per drawing 0.47/6196 section BB, and detail VII, VIII, IX and X and detail of supporting (on detail VI, VII & VIII). (Dimension to be verified onsite by contractor prior to order placement)</p>			
6	Nevaclog filter anion	<p>To ensure the following type of resins does not pass through:</p> <ul style="list-style-type: none"> - Ambersep 900 OH⁻ (Harmonic mean diameter of 0,5 – 0,70mm) - Amberjet 1600 H+ (Bead size range = Min: 300 – 1,200µm and Max: <300µm) <p>SS316, 140 µm, 1154mm OD. With holes as per drawing 0.47/6198 section BB, and detail VII, VIII, IX and X and detail of supporting (on detail VI, VII & VIII) (Dimension to be verified onsite by contractor prior to order placement)</p>			3
7	Retention ring Cation	AISI 316. As per item no. 11 on drawings 0.47/6196 sheets 1-3. Dimensions to be confirmed on site prior to manufacture			1
8	Retention Ring Anion	AISI 316. As per item no. 11 on drawing 0.47/6198 sheets 1-3. Dimensions to be confirmed on site prior to manufacture			1
9	External coating of vessels	<p>Primer and Intermediate coats = Twin Pack Polyamide Cured Epoxy.</p> <p>Finishing coat = High Build Re-coatable Polyurethane Acrylic</p> <p>Final coat colour similar to hex #FFFF89 (RGB – 252 252 137) (exact colour to be confirmed onsite)</p>			To cover approximately 210m ²
10	Mechanical clean/grind vessel exterior to Sa 2.5	Silica free grit			Approximately 210m ²
11	Grit blast vessel interior to Sa 3	Silica free grit			Approximately 228m ²
12	Cation vessel bottom dome	As per cation drawings below. Material BS 1501 – 151 - 28. Verify dimensions onsite. BS 1515 Pt 1 1965			1

SCOPE COMPILATION REFERENCES				
SOURCE & Ref No.	Yes	No	N/A	Comments
Previous outage service reports				
Return to service data packages				
Maintenance Strategy with Rev number				
SAP defects (attach list as appendix)				
GHRMS (STEP) reports (Generation Heat Rate Management System)				
Online Condition Monitoring				
Pre-outage performance test results				
Post outage performance test results				
GPSS/ Plant Performance data on UCLF incurred				
OMS / IIRMS recommendations (Audits Reports)				
Risk controls (IRM system)				
Previous audits and reviews (e.g. ERAP)				
Engineering Change Requests (Projects)				
LOPP strategy reports	X			
URS				
Philosophy (Outage)				
Condition Monitoring Report				
VA/PHD Viewer trends				
Corrective Actions				
CARAB reports				
Statutory Requirements				
Grid code requirements				
Waivers and Exemptions				
Calibration requirements				

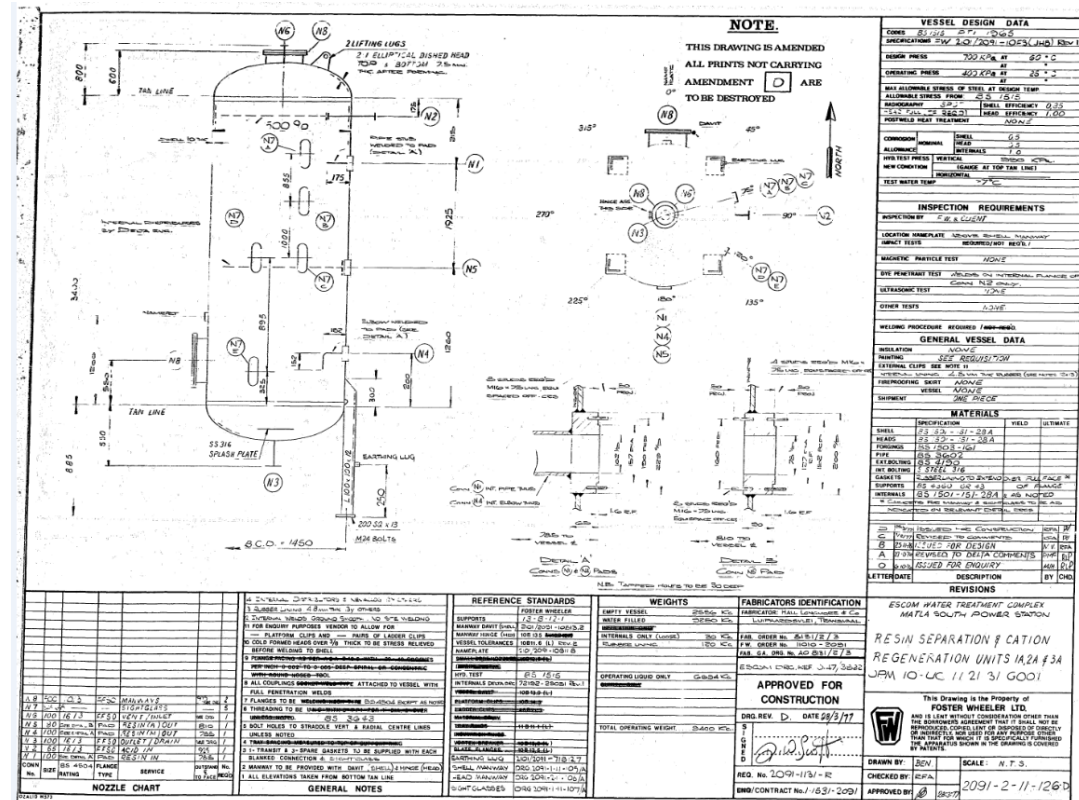
Previous Outage SOW variations				
Post Mortems Actions from previous outages				
Pre-Outage plant walks				
Risk based inspection (RBI) report				
Simulation, TOIs, OON, SI				

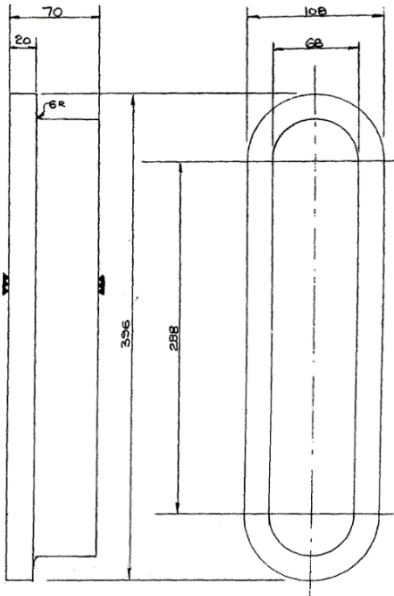
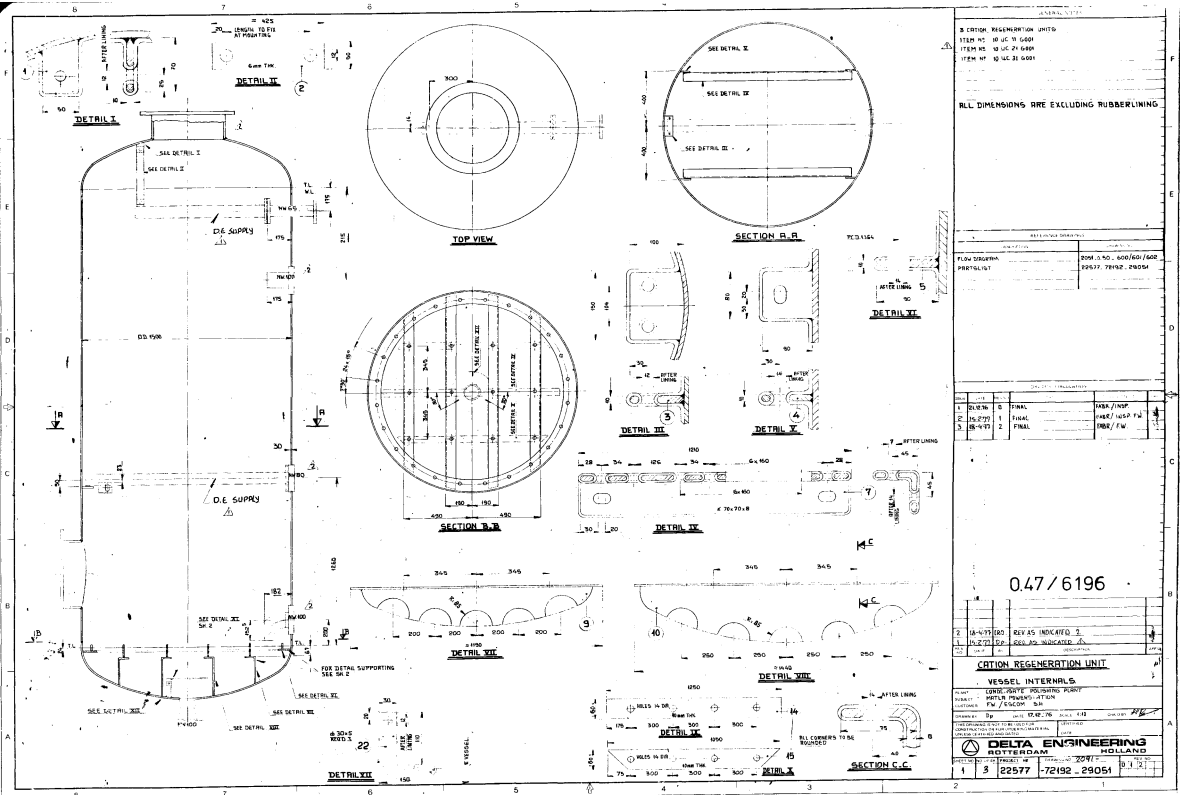
COMMENTS

ATTACHMENTS: DRAWINGS, SKETCHES, DIAGRAMS, INSTRUCTIONS, etc

1	See drawings attached below
2	
3	
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7	
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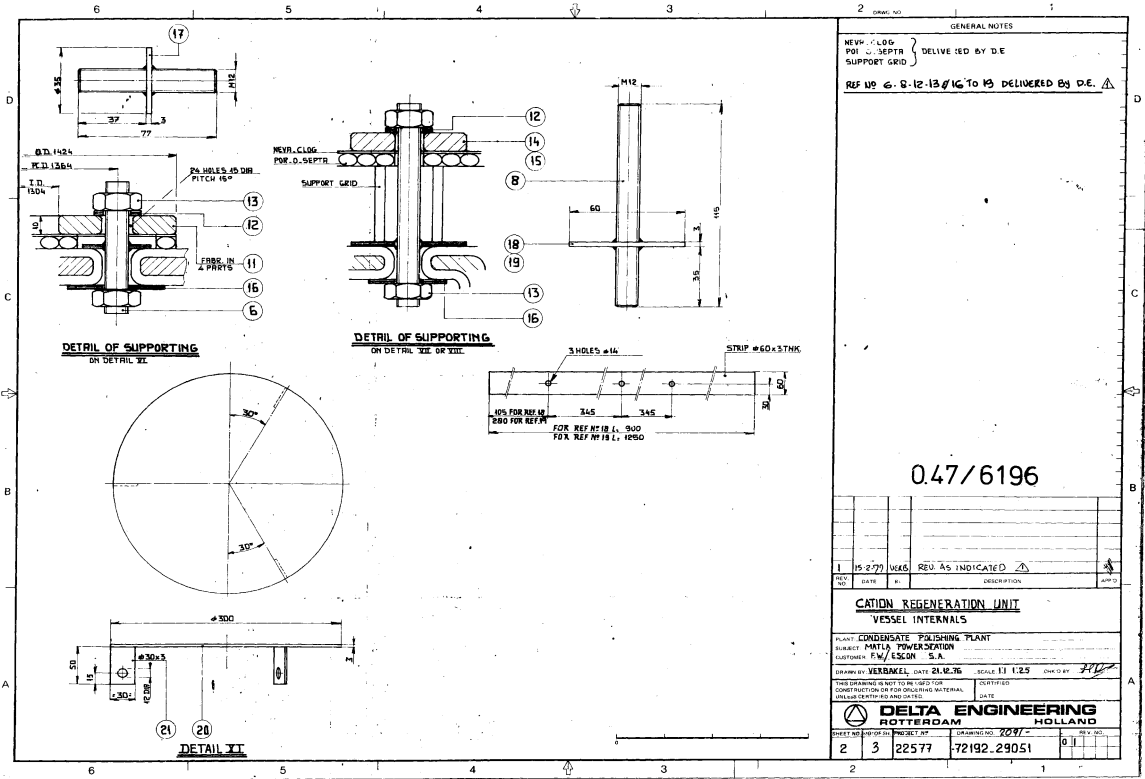
Appendix A: Cation Regeneration Units and Sight glass





MATERIAL :- CLEAR PERSPEX
ONE PIECE CONSTRUCTION.
FINISH :- FULLY POLISHED ON
SURFACES MARKED THUS ALL OTHER SURFACES CUT.


⑥ SIGHT GLASS



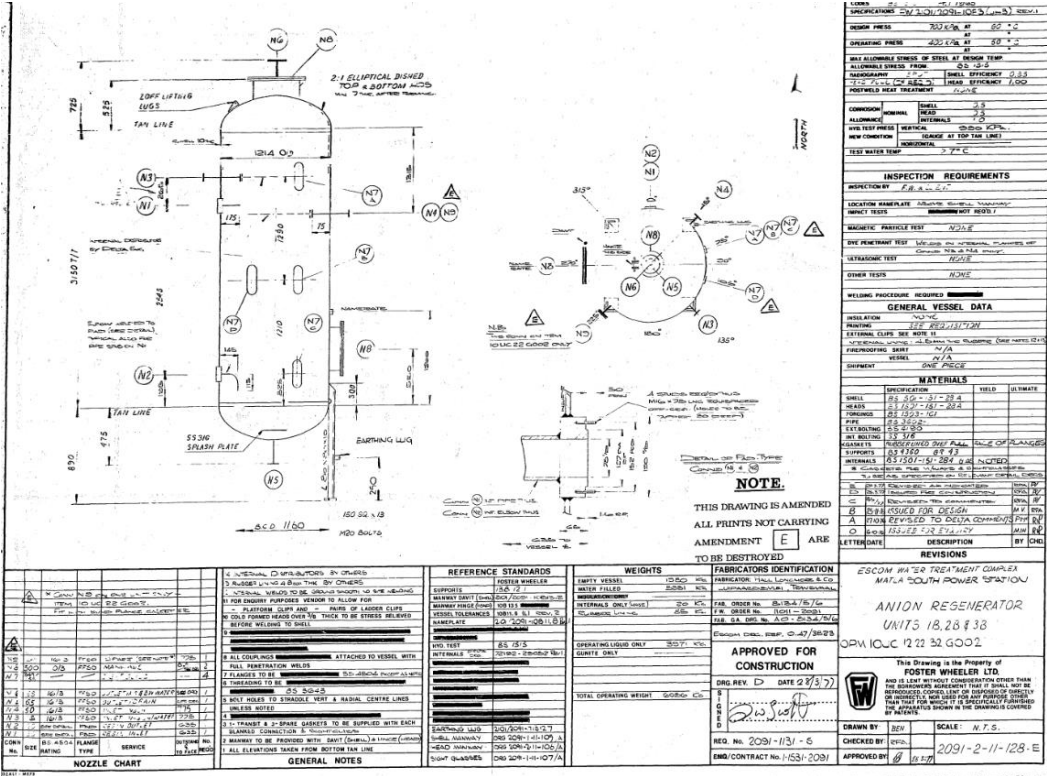
REF No 6-8-12-13 & 16 TO 19 DELIVERED BY D.E.

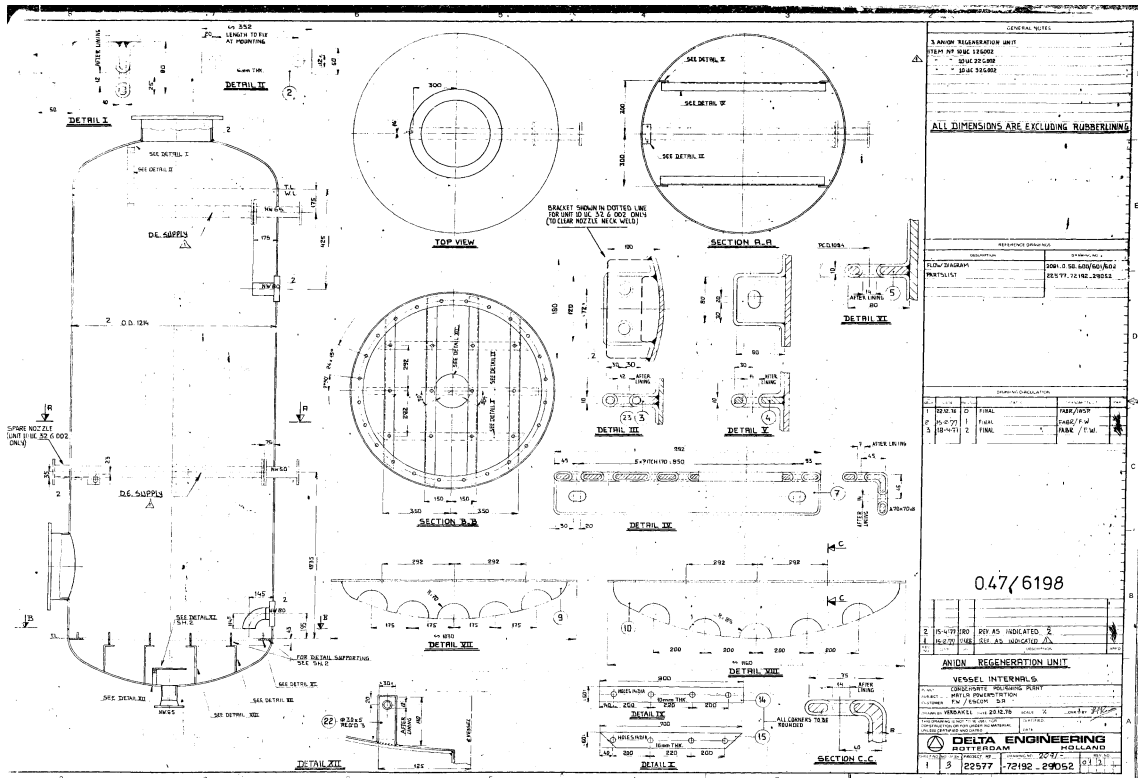
QTY	UNIT	DESCRIPTION	REFNO	MATERIAL	CER	SIZE	REMARKS
3	3	STRIP	22	ST.		30x5 L: 110	
9	3	STRIP	21	AISI 316		30x3 L: 50	
3	1	PLATE	20	AISI 316		PL 300x3	
6	2	STRIP	19	AISI 316		60x3 L: 1250	WELDED ON REF No 8
6	2	STRIP	18	AISI 316		60x3 L: 900	WELDED ON REF No 8
72	24	RING	17	AISI 316		PL 35x3 HOLE 13	WELDED ON REF No 6
108	36	PLAIN WASHER	16	AISI 316		PL 40x3 HOLE 14	
6	2	STRIP	15	AISI 316		60x10 L: 1050	
3	1	STRIP	14	AISI 316		60x10 L: 1250	
23	72	NUT	13	AISI 316		M12	DIN 934
108	36	PLAIN WASHER	12	AISI 316		FOR BOLT M12	A13 DIN 125
12	4	STRIP	11	AISI 316		60x10 L: 1070	FORMING IN RING
6	2	PLATE	10	ST.		300x8 L: 1440	
1	2	PLATE	9	ST.		300x8 L: 1190	
36	12	THREAD END	8	AISI 316		M12x115	
6	2	ANGLE	7	ST.		70x70x8 L: 1210	
72	24	THREAD END	6	AISI 316		M12x77	
3	1	STRIP	5	ST.		90x10 L: 4380	FORMING IN RING
12	4	STRIP	4	ST.		80x10 L: 90	
3	1	STRIP	3	ST.		100x10 L: 150	
3	1	STRIP	2	AISI 304		50x6 L: 425	
3	1	STRIP	1	ST.		50x10 L: 70	

MADE BY	DATE	CHK'D BY	DATE	APPD BY	DATE	DESCRIPTION
Dp	20.12.76	[Signature]	22.12.76			CATION REGENERATION UNIT

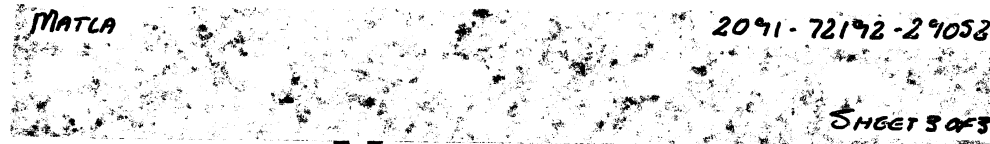
 DELTA ENGINEERING ROTTERDAM HOLLAND	PROJECT NO.	DOCUMENT NO.	REV NO.	CH NO.	NO OF SHEETS
	22577	72192	29051	1	1

Appendix B: Anion Regenerator Units









REF NO 6-8-12-13 & 16 To 19 DELIVERED BY D.E.

QTY	UNIT	DESCRIPTION	MATERIAL	QTY	UNIT	DESCRIPTION	MATERIAL
1	1	STRIP	23	ST	1	100X10 L=180	ONLY FOR ITEM NO 10 & 26 002
3	3	STRIP	22	ST		30x5 L=110	
3	3	STRIP	21	AISI 316		30x3 L=50	
3	1	PLATE	20	AISI 316		PL 250x3	
6	2	STRIP	19	AISI 316		60x3 L=1000	WELDED ON REANFB
6	2	STRIP	18	AISI 316		60x3 L=850	WELDED ON REFNO 8
72	24	RING	17	AISI 316		PL 35x3 HOLE 13	WELDED ON REFNO 6
108	36	PLAIN WASHER	16	AISI 316		PL 40x3 HOLE 14	
6	2	STRIP	15	AISI 316		60x10 L=700	
3	1	STRIP	14	AISI 316		60x10 L=900	
216	72	NUT	13	AISI 316		M12	DIN 934
108	36	PLAIN WASHER	12	AISI 316		FDR BOLT M12	A13 DIN 125
12	4	STRIP	11	AISI 316		60x10 L=858	FORMING IN RING
6	2	PLATE	10	ST		320x8 L=1160	
6	2	PLATE	9	ST		260x8 L=1030	
36	12	THREAD END	8	AISI 316		M12x115	
6	2	ANGLE	7	ST		90x70x8 L=992	
72	24	THREAD END	6	AISI 316		M12x77	
3	1	STRIP	5	ST		80x10 L=3500	FORMING IN RING
12	4	STRIP	4	ST		80x10 L=90	
2	1	STRIP	3	ST		100x10 L=120	
3	1	STRIP	2	AISI 304		50x6 L=352	
3	1	STRIP	1	ST		50x10 L=80	

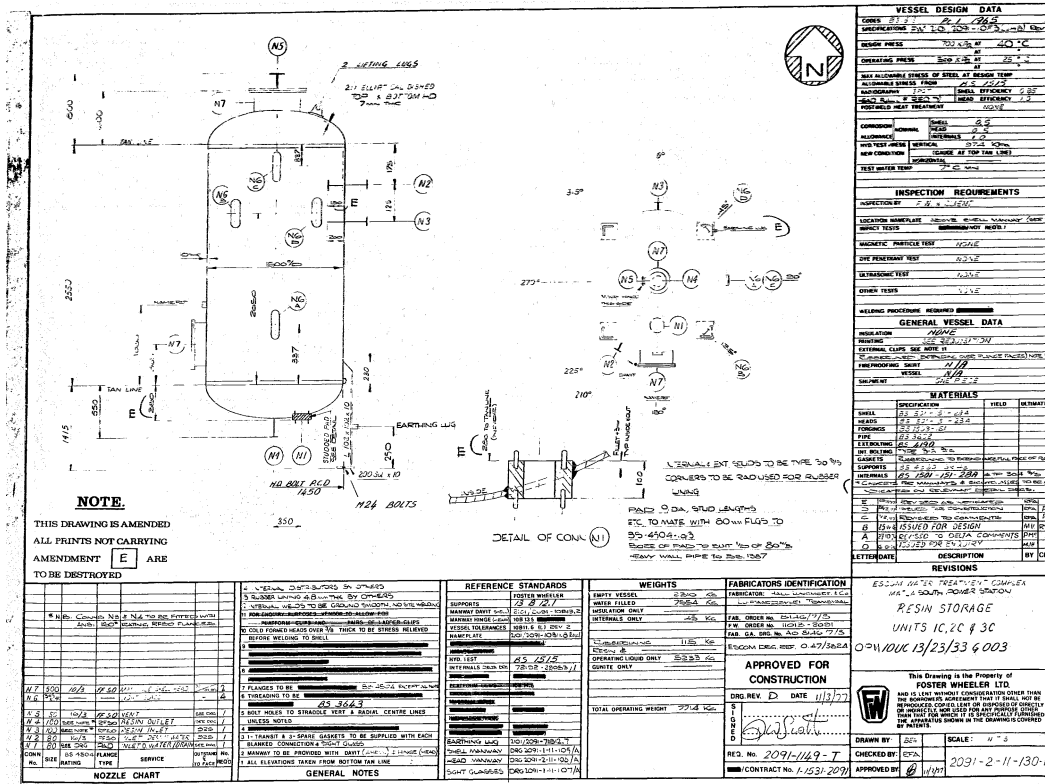
MADE BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE	DESCRIPTION
VERBAKEL	20.12.76	SRK	22.12.76			ANION REGENERATION UNIT

DELTA
 ROTTERDAM

0.47/6198 HOLLAND

PROJECT NO 22577
 DOCUMENT NO 2091-72192-29052
 SHEET 3 OF 3

Appendix C: Resin Storage Units



**GAM/MAT/22/145: Matla Power Station Condensate Polisher Regeneration (CPR)
Corrosion Protection Specification**

Page 1 of 19

To be considered as Annexure D of 240-101712128 and 240-106365693: “Standards for the Internal and External Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings”	
Table 1: Internal Corrosion Protection System	
Components	Condensate Polishing Regeneration Plant Vessels (CPR) Vessels including Vessels Piping attachment and Flange Faces For specific details with respect to vessels sizes, quantities and manufacturing standards etc. refer to the Scope of Work section of the enquiry document.
Material/Substrate (Internal/external)	Existing steel <ul style="list-style-type: none"> • Vessels Wall – Internally rubber lined (aged rubber) • Externally - coated (epoxy/urethane) <p>For existing steel there is a high probability of soluble salt contamination, both internally and externally. For further details/requirements refer to the relevant sections below. Prior to execution of the project the vessels floors are to be inspected to identify current corrosion protection.</p>
Internal Environment (1) (Internal Immersed)	<p>Cation</p> <ul style="list-style-type: none"> • Temperature (maximum) = 60°C • pH = 1 - 6 • Medium = Sulphuric Acid, Concentration (6%) • Pressure = 973kPa. <p>Anion</p> <ul style="list-style-type: none"> • Temperature (maximum) = 60°C • pH = 2 - 12 • Medium = Caustic, Concentration (5%) • Pressure = 973kPa. <p>Demin Storage</p> <ul style="list-style-type: none"> • Temperature (maximum) = 60°C. Operating = 25°C. • pH = 7 • Medium = Demineralised Water. • Pressure = 973kPa.

	For more specific details with respect to the water analysis refer to the Scope of Work section of the enquiry document.
Surface Preparation (Internal Surface)	Abrasive blast clean to Grade Sa 3 as per ISO 8501-1. Suitable substrate profile as per the rubber lining material and adhesive Manufacturer's requirements.
Generic System (Internal Surfaces)	Pre-cured Butyl Rubber Lining (Grade B: 40 - 70 IRHD) as per SANS 1198. The adhesion of the rubber lining to substrate shall be ≥ 7 MPa. In the event that (Grade B) is not available and only (Grade C) is available as a last resort, then the supplier shall indicate the particular properties which do not meet the requirements of (Grade B). Lining thickness shall be 6 mm for the Shell and 3mm for the Beams, refer to section 2.7 for specific rubber thickness criteria.
Table 2: External Corrosion Protection System	
External Environment	<ul style="list-style-type: none"> - Non-aggressive Indoors - Ambient temperature
Surface Preparation (External Surface)	<p>Abrasive blast-clean to Grade Sa 2.5 (ISO 8501-1). The surface profile shall be as specified by the Coating Manufacturer.</p> <p>For small/isolated areas mechanical clean (by rotary bristle tool) to Grade Sa 2.5 (ISO 8501-1) The surface profile shall be as specified by the Coating Manufacturer.</p>

Generic System (External Surfaces)	<ul style="list-style-type: none"> • Primer and Intermediate coats = Twin Pack Polyamide Cured Epoxy. • Finishing coat = High Build Re-coatable Polyurethane Acrylic
Primer Coat	Apply by spray, one coat Twin Pack Polyamide Cured Epoxy Primer from 60 to 80 microns
Stripe Coat	After allowing sufficient time (as recommended by Coating Manufacturer) for the first coat to cure, all edges, weld seams, bolt holes and other crucial areas shall be given an additional stripe coat, by brush/roller, with the same material as the following coat.

Intermediate Coat	Allowing sufficient time for the primer coat and stripe coat to cure, the Manufacturer's recommendations shall be adhered to in this regard, apply by spray, one coat Twin Pack, High Build Polyamide Cured Epoxy Intermediate Coat from 120 to 150 microns.
Final Coat	<p>Allowing sufficient time for the intermediate coat to cure, the Manufacturer's recommendations shall be adhered to in this regard, apply by spray, one coat Twin Pack, High Build Re-coatable Polyurethane Acrylic Finish from 50 to 60 microns.</p> <p>Total System Minimum DFT = 230 to 290 microns.</p> <p>The colour of the final/finishing coat shall be as per the requirements of document 240-145581571: Standard for the Identification of the Contents of Pipelines and Vessels.</p>

With respect to aspects not mentioned in the above coating specification table (e.g. mixing ratios, pot life, straining, thinning, induction times, over-coating and curing times), the manufacturer's recommendations shall be strictly adhered to.

1. Background

There is no information of any previous inspections for the Matla CPR vessel's rubber lining i.e. the condition of the existing rubber. The current rubber lining scope of work defines complete rubber lining replacement. However this specification recommends that the final/actual rubber lining scope of work will be defined based on the condition of the rubber lining during the inspection. To account for various conditions, two options such as rubber lining patch repairs or complete rubber lining replacement are considered in this document.

Rubber lining inspections shall be carried out by the Contractor and Eskom representative and thereafter inspection findings shall be documented. Based on the inspection findings, Eskom with recommendations from the Contractor, will decide upon the suitable rubber lining option (either rubber lining patch repairs or complete replacement).

Option 1 - Rubber Patch Repairs

Assess the condition of the existing rubber lining through detailed visual inspection and pin-hole detection testing (no more than 3 kilovolts per mm). Identify and mark-up the defects or the areas requiring the repairs.

The Contractor shall compile a rubber patch repair procedure and submit to Eskom for approval. As a minimum, the repair procedure shall include the following:

- ☐ Pin-hole detection testing on the existing rubber lining.
- • Cutting out, stripping and removal of the existing rubber in the marked-up areas as per the above inspections.
- • Surface preparation of the substrate after removal of the existing rubber. For smaller areas to be patch repaired where abrasive blast cleaning is impractical, the Rubber Liner or Contractor shall propose a suitable cleaning method. The cleaning method shall be submitted to Eskom for review and approval before commencement of the work.
- • Provision shall be made for mechanical repairs i.e. welding and grinding where necessary before new rubber patch repairs. The Contractor shall propose substrate repair procedures and submit these to Eskom for approval.
- • Care shall be taken during welding and surface preparation to protect the remaining rubber lining from any damage such as mechanical damage, welding/grinding sparks, and welding spatter.
- • Once the mechanical repairs and surface preparation are completed then conduct rubber lining patch repair of the affected areas. The total surface area to be rubber lined will be determined by inspection.

Option 2 - Complete Rubber Lining Replacement

After inspection step in option 1 is completed and inspection findings documented; if the damage covers a large surface area, Eskom with recommendations by the Contractor will decide on complete rubber replacement.

- • The Rubber Liner or Contractor shall remove most of the existing rubber lining by initial removal techniques such as cutting out, stripping and flapper disc grinding.
- • Subsequent surface preparation shall be by means of abrasive blast cleaning method.
- • After the old rubber lining is removed and initial surface preparation is completed, a detailed visual inspection shall be carried out to check for defects of the substrate surface. Where necessary mechanical repairs i.e. welding and grinding shall be carried out before new rubber is installed. The Contractor shall propose substrate repair procedures and submit these to Eskom for approval. The procedure shall be agreed by both parties before commencement of work.
- • Corrosion Protection shall only proceed once all mechanical or welding activities on the vessels have been completed and released in terms of the applicable mechanical repair Quality Control Plan (QCP).

2 Specific Project Requirements

2.1 To enable proper inspection as detailed in section 1 above the vessels need to be emptied and all components that are removable shall be removed from the vessel. These components include but are not limited to the laterals, nozzles and distribution pipes.

2.2 Based on the inspection findings it might be necessary to conduct repairs on the vessel before corrosion protection application therefore provision shall be made for mechanical repairs i.e. welding and grinding.

2.3 For these mechanical repairs, it is strongly recommended that the appropriate engineering subject matter experts (welding engineers and NDT subject matter experts) are consulted. The engineering experts in consultation with the Rubber Liner or Contractor and Lining Manufacturer shall compile substrate repair procedures for the works and submit to Eskom for review and approval.

2.4 The Eskom standard 240-101712128 (Section 5 in particular), SANS 1201, SANS 1198 and BS 6374-5 shall apply for the manufacture, selection and installation of rubber lining. The Rubber Liner/ Contractor to take note of the selected type of rubber required in the table above. NOTE: Special Requirements as per SANS 1198, Table 4, Property Column (Special points (I), (III), (V) and (VI)) shall apply.

2.5 The type of rubber for lining shall be one of those given in SANS 1198, as specified by the Rubber Liner, to meet Eskom's requirements namely Pre-cured Butyl rubber (Grade B with 40-70 IRHD) or possibly Grade C strictly based on the requirements in the tables at the top of this document.

2.6 All components in the vessel shall be rubber lined except components constructed from stainless steel or plastic. These components include distribution pipes and nozzle plates. As part of the method statement the Contractor shall consider and propose steps and measures to ensure a leak tight seal between the nozzles and nozzle plate. The measures shall describe how the rubber lining will be applied to the nozzle plate to ensure the rubber is completely flat to facilitate nozzle assembly. The rubber lining on the nozzle plate shall serve a dual purpose of corrosion protection and as a gasket.

2.7 The rubber lining thickness of 6 mm is specified for the shell and 3mm for the beams on condition that this thickness is suitable for the flange arrangement and eventual fitment/re-assembly in terms of existing piping/flange length and alignment. The Rubber Liner or Contractor shall confirm the specified thickness as satisfactory for the application.

2.8 The rubber lining Manufacturer, adhesive Manufacturer and Rubber Liner or Contractor shall select relevant primer and or adhesive system for the type of rubber lining material, substrate and service conditions to ensure compatibility.

2.9 All parts comprising systems i.e. Rubber Lining and Organic Coating, in this specification sheet, shall be supplied by the same Manufacturer. Should this not be possible the coating/rubber lining Supplier shall confirm suitability or compatibility of the particular product with his system.

2.10 The solvents used shall be those recommended and manufactured by the Coating Manufacturer. Where the recommended 'solvent' and 'clean-up thinners' for a material differs, the 'clean-up' solvent must not be added to the paint for dilution purposes.

2.11 Surface preparation by abrasive blasting shall be performed by means of blasting equipment capable of removing remaining/residual rubber, rust and suitably preparing the substrate to the required cleanliness of Grade Sa 3 or Sa 2.5 as specified for the internal or external surfaces.

2.12 The requirement for surface preparation of all metallic surfaces for immersion is strictly Grade Sa 3 (ISO 8501-1), in which case the surfaces shall be blast cleaned to white metal where all traces of rust, mill scale and other foreign matter are removed.

2.13 Power and hand tool cleaning is only applicable to the external surface and for localised patch repairs. Hand-tool cleaning for isolated/localised areas may be utilised provided the required standard of finish is achieved. For all external applications and internal patch repair applications final mechanical cleaning shall be by bristle blaster in order to create a surface profile.

2.14 Cleaning by means of hand or power-tools, i.e. wire brushes, chipping hammers, scrapers, grinders, sanders, needle scalers, bristle blasters etc. may only be used where accepted by the Eskom Engineer and where the position and condition of the substrate metal is such that efficient cleaning and surface profile can be achieved.

2.15 Burnishing of the surface shall not be permitted.

2.16 In all cases, after wire brushing or grinding, all traces of loose material shall be removed from the surface by vacuum cleaning. Cleaned surfaces shall not be contaminated with oil, grease, rust or other deposits before primer application.

2.17 After tender award the Manufacturer shall supply batch certificate for each of the lining/coating products. Specifically for rubber lining all tests, parameters, and results shall be as per the requirements of SANS 1198 Table 4. These tests shall be conducted as per SANS 1198 by an ISO 9001 certified independent laboratory. These test results or certificates shall be submitted to Eskom after tender award and before commencement of work to verify mechanical and chemical properties in the product data sheets.

2.18 After tender award and prior to project execution the Manufacturer shall submit test samples of the lining system as proposed in the tender submission. Two samples shall be required for reference purposes. The samples (substrates) shall be prepared as per the requirements of the Manufacturer's datasheet and in compliance with the requirements of this standard. The size of the test sample panels shall be (200 mm X 300 mm X 3 mm), with a rubber lining thickness of 5 mm. The lining shall be cured as would be in practical situations without any artificial assistance. The Manufacturer shall supply the relevant batch certificate for each of the lining products used in the submitted test sample panels.

2.19 In addition to the panel samples above, representative (considering different batches), loose rubber sheeting 500 mm X 500 mm, with a rubber lining thickness of 5 mm shall be submitted for tensile testing to ensure conformity to SANS 1198.

2.20 Specifically for the tensile testing, specimens shall be prepared as per SANS 10037 "Type 1 Dumb-bell". The Rubber Liner or Manufacturer shall provide written commitment to this requirement at the tender stage.

2.21 During rubber lining of the vessels the Rubber Liner shall prepare (200 mm X 300 mm X 3 mm) test panels with a rubber lining thickness of 6 mm, at the same time and under the same conditions as the vessels. The prepared test panels shall be sent to Eskom for adhesion/peel testing as per the requirements of SANS 1201 section 9.4.

2.22 Corrosion protection shall only proceed once all mechanical repairs or activities i.e. cutting and welding have been completed and released in terms of the fabrication Quality Control Plan (QCP). And under no circumstances shall this work be performed until the corrosion protection QCP and Method Statement have been accepted by the Eskom Engineer.

3 General Requirements

3.1 Sharp edges shall be dressed to a radius of not less than 3 mm. All burrs and weld spatter shall be removed. Welds shall be free from imperfections (e.g. asperities, undercutting, blowholes, craters, and spatter).

3.2 Weld beads with a surface irregularity exceeding 3 mm or with sharp crests having a radius less than 3 mm shall be ground.

3.3 All welds shall be free of slag, inclusions and pinholes. Adjacent areas shall be free of weld spatter, which shall be removed by grinding or scraping.

3.4 All surfaces shall be completely dry and free from contaminants such as traces of oil, grease, etc., before surface preparation is carried out.

3.5 After initial blasting of representative patches soluble salt testing shall be performed by the Bresle soluble salt test method. If not within acceptable limits (as per the Manufacturer requirement but not exceeding 100 mg/m²), the surfaces shall then be washed/decontaminated by High Pressure (HP) water washing using fresh/clean water (with a conductivity reading of maximum 100 µS/cm) at a minimum pressure of 300 bar. A salt decontamination chemical additive with demonstrated capability of removing salts may be used in conjunction with HP cleaning.

3.6 Soluble salt testing shall be repeated on representative test patches and if acceptable then proceed with blasting and application steps – if not then repeat HP washing until the salt contamination has been removed to within acceptable limits.

3.7 Prior to any surface preparation all surfaces that are or are likely to be contaminated with oil or grease shall be solvent cleaned with a suitable water-soluble biodegradable alkaline cleaner/detergent or with appropriate organic solvents.

3.8 Cleaning may be performed by using rags for small areas, or a spray gun for large areas. The detergent/solvent-cleaned surfaces shall then be thoroughly washed down with fresh/clean water ensuring that the oil-water emulsion formed is completely removed from the metal. Special attention shall be paid to drillings, bolt holes, etc.

3.9 Degreased and water washed surfaces shall be checked for residual oil and grease using the atomized water spray test as per ASTM F21 and further degreasing shall be carried out if

residual oil or grease is found to be present. In instances where there is no or poor natural lighting then the interpretation of the ASTM F21 shall be assessed by means of ultraviolet light i.e. back light.

3.10 A black light test shall be used to check for oil contamination. Zero oil and grease contamination are the acceptable limit. Washing with fresh/clean water containing a suitable degreasing agent of partially painted components shall take place between coats, if surfaces are found to be contaminated.

3.11 During the corrosion protection process on site care shall be taken to ensure adequate protection of the surrounding areas and any parts of the ancillary equipment i.e. pumps, filters, valves seats, drains, inlet and outlet piping from abrasive blasting and spent grit particles, paint.

3.12 No abrasive blasting or lining applications shall take place when conditions are likely to affect these operations. Clauses 4.1.1.2 to 4.1.1.5 of BS 6374-5 shall apply.

3.13 Different grades and types of blasting media exist. It is important that the correct abrasive be used in combination with a specific corrosion protection system to achieve the specified surface profile. The required blast profile height should be carefully considered. The Contractor shall select an appropriate abrasive type and mesh size to attain the specified surface profile.

3.14 Only inert mineral grit or steel grit abrasives shall be used. Sand or silica-based abrasives shall not be used. Abrasive material for blast cleaning shall be used in line with local environmental regulations.

3.15 The abrasive shall be used in accordance with the Manufacturer's specifications and shall be clean, sound, hard particles free from foreign substances such as dirt, oil, grease, toxic substances, organic matter and water-soluble salts. It is important that good quality abrasives are used to minimize the amount of waste grit and dust generated and contamination of the surfaces.

3.16 The use of re-cycled blasting media for the final blast is strictly prohibited.

3.17 All abrasive media shall be stored in an area that is completely dry, covered and protected from weather.

3.18 All compressed air for blasting and coating/lining activities shall be free from entrained moisture and oil. All traps shall be in a functional condition. The compressed air shall be tested at regular intervals using clean white clothes to assess cleanliness and dryness. This requirement shall be included in the QCP.

3.19 On completion of grit blasting the surface shall be thoroughly vacuumed until no loose dust is evident. The process shall be repeated until the required level of dust and debris removal is achieved.

3.20 The level of cleanliness required shall be less than "dust quality rating" 1 when tested in accordance with ISO 8502-3. It is imperative that all surface dirt and contaminants are completely removed before lining or the adhesion of the lining shall be impaired.

3.21 The profile height of the blasted surfaces should be within the range of the specified coating system. Refer to the Manufacturers Product Data Sheets. Unless otherwise specified by the Coating Manufacturer, a profile height of 25 microns to 50 microns is recommended for most coatings systems.

3.22 It is important that the blast profile does not exceed the specified DFT of the primer. Blast cleaning of severely corroded surfaces may result in high profiles i.e. > than 100 microns. In these cases, the primer shall be applied by brush/roller to ensure complete wet-out of the pitted/jagged surface. However, agreement should be reached between the Applicator and Primer Manufacturer as to the most suitable profile range, with due consideration of the application method, for the specific primer.

3.23 During the corrosion protection process on site care shall be taken to ensure adequate protection of the surrounding areas and any parts of the ancillary equipment i.e. pumps, filters, valves seats, drains, inlet and outlet piping from abrasive blasting and spent grit particles, paint.

3.24 Cleaned surfaces shall not be contaminated with oil, grease, rust or other deposits before coating application. Unnecessary traffic prior to painting/lining shall be avoided.

3.25 The Contractor shall ensure that during surface preparation and corrosion protection activities the relative humidity (RH) in open, undercover shop environments is less than 80 % RH and for the vessel internal space is less than 60% RH. Ambient temperatures shall be between 5 °C and 30 °C or as per the Manufacturer recommendations, whichever is the more stringent. The maximum/minimum substrate temperature at the time of coating application shall be strictly in accordance with the product data sheet. During stable weather conditions environmental parameters shall be measured and recorded at least 4 times per shift.

3.26 During periods of inclement or cold weather conditions the environmental parameters shall be measured and recorded hourly. If the latest two readings of any of the parameters indicate a deteriorating trend which would likely exceed parameter/s limit then no final surface preparation or spray application shall be permitted. All measurements shall be recorded at the steel surface. Dew point requirements shall be as per the Product Datasheet or Eskom standards 240-101712128 and 240-106365693.

3.27 To avoid recontamination and flash rusting of the surfaces, the primer shall be applied within 8 hours after final surface preparation of the steel surfaces. Under no circumstances shall the blast be permitted to stand overnight.

3.28 If the pre-cleaned substrate has been exposed for more than 8 hours or the cleanliness grade of the substrate has deteriorated then the substrate will require rework to reinstate the required grade of cleanliness in accordance with ISO 8501-1.

3.29 Individual rubber sheets shall be tailored to fit the surface to be lined. The lining shall be bonded to the manhole flange faces. The mating surface of the flange face to gasket shall be suitably dressed such that the face is acceptably flat to ensure sealing between the liner and the gasket. The application and flange arrangement shall be as per SANS 1201 Figure 7 a) or c) and the Eskom Engineer requirements.

3.30 All joints of lined rubber shall be strapped as per BS 6374-5.

3.31 All surfaces shall be pinhole tested before strapping with the testing starting from the top of the vessel downwards as the scaffolding is being dismantled to ensure the lining is pinhole free and if required additional repairs shall be performed and once cured then the repair areas shall be retested. The process to be repeated until a pinhole free lining is achieved.

3.32 The rubber lining Manufacturer and Rubber Liner or Contractor shall specify the test voltage and the length of spark (no less than 2 kilovolts per mm). If the rubber Manufacturer cannot comply then a detailed motivation describing the reasons why this requirement can't be met shall be submitted for review, acceptance or rejection

3.33 The installed lining shall present a smooth appearance and be free of voids, blisters, pinholes, cracks, open seams, entrapped air or any other defects which will impair its use. Defective areas shall be cause for rejection of the lining.

3.34 For all inspections of all surface preparation and coating/lining activities the surfaces shall be clean allowing unhindered visual access to the surface. The Contractor shall provide sufficient and adequate lighting (Cool White) to enable inspections. Cell phone lighting is not acceptable

3.35 Prior to commencement of rubber lining/coating the Applicator shall submit detailed repair procedures in accordance with BS 6374-5. Any defects such as mechanical damage, cuts, blisters, lack of adhesion and poor joints shall be marked up and repaired according to BS 6374-5 Clause 5.2.4.

3.36 For the coating the spray operator shall ensure application in a smooth and controlled motion. The spray operator shall be equipped with a "wet comb" and frequently monitor the wet film thickness to prevent/reduce a wide spread of DFT's.

3.37 After allowing sufficient time for the first coat to cure, all edges, weld seams and other crucial areas shall be given an additional stripe coat, by brush application, with the same material as the following coat. Should the use of a primer be omitted, stripe coating shall be carried out immediately prior to the spray application of the first coat.

3.38 Multiple coats shall be applied as per the tables at the top of this specification sheet. Single coat systems are not permissible.

3.39 Where the coating has completely cured or allowed to age before finishing, before application of a subsequent coat the surface shall be prepared by light sanding, scrubbing with potable water using a bristle brush and drying before over-coating.

3.40 Application of subsequent coats shall be in accordance with the specified system. The required over-coating intervals as mentioned in the latest Product Data Sheet shall be observed and adhered to.

3.41 The number of coats and DFT per coat required to achieve the total film DFT shall be agreed between the Contractor and Coating Manufacturer and will be dependent upon the method of application chosen.

3.42 The total DFT of the applied coating system shall comply with the recommended minimum and maximum DFT limits as recommended in the latest Product System Data Sheet and this specification.

3.43 The range of DFTs of each coat shall be as follows; 90 % of random readings shall be equal to or greater than the minimum specified DFT. No individual reading shall be less than 80 % of the specified DFT.

3.44 In the case of solvent borne coatings no individual reading shall be greater than 150 % of the Manufacturer's maximum specified DFT. All deficient film DFTs shall be rectified prior to release of components.

3.45 All finishing colours for external surfaces shall be in accordance with the Eskom requirements; 240-145581571: Standard for the Identification of the Contents of Pipelines.

3.46 The coating shall be evenly applied to form a smooth, continuous, unbroken layer free from misses, sags, runs, tears and other defects that could affect the integrity of the coating.

3.47 All areas of coating damage shall be patch repaired. The extent of the damage shall be carefully inspected to assess which coats in the system have been damaged and which surface preparation methods are most suitable and appropriate. The Eskom Engineer shall accept/reject the Contractor's recommended method of surface preparation i.e. mechanical power and hand tool cleaning. When more widespread repairs are required and when the damage extends to the steel substrate mechanical cleaning by rotary bristle tool to Sa 2.5 is required.

3.48 All coats in the system shall be re-instated. Areas to be primed shall be cleaned of dust, dirt, grease, salts or other deleterious matter and all edges of existing paint shall be feathered back to a hard edge.

3.49 The patch primer used shall be in accordance with the requirements of the relevant coating system. The over-coating onto an existing coating by subsequent intermediate and finishing coats (where applicable) shall be stepped at 25 mm intervals to produce a feathered edge. Specifics of such instances shall be assessed on a case-by-case basis.

3.50 Provision shall also be made for the repair of handling damage to the coating after installation/assembly/erection. Spot repairs shall reinstate each of the previous coats and shall commence directly after the localised surface preparation.

3.51 The supply and cost of all testing, inspection and specialized testing equipment shall be the Contractor's responsibility. QC shall be performed by the Applicator and the Quality Assurance inspection shall be conducted by Eskom. A series of witness and hold points shall be agreed such that Eskom may witness any of the above tests. Eskom may elect to carry out its own tests at these times.

4 Tender Returnables

Note that the returnables as detailed below shall be returned as part of the Contractor's Tender document/submission.

4.1 Mandatory Tender Returnables

4.1.1 At the time of tender verifiable evidence shall be submitted that the Rubber Liner/ Coating Applicator has experience in the application of corrosion protection systems in comparable environments i.e. tanks/confined spaces. In this regard the experience shall, as a minimum, be equal to the surface area (288m²) as defined in enquiry and Scope of Work (SOW) documents. This verifiable evidence shall be for projects where vessels have been successfully lined by the Contractor, within the last five years. The verifiable evidence shall include formal signed off QCP's or release certificates, total surface area of the vessels lined and contact details, for at least 3 similar projects.

4.2 Tender Returnables for Evaluation

4.2.1 The System Supplier or Rubber Liner or Coating Applicator or Contractor shall supply individual product datasheets and material safety datasheets (MSDS) for all products comprising the system i.e. rubber lining, adhesives, tack coats, primer, intermediate, top coats and solvents. As a minimum the following shall be submitted:

- A description of the generic type of rubber lining and coating material.
- Rubber lining/coating physical and chemical properties (for rubber lining Table 4 of SANS 1198 shall apply).
- Recommended and non-recommended uses.

Service temperatures and chemical resistance limits. For the chemical resistance, special property, (III), (V) and (VI) as per 240-101712128 and SANS 1198 Clauses 4.2.2 (d), 4.2.3 (b) in conjunction with the environment and operating conditions in the table above in this specification sheet shall apply. Confirmation that the lining shall not contaminate the system/process fluid to be handled. The approved test results or certificates from the independent laboratory shall be written in English.

- Maximum recommended service temperature which shall be a minimum of 30 % greater than the maximum temperatures as is indicated in the table at the top of this specification sheet.
- Surface preparation requirements.

4.2.2 A detailed procedures/method statements shall be submitted to Eskom at the time of tender detailing all steps, procedures and activities of the coating/lining application process. The steps to be considered includes:

- The methods, steps, sequence and equipment required for ventilation and dust mitigation.
- Grease decontamination and washing.
- Soluble salt decontamination.
- Methods for dust and debris removal, maintaining and ensuring cleanliness between adhesives and lining shall be described.
- The Method Statement shall detail the precise sequence and breakdown of work areas/activities in order to apply the system with due consideration of dust contamination.
- The Method Statement shall also consider the most efficient methods and sequencing to avoid unnecessary delays that may have an impact i.e. time required for removal of spent abrasive grit and dust/debris.
- All inspection interventions during and after completion of corrosion protection installation shall be considered and included.
- The Method Statement shall describe all measures and details for establishing and maintaining:
 - The environmental conditions as required by this specification.
 - The required ventilation for the prevention and/or management of fumes and dust build-up. The number of extraction fans; mounting diameters, sizes and mounting methods of fans to manholes; power rating of fans; positioning of fans and direction of intended air flow shall be described and detailed.

4.2.3 A detailed Quality Control Plan (QCP) shall be submitted at the tender stage and shall detail all inspections and tests with acceptance criteria during lining/coating application. Inspections during lining/coating application shall at least cover compressed air blotter test for blasting and spray applications, surface preparation, environmental parameters, rubber

thickness, hardness, adhesion, continuity and visual tests. Tests for continuity shall be carried out using the high frequency spark test method.

4.2.4 List of deviations or exclusions from this specification. If there are none then there shall be a definitive written statement to such effect. This mentioned list of deviations or definitive written statement shall be used as part of the contract. In addition to this statement the Contractor, Rubber Liner or Manufacturer shall also provide a definitive statement of the submission of samples as prescribed above.

5 Safety Requirements and Considerations

5.1 During the application of all coatings/lining systems, care shall be taken to ensure adequate ventilation and lighting, to avoid/minimise health and safety risks.

5.2 Special care needs to be taken when working with all organic coatings/linings. Prior to the use of any coating material, the Material Safety Data Sheets shall be obtained from the relevant Coating Manufacturer.

5.3 A confined spaces (CSs) may be defined as an enclosed, restricted, or limited space in which, because of its construction, location or contents, or any work activity carried on therein, a hazardous substance may accumulate and/or an oxygen-deficient atmosphere may occur, and/or in which a dangerous liquid or dangerous concentration of gas, vapour, dust or fumes may be present. It includes any chamber, tunnel, pipe, pit, sewer, container, valve, pump, sump, chute, bunker, silo, gearbox, tank, receiver, drum or any similar construction, equipment, machinery or object.

5.4 Flammable Atmospheres: Gases, vapours and dusts can become trapped in CSs and create flammable or explosive atmospheres, and include combustibles e.g. Hydrogen, Acetylene, Rubber and thinning/cleaning solvents, etc.

5.5 The Contractor shall be familiar with the contents of the safety data sheets and ensure that the necessary safety precautions are taken in order to comply with local and national safety and health requirements such as the OHS Act.

5.6 Any solid waste materials or liquids stripped or generated during the coating operations shall be discarded in accordance with the requirements of the appropriate national and/or local authorities or the requirements of Eskom.

5.7 The Contractor shall ensure compliance with all statutory regulations, municipal by-laws, etc. concerning pollution and the health and safety of personnel and/or members of the public who may be affected by the work. The Contractor shall provide the personnel with the appropriate required PPE.

5.8 The Contractor shall advise Eskom of all hazardous materials to be brought on site.

5.9 The Contractor's Safety File shall address all the hazardous activities of abrasive blast cleaning and spray painting. The Contractor shall verify that the personnel carrying out these activities are suitably qualified.

5.10 The Contractor shall ensure that the abrasive materials used conform to all National Health and Safety Standards.

5.11 All materials shall be stored in designated areas in storage facilities that meet the storage requirements of the coating/rubber Manufacturer. The Contractor shall be responsible for the provision of appropriate storage/shipping containers as required. These containers shall include the appropriate refrigeration/conditioning systems for temperature control. This requirement shall be dependent on where the container will be located (indoors/outdoors), typical ambient temperature for the particular season of the year and the maximum storage temperature limits as per the Manufacturer's recommendations.

5.12 The Contractor shall provide for all necessary safety precautions and risk assessments.

6 Reference Documents

The latest revision of the referenced standards shall apply. Where conflict exists between any of these documents the more stringent requirement shall apply.

6.1 240-101712128: Standard for the internal corrosion protection of water systems, Chemical Tanks and Vessels and Associated Piping with Coatings.

6.2 240-106365693: Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings.

6.3 240-145581571: Standard for the Identification of the Contents of Pipelines.

6.4 ASTM D4414: Standard practice for measurement of wet film DFT by notch gauges.

6.5 ASTM D4541: Standard Method for Pull-off Strength of Coatings using Portable Adhesion Testers.

6.6 ASTM D5162: Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates.

6.7 ASTM E376: Measuring coating DFT by magnetic field or eddy current electro-magnetic test Methods.

6.8 ASTM F21: Standard Test Method for Hydrophobic Surface Films by the Atomizer Test.

6.9 BS 6374-5: Lining of equipment with polymeric materials for the process industries.

6.10 ISO 2409: Paints and varnishes – Cross cut test

6.11 ISO 4624: Paints and varnishes – Pull-off test for adhesion.

6.12 ISO 4628 – 1: Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 1: General introduction and designation system.

6.13 ISO 4628 – 3: Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 3: Assessment of degree of rusting.

6.14 ISO 8501-1: Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.

6.15 ISO 8502-3: Preparation of steel substrates before application of paint and related products – Test for the assessment of surface cleanliness – Part 3: Assessment of dust on steel surfaces prepared for painting (pressure sensitive tape method).

6.16 ISO 8502-6: Preparation of steel substrates before application of paint and related products – Test for the assessment of surface cleanliness – Part 6: Extraction of soluble contaminants for analysis – The Bresle method.

6.17 ISO 8503-4: Preparation of steel substrates before application of paint and related products – Surface roughness characteristics of blast-cleaned steel substrates - Part 4: Method for the calibration of ISO surface profile comparators and for the determination of surface profile – Stylus instrument procedure. (May be used as an alternative to SANS 5772).

6.18 ISO 9001: Quality Management Systems - "is defined as the international standard that specifies requirements for a quality management system (QMS). Organizations use the standard to demonstrate the ability to consistently provide products and services that meet customer and regulatory requirements."

6.19 ISO 9223: Corrosion of metal and alloys – Corrosivity of atmospheres – Classification.

6.20 ISO 12944-3: Paint and varnishes – Corrosion protection of steel structures by protective paint systems. Part 3: Design considerations.

6.21 SANS 1198: The manufacture of rubber sheeting for rubber lining.

6.22 SANS 1201: The application of rubber linings to pipes, pipe fittings and vessels.

6.23 SANS / ISO 2808: Paints and Varnishes: Determination of film DFTs (Can be used as alternative to ASTM E376).

6.24 SANS 5770: Preparation of steel substrates before the application of paints and related products – Test for the assessment of cleanliness of blast-cleaned steel surface – Freedom from certain soluble salts.

6.25 SANS 5772: Preparation of steel substrates before the application of paints and related products – Surface roughness characteristics of blast-cleaned steel surfaces – Profile of blast-cleaned surfaces determined by a micrometre profile gauge (Can be used as alternative to ISO 8503-4).

6.26 SANS 10037: Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties.

2. Drawings

Drawing number	Revision	Title
047/257	N/A	Malta Power-Station Layout
0.47/3822	N/A	Cation Regeneration units
0.47/3823	N/A	Anion Regeneration units
0.47.3824	N/A	Resin storage units
0.47/6196	N/A	Cation Regeneration units vessel internals
0.47/6198	N/A	Anion Regeneration units vessel internals
0.47/16219	N/A	Assembly and Details – typical sight glass

3. Specifications

Title	Date or revision	Tick if publicly available
<u>General Specifications:</u>		
Health and Safety Specifications For Contracting Companies	OMOP 2605	Yes
Eskom Life Saving Rules	32-421	Yes

Construction Regulations	32-136	Yes
Conflict of Interest Policy	32-173	Yes
Plant Safety Regulations		Yes
<u>Technical specifications</u> As per Engineering Scope of Works		

1.4 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
QCP	Quality Control Plan
ITP	Inspection Test Plan
QMS	Quality Management System
ISO	International Standards Organisation
CPP	Condensate polishing plant
CPR	Condensate Polishing Regeneration

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:
Risk register, Early warnings and compensation events	Bi- weekly	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>
Construction progress meeting	Weekly	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>
Commercial and Assessment meeting	Monthly	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>

Quality meeting	As advised by the Project Manager	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>
SHE meetings	As advised by the Project Manager	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>
Integration meeting	As advised by the Project Manager	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>
Planning meeting	As advised by the Project Manager	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>
Outage Meeting	Daily	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>
Document Management	Adhoc	TBC	<i>Employer, PM, Contractor, Supervisor, and Others as per the invite from the Project Manager</i>

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

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

2.2 Documentation control

2.1 Documentation Requirements

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

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

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

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

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

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

2.2 Document Identification

The documentation requirements cover the various engineering stages, from the design stage through fabrication, installation, testing and commissioning and most importantly for the operating, maintenance and training stages of the project.

The *Contractor* is responsible for the compilation and the supply of the documentation during the various project stages and to provide the documentation programme linked to the milestone dates. Completion dates for documentation and drawings are scheduled to meet the milestone dates.

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

- The *Contractor* shall ensure that document has the following minimum attribute on the cover page:
 - Title of the document

- Document Unique Identification Number (Eskom number)
- *Contractor* Document number, if applicable
- Document status
- Revision number
- Document Type
- Document security level
- Document revision table/history
- Page number on the footer
- Document Author/Authoriser/
- Document Originator *Contractor*
- The following additional attributes are important for technical documents:
 - Package/System name, sub-system if applicable
 - Unit/s number
 - *Contractor* name
 - *Contractor* number
 - Plant Identification Codes

2.3 Format and Layout of Documents

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

Layout and Typography

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

Document Headers

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

Naming of files

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

For documents that have approval date and signature

(YYYYMMDD_DocType_DocumentTitle_UniqueIdentifier_Revision.FileExtension)

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

(YYYYMMDD_DocType_DocumentTitle_UniqueIdentifier_Revision.FileExtension)

2.3 Document Submission

Contractor engineering program reasonable mailing, processing, and review of drawings and data by *Employer*. The *Contractor* is responsible for the compilation and the supply of all the documentation required during the various project stages and to provide the documentation programmed to link with the milestone dates.

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

Transmittals

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

- Title of the document
 - Reason for issuing/submission
 - Transmittal Number
 - Transmittal Name
 - Transmittal Description
 - Contract Number:
 - Package Number
 - Transmittal purpose
 - Sender Name
 - Sender E-Mail
 - Sender Organisation
 - Recipient Name
 - Recipient E-Mail
 - Recipient Organisation
 - Disclosure Classification
 - Date received
 - Quantity of documentation referenced on the transmittal
 - Number of copies
 - Format/medium submitted (e.g. paper, DVD, etc.)
 - Sender signature
 - Recipient signature, once submitted, to acknowledge receipt
1. If a transmittal is in response to an Eskom communication via transmittal, the Eskom Transmittal Number shall be referenced in the transmittal response and shall be provided in addition to the meta-data required.
 2. The *Contractor* shall follow a structured and standard definition for Transmittal Descriptions, i.e. a subject line convention of **YYYYMMDD – <Contract Number> – <Short Description> – <Sender Initials>**.
 3. **The *Contractor* shall follow a structured method of communication as defined within Communication Interface Memorandum (CIM) for any correspondence**
 4. The *Contractor* shall follow a structured and standard definition for email subjects i.e. a subject line convention of **YYYYMMDD – < Package File Number> – > – <Email Subject line>**.
 5. The *Contractor* shall select the purpose for transmittal in line with the standard Eskom Selection Criteria:
 - Issued for Approval
 - Issued for Award
 - Issued for Basic Design
 - Issued for Commissioning
 - Issued for Concept Design
 - Issued for Consideration
 - Issued for Construction

- Issued for Detail Design
- Issued for Document Review
- Issued for Handover
- Issued for Information
- Issued for Installation
- Issued for Manufacturing
- Issued for Procurement
- Issued for Review
- Issued for Tender

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

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

In case of email submission, the Contractor should note that if a single file to be transmitted is over 2MB in size, then the document shall be uploaded on Zendto portal.

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

2.4 Health and safety risk management

The *Contractor* shall comply with:

- The Occupational Health and Safety Act, 1993, and all regulations made there under;
- All Eskom Safety and Operating Procedures.

The *Contractor* acknowledges that it is fully aware of the requirements of all the above and undertakes to employ only people who have been duly authorised in terms thereof and who have received sufficient safety training to ensure that they can comply therewith.

The *Contractor* undertakes not to do, or not to allow anything to be done which will contravene any of the provisions of the Act, Regulations or Safety and Operating Procedures.

The *Contractor* shall appoint a person who will liaise with the Eskom Safety Officer responsible for the premises relevant to this contract.

Do safety audits at the *Contractor's* premises, its work-places and on its employees;

Refuse any employee, sub-contractor or agent of the *Contractor* access to its premises if such person has been found to commit any unlawful act or any unsafe working practice or is found to be not authorised or qualifies in terms of the Act;

Issue the *Contractor* with a work stop order or a compliance order should Eskom become aware of any unsafe working procedures or conditions or any non-compliance with the Act, Regulations and Procedures referred to in 1 above by the *Contractor* or any of its employees, sub-contractors or agents.

The *Contractors* safety file is to be submitted for approval to Matla's Safety Officer within three (3) days after order placement.

2.5 Environmental constraints and management

The *Contractor* shall comply to environmental authorizations obligations, water use licences, environmental management plan/programmes, any other applicable legislative requirements (local, provincial, national and international). The *Contractor* shall also comply with Eskom policies and procedures.

The *Contractor* develops and implements as a minimum the following procedures/ method statement in line with site environmental regulations:

- Environmental Management Plan
- Site Establishment Procedure
- Site Layout Plan
- Waste Management Procedure
- Spill Management Procedure
- Hazardous Chemical Substances Management and Storage Procedure
- Emergency Preparedness and Response Plan
- Dust Control Procedure

2.6 Quality assurance requirements

The *Contractor* shall be required to demonstrate by means of a Quality Plan that this organisation is so structured that all the requirements of the specification will be properly monitored and controlled. The Quality Plan and Control procedures are to be carried out in accordance with the Quality Control document NWS 1841/C1 and the Matla Quality Manual for *Contractor*. The Quality Control document is to be submitted for approval to Matla Engineering within three (3) days after order placement by the *Contractor*.

No work may commence unless the Quality Control document has been approved in writing and a copy submitted to *the Employers Representative*. The *Contractor*, in conjunction with Matla Engineering must sign off all Quality Control documents after completing all work on site. The *Contractor* to submit a copy of the final signed off document to *the Employers Representative* within 1 week after Completion of the works.

The following requirements shall also be met for the entire duration of the contract. The standard 240-105658000, "Supplier Quality Management Specification (QM58)" shall be complied with.

- The supplier shall complete and sign **Form A** (Enquiry/Contract/Quality Requirements for QM 58 and ISO 9001).
- The supplier shall submit objective evidence of a developed QMS that complies with **ISO 9001** (or the latest applicable revision). The following documents (approved/signed copies) shall be submitted:
 - Quality management system manual or a document that defines and describes the QMS and its scope
 - Quality Policy
 - Control of documented information
 - Records required by ISO 9001 standard (List of Records)
 - Internal audit procedure
 - Control of nonconformity outputs
 - Nonconformity and Corrective action procedure

The QMS should drive all the supplier's business management processes to ensure that all of Eskom's requirements are fully met on a consistent basis.

2.7 Programming constraints

The Contractor will provide a detailed programme every second day during the project or as requested by the *Employers Representative*. The *Employer* may terminate a contract if a detailed programme is not submitted as requested by the *Employers Representative*. The final contract programme and breakdown will be agreed upon within five (5) working days after order placement by the *Employer* & the *Contractor*.

- **More than R350 000,00**

- Computerized logic network
- Network barchart
- Time analysis (print out listing)
- Weekly updated critical activities report
- Weekly updated resource report
- Weekly updated interface dates with other *Contractors*.

- **Activities on critical path**

On request from the *Employers Representative* for work on critical path the *Contractor* must submit

- Computerized programme twice a day.
- However, should a logic change been executed by the *Contractor*, A revised network, bar-chart and time analysis must be submitted by the *Contractor*.
- Key dates are considered as part completion dates and failure by the *Contractor* to meet those dated could result in the imposition of penalties by Eskom.
- If any difficulties are foreseen in complying with the requirements of this document, these must be resolved with the *Employers Representative* before the tender is submitted.

2.7.1 Construction schedule

The *Contractor* is required to submit a construction schedule and finalized resource schedule weekly for review and acceptance by the *Project Manager*. The schedule shall satisfy the following criteria:

Accurate sequencing of all activities and their relationships in the program

Clearly indicating first and second critical path of the program

Performance in planned versus actual completed activities and explanation of their variance

Clear indication of integration points to others

Identify when services are required for commissioning purposes

2.7.2 Commissioning schedule

During the progress of the works. The contractor develops a detailed commissioning schedule with sufficient detail to enable the work to be adequate progressed in order to meet key dates and the completion dates. The schedule must show alignment interface and compatibility with the employer and others.

2.8 Contractor's management, supervision and key people

The *Contractor* to provide organogram listing management and key personnel including the following:

Project Manager

Site Manager (Site dedicated)

Construction Supervisor (Site dedicated)

Safety Officer (Site dedicated)

Core Crew

2.9 Invoicing and payment

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. Clause 50.2 states invoices submitted by the *Contractor* include the details stated in the Scope to show how the amount due has been assessed. The *Contractor* shall address the tax invoice to the email address that will be provided and include on it the following information. The *Contractor* shall address the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:

Name and address of the *Contractor* and the *Project Manager*;
The contract number and title;
Contractor's VAT registration number;
The *Employer's* VAT registration number 4740101508;
Description of service provided for each item invoiced based on the Price List;
Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
(add other as required)

2.10 Insurance provided by the *Employer*

Refer to clause 84 of this contract

2.11 Contract change management

Contract change management will follow the normal compensation event process. Any change implemented by the *Contractor* without following the compensation event process will not be assessed for payment by the *Project Manager*

Compensation events shall be managed in line with clauses 60, 61, 62, 63, 64 and 65 of the NEC3 Engineering Construction Contract

2.12 Provision of bonds and guarantees

Applicable as per the agreed Works information specification.

2.13 Records of Defined Cost, payments & assessments of compensation events to be kept by the *Contractor*

Not applicable

2.14 Training workshops and technology transfer

Not applicable

3 Engineering and the *Contractor's* design

3.1 *Employer's* design

As attached to the signed scope of work

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

Produce drawings as per scope of work

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

- All design works to be submitted to Matla engineering department for approval prior to installation, all design works to be in accordance to the scope of work unless an alternative has been agreed by both parties

3.4 Other requirements of the *Contractor's* design

Comply with Eskom requirements

3.5 Use of *Contractor's* design

Project specific drawing ,data and equipment specifications will become property of Eskom to be used within Eskom as deemed required

3.6 Design of Equipment

Not applicable

3.7 Equipment required to be included in the *works*

The *Contractor* provides plant and materials, machinery, tools, labour, transportation, construction fuels, chemicals, construction utilities, and administration and other services and items required to complete the scope of work.

As per scope of work

3.8 As-built drawings, operating manuals and maintenance schedules

Contractor to submit a complete Data pack.

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed on the Site

Not applicable, otherwise stated in the works information

4.1.2 BBBEE and preferencing scheme

Not applicable

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

Not applicable

4.2 Subcontracting

4.2.1 Preferred subcontractors

ECC does not make use of nominated subcontracting, but the *Employer* may list which subcontractors or suppliers the *Contractor* is required to enter into subcontracts with. This is usually only required where Plant and Materials need to be obtained from a particular supplier or group of suppliers in order to comply with operational standards

4.2.2 Subcontract documentation, and assessment of subcontract tenders

Not Applicable

4.2.3 Limitations on subcontracting

The *Employer* may require that the *Contractor* must subcontract certain specialised work, or that the *Contractor* shall not subcontract more than a specified proportion of the whole of the contract.

4.2.4 Attendance on subcontractors

Not Applicable

4.3 Plant and Materials

4.3.1 Quality

The *Contractor* shall be required to demonstrate by means of a Quality Plan that this organisation is so structured that all the requirements of the specification will be properly monitored and controlled. The Quality Plan and Control procedures are to be carried out in accordance with the Quality Control document NWS 1841/C1 and the Matla Quality Manual for *Contractor*. The Quality Control document is to be submitted for approval to Matla Engineering and Quality within three (3) days after order placement by the *Contractor*.

No work may commence unless the Quality Control document has been approved in writing and a copy submitted to the *Employers Representative*. The *Contractor*, in conjunction with Matla Engineering and Quality must sign off all Quality Control documents after completing all work on site. The *Contractor* to

submit a copy of the final signed off document to *the Employers Representative* within 1 week after Completion of the works.

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

Not Applicable

4.3.3 *Contractor's* procurement of Plant and Materials

As per the Scope of work

4.3.4 Spares and consumables

Any other spares and material required to complete the Works will be the responsibility of the *Contractor*, unless otherwise stated in the Works Information

4.4 Tests and inspections before delivery

The *Contractor* must make a provision for access for the inspection of the manufacturing of the equipment's as and when required

4.5 Marking Plant and Materials outside the Working Areas

Not applicable

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

It is the *Contractor's* responsibility to safeguard his Equipment onsite and offsite for the whole duration of the contract.

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

The *Contractor's* Personnel and any visitors on the Project Site must be in possession of a valid identification card supplied by the *Employer*. Applications for identification cards shall be made in the form prescribed by the Project Manager. The identification cards shall be used to gain access to the Project Site and only persons with legitimate business on the Project Site and in possession of such identification cards will be allowed access. Applications for identification cards shall be made in good time prior to access being required. Lost, stolen or damaged cards shall be reported to the Project Manager immediately. A fee shall be charged for replacement cards. Identification card holders will be required to produce their identification cards for an ID photo at the security check points. Where a card holder's right of access to the Project Site is withdrawn, their identification card will be electronically cancelled. It is the responsibility of the *Contractor* to ensure the card is returned to the Project Manager.

Removal of Goods from the Project Site

All persons removing *inter alia* materials, equipment, toolboxes, temporary facilities etc. from the Project Site must be in possession of a valid gate release permit. Applications for general or specific gate release permits shall be made in the form prescribed by the *Project Manager*.

Access Control for Vehicles

Only a limited number of *Contractor* and Subcontractor non-construction vehicles will be allowed onto the Project Site.

Visitors

Before entering the Project Site, visitors (meaning any person other than the *Contractor's* Personnel) must be in possession of a valid identification card as mentioned above. Applications shall be made in a form prescribed by the *Project Manager* prior to access being required and visitors must be in possession of positive identification. The *Contractor's* visitors shall be subject to all Project Site rules and regulations including those related to Health & Safety and discipline

Fire-arms

Fire-arms will not be permitted on the Project Site (nor at other places, if any, as may be specified under the Contract as forming part of the Site). This restriction does not, however, apply to the South African Police Services in the pursuance of official duties and Security personnel approved by the *Project Manager*.

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

The *Contractor* shall comply with the restrictions to access on site, roads, walkways and barricades according to the site specifications

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

It is very important that the *Contractor* keeps records of his people on Site, including those of his Subcontractors which the Project Manager or Supervisor have access to at any time. These records may be needed when assessing compensation events. The *Contractor* shall inform the Project Manager in advance for any work that is planned to be executed outside the official working hours.

The *Employer's* working hours are from:

- 07:00 to 16:30 Monday to Thursday
- 07:00 to 12:00 on Friday

5.1.4 Health and safety facilities on Site

The *Contractor* shall comply with

- The Occupational Health and Safety Act, 1993, and all regulations made there under;
- All Eskom Safety and Operating Procedures.

The *Contractor* acknowledges that it is fully aware of the requirements of all the above and undertakes to employ only people who have been duly authorised in terms thereof and who have received sufficient safety training to ensure that they can comply therewith.

The *Contractor* undertakes not to do, or not to allow anything to be done which will contravene any of the provisions of the Act, Regulations or Safety and Operating Procedures.

The *Contractor* shall appoint a person who will liaise with the Eskom Safety Officer responsible for the premises relevant to this contract.

Do safety audits at the *Contractor's* premises, its work-places and on its employees;

Refuse any employee, sub-contractor or agent of the *Contractor* access to its premises if such person has been found to commit any unlawful act or any unsafe working practice or is found to be not authorised or qualifies in terms of the Act;

Issue the *Contractor* with a work stop order or a compliance order should Eskom become aware of any unsafe working procedures or conditions or any non-compliance with the Act, Regulations and Procedures referred to in 1 above by the *Contractor* or any of its employees, sub-contractors or agents.

The *Contractors* safety file is to be submitted for approval to Matla's Safety Officer within three (3) days after order placement.

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

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 2003 (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.

5.1.6 Title to materials from demolition and excavation

Not applicable

5.1.7 Cooperating with and obtaining acceptance of Others

The Contractor will have to cooperate with others

5.1.8 Publicity and progress photographs

The taking of photographs at Matla Power Station including the Project works is restricted and subject to the approval by the Project Manager. For the purpose of the Progress Reporting Requirements, the Project Manager may prohibit the taking of such photographs and/or require that all such photographs be taken by the *Employer*. All notice boards, advertising rights and media relations should be published with the approval of the *Employer*.

5.1.9 Contractor's Equipment

- The *Contractor* provides all Equipment that is required to complete the works. The *Contractor* shall ensure that all his construction equipment remains within the fenced off in the allocated construction area.
- The *Contractor* shall ensure that any equipment moving outside his allocated construction site does not obstruct the normal operation of the power station. Any additional access routes required must be coordinated with the Project Manager.
- The *Contractor* must keep daily records of his equipment used on Site and the Working areas (distinguishing between owned and hired Equipment) with access to such daily records available for inspection by the Project Manager at all reasonable times.
- All Equipment used by the *Contractor* in providing the works shall comply with the General Machinery Regulation 4 of the Occupational Health and Safety Act (Act 85 of 1993)

5.1.10 Equipment provided by the Employer

No Equipment will be supplied by the *Employer*; however, the *Employer* does reserve the right to negotiate with the *Contractor* on the use of different equipment for whatever purpose that may become apparent at the time. The *Contractor* supplies all equipment including cranes, scaffolding and any other equipment for the construction of the works and site establishment

5.1.11 Site services and facilities

Water

Water (Raw water and Fire water) will be made available on request free of charge from tapping points on site. Connection point to be provided by the *Employer*. The *Contractor* is responsible for connection from the tapping points to the *Contractor's* yard. The *Contractor* shall have indicated his request in the Tender. Neither the *Employer* nor the Project Manager shall, however, be bound to approve any revised requirements.

Electricity

All power required for construction and lighting should be provided for by the *contractor*. The *Employer* will not supply electrical power for construction purposes.

5.1.12 Facilities provided by the *Contractor*

Contractor's offices and storage

The *Contractor* shall provide *contractor's* offices to be used by the *Contractor* during the duration of the contract. The yard will be kept clean and tidy at all times, this will include all workshops and storage areas under the control of the *Contractor*. Maintenance of the yard is the *Contractors* responsibility and is for the Project Managers acceptance. Outfall drainage of all surface run-off drains is constructed by the *Contractor* to the acceptance of the Project Manager to minimise erosion and to effect control of contaminated water

Rehabilitation

The *Contractor* is responsible for the rehabilitation of the areas of responsibility including lay down area. Amongst others, this shall include the removal of infrastructure such as offices, workshop areas, storage areas, etc

Ablution Facilities and Refuse

Where required, the *Contractor* shall provide and maintain adequate and suitable sanitized ablution facilities appropriate to the workforce size and work duration that conforms to the requirements of all applicable legislation. The ratio is 1 ablution to 15 employees for each gender. The separate ablution facilities shall be provided for both genders. These portable ablution facilities will be kept tidy and hygienic during the duration of the Project. Where the *Contractor* makes use of existing facilities provided by the project, the *Contractor* shall ensure that their employees support the aim of keeping these facilities clean and hygienic. The *Contractor* is to supply own sanitary facilities. A refuse and sewage control system will be established by the *Contractor*. The *Contractor* submits all safe disposal certificates and waste manifests to the Project Manager.

Accommodation

The *Contractor must* provide accommodation, and transportation to and from site for its employees. Transportation must also be provided for local employees.

The *Contractor* shall provide everything required to execute the scope of work as defined in the works information.

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

Not applicable

5.1.14 Survey control and setting out of the *works*

Not applicable

5.1.15 Excavations and associated water control

Not Applicable

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

Not Applicable

5.1.17 Control of noise, dust, water and waste

Noise

The *Contractor* shall conduct Health Risk Assessment to determine noise levels. If the noise level is medium or high, the *Contractor* shall implement control measures.

Dust and Air quality control

The dust shall be managed in such a manner that the *Contractor* complies with Environmental requirements and unnecessary complaints are prevented. The *Contractor* shall provide all the necessary equipment and tools to do dust suppression in their Contractor's laydown areas, surrounding areas and roads as well as in their working areas. The *Contractor* is also responsible for dust suppression on common areas, Eskom areas which are not used exclusively, or primarily by the Contractors. The *Contractor* must also dust suppress on other areas that are affecting his works. Dust suppression measures shall be in place to reduce the dust caused by the movement of construction vehicles and other sources.

Water pollution control

The *Contractor* shall provide the method statement for water pollution control for the approval of the Project Manager. The *Contractor* shall implement appropriate storm water management control measures prior to construction to manage any erosions such as installing of sediment barriers and/or low berms along the downslope edge of cleared areas to trap sediments on site. Design of sediment barriers should be such that expected flow velocities will not damage the barriers or impair their function. Regular cleaning and maintenance of the barriers should be undertaken.

The *Contractor* shall ensure that there is no mix of clean and dirty water. The *Contractor* must inform the PM prior to the abstraction of water from any onsite water bodies.

Waste

For the purpose hereof, "waste" any matter, whether liquid or solid or any combination thereof, which is a by-product, emission, residue or remainder of any process or activity carried out in connection with the works and which is not reused on the Site in the ordinary course of carrying out the works within seven days of production.

The *Contractor* maintains a high standard of cleanliness during the conduct of his activities at Matla Power Station. This includes areas allocated for storage of materials, site offices etc. to the satisfaction of the Project Manager. The *Contractor* keeps these areas clean and free from accumulation of waste materials and refuse regardless of the source. The *Contractor* is responsible for the prompt removal of all waste to a designated disposal area. The disposal area will be on or in the vicinity of the Power Station and be indicated by the Project Manager.

The *Contractor* provides an adequate number of marked bins and containers at offices, in yards, at workshops and on the Site for the temporary storage of waste. These bins and containers are subject to approval by the Project Manager. The *Contractor* is required to segregate certain items of waste by type as designated by the Project Manager. Bins and containers are emptied and waste removed to the designated area at least once a week.

All the temporary storage areas for bins and containers are kept tidy and must not constitute a nuisance to others. The *Contractor* takes all required steps to avoid spillage of waste alongside the bins and containers during removal and disposal thereof. All waste that cannot be contained in either a bin or container is placed on a temporary waste site which the Project Manager identifies. No burning of waste and littering is allowed at the Power Station.

Hazardous waste is dealt with in accordance with the SHE Specification requirements of the works and the *Contractor* is solely responsible for the proper disposal thereof. Hazardous waste will be disposed of at an authorised landfill site. Waste register will be kept for record keeping and handed over at the end of the Project. The *Contractor* notifies the Project Manager of all chemical substances coming to site and keeps an inventory and MSDS of the chemicals.

5.1.18 Sequences of construction or installation

As per approved schedule

5.1.19 Giving notice of work to be covered up

The *Contractor* provides a notice of work to be covered up to the *Supervisor* as per the approved inspection test plans

5.1.20 Hook ups to existing works

The adjacent plant and equipment may not be modified without written permission from the *Project Manager*. The *Contractor* complies with Eskom Life Saving Rules and will report any non-conformance.

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Work to be done by the Completion Date

Completion will not be achieved until the *Contractor* has successfully completed and handed over all *Works* associated with the contract including the following amongst others;

- *Contractor* Application for Eskom's Inspection of the Works /Part of the Works,
- Data Packs (e.g. Material Certificates, Qualifications, NDT and Welding Documentation, Cutting Instructions, Factory Design Review Reports, etc.)
- Partial/final Inspection certificate,
- Defects Notification Certificate/Clearance,
- Red-lined drawings for engineering approval,
- Testing results,
- Safety and Housekeeping Certificate,
- Completion Certificate,
- Defects Certificate and

On or before the Completion Date the *Contractor* shall have done everything required to Provide the *Works*. The *Project Manager* cannot certify Completion until all the work has been done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the *works* and Others from doing their work.

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

As per the project manager's instruction

5.2.3 Materials facilities and samples for tests and inspections

As per the project manager's instruction

5.2.4 Commissioning

Commissioning of the *Works* will be done before handing over the completed scope of work by the *Contractor*, witnessed and Accepted by the *Employer*

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

As per scope of work.

5.2.6 Take over procedures

Take over is after or at the same time as Completion. The *Employer* may require the *Contractor* to provide assistance during hand over and data packs to be submitted.

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

The *Project Manager* arranges for the *Employer* to allow the *Contractor* access to and use of a part of the *works* which has been taken over if needed to correct a Defect. After the *works* have been put into operation, the *Employer* may require the *Contractor* to undertake certain procedures before such access can be granted (for example applying for a plant to be safe)

5.2.8 Performance tests after Completion

The projects require the *Contractor* to demonstrate that the *works* can operate as guaranteed by the *Contractor* (in *Contractor's Works Information*) or specified by the *Employer* in this Works Information.

5.2.9 Training and technology transfer

Not applicable

5.2.10 Operational maintenance after Completion

Not applicable

6 Plant and Materials standards and workmanship

6.1 Investigation, survey and Site clearance

Not applicable

6.2 Building works

Not applicable

6.3 Civil engineering and structural works

Not applicable

6.4 Electrical & mechanical engineering works

According to the scope of works and the specification

6.5 Process control and IT works

Not applicable

6.6 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
C4	This cover page Site Information	1
	Total number of pages	

PART 4: SITE INFORMATION

Core clause 11.2(16) states

“Site Information is information which

- describes the Site and its surroundings and
- is in the documents which the Contract Data states it is in.”

In Contract Data, reference has been made to this Part 4 of the contract for the location of Site Information.

5. General description

The Matla Power Station is situated approximately half way between Bethal and Ogies on the R545, being just over 30 km from each town and 13 km north-west of Kriel town.

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

The works is within the existing power plant (Unit 1)

7. Subsoil information

Not applicable

8. Hidden services

Not applicable

9. Other reports and publicly available information

Not applicable