

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years



NEC3 Term Service Contract (TSC3)

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

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

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

Contents:	No of pages
Part C1 Agreements & Contract Data	[•]
Part C2 Pricing Data	[•]
Part C3 Scope of Work	[•]

CONTRACT No.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

PART C1: AGREEMENTS & CONTRACT DATA

Contents:	No of pages
C1.1 Form of Offer and Acceptance	[•]
C1.2a Contract Data provided by the <i>Employer</i>	[•]
C1.2b Contract Data provided by the <i>Contractor</i>	[•]
C1.3 Proforma Guarantees	[•]

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

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:

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-Needed" based on Inspection Findings. at Matla Power Station for a period of five (5) years

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

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

Signature(s)

Name(s)

Capacity

**For the
tenderer:**

(Insert name and address of organisation)

Name &
signature of
witness

Date

Tenderer's CIDB registration number:

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*.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

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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: Service 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 and signed original copy of this document, including the Schedule of Deviations (if any).

Signature(s)

Matla Power Station

Name(s)

Private Bag X5012

Capacity

General Manager

Kriel,2271

**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.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

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

Note:

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

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

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)

Matla Power Station
Private Bag X5012
Kriel, 2271

Name &
signature
of witness

Date

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

C1.2 TSC3 Contract Data

Part one - Data provided by the *Employer*

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

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option:	
	☐ dispute resolution Option	A: Priced contract with price list W1: Dispute resolution procedure
	and secondary Options	
	☐	X1: Price Adjustment for Inflation X2: Changes in the Law
	☐	X17: Low Service Damage X18: Limitation of Liability X19: Task Order
		Z: Additional conditions of contract
	of the NEC3 Term Service Contract April 2013 ² (TSC3)	
10.1	The <i>Employer</i> is (name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
	Tel No.	[•]
	Fax No.	[•]
10.1	The <i>Service Manager</i> is (name):	
	Address	Eskom Holdings SOC LTD Matla Power Station

² Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

Private Bag X 5012
KRIEL
2271

Tel

Fax

e-mail

11.2(2)	The Affected Property is	Matla Power Station (TSD)
11.2(13)	The <i>service</i> is	Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years.
11.2(14)	The following matters will be included in the Risk Register	Access to site Health and safety risks to staff, contractors and visitors Environmental risks including Statutory compliance Unprotected strike
11.2(15)	The Service 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	Within 24 Hours for emergency Within 3 working days for any other contractual matters
2	The Contractor's main responsibilities	Data required by this section of the core clauses is also provided by the Contractor in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data
21.1	The Contractor submits a first plan for acceptance within	2 Weeks after effective Contract date
3	Time	
30.1	The <i>starting date</i> is.	TBC

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

30.1	The <i>service period</i> is	05 years (60 months) from Contract Date
4	Testing and defects	Testing and defect on Contractor' site before delivered to Matla Power Station. Final quality inspection will be done at Matla Power Station for acceptance of goods and services. If a test or inspection shows that any work has a defect, the supplier corrects the defect, and the test or inspection is repeated
42.1	Notifying and correction of defects	The Contractor corrects a Defect whether or not the Service Manager notifies him of it.
42.2	Defects correction period is	Defect Correction Period is 52 weeks after the respective Task Order Completion Date
42.3	Access to site to correct defects	The Service Manager arranges for the Employer to allow the Contractor access if it is needed for correcting a Defect
5	Payment	
50.1	The <i>assessment interval</i> is	between the 30th day of each successive month
51.1	The <i>currency of this contract</i> is the	South African Rand
51.2	The period within which payments are made is	Thirty (30) Calendar days after the signed assessment by both Parties and a valid Tax Invoice. ATTENTION: Eskom's standard policy on payment term for all contracts valued above R50 000 0000 (Fifty Million Rand), including VAT, is 60 days. Bidders are requested to bear this payment term in mind when submitting bids and concluding contracts.
51.4	The <i>interest rate</i> is	the publicly quoted prime rate of interest (calculated on a 365 day year) charged by 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

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

**be necessary to prove) for
amounts due in Rands**

6	Compensation events	All Compensation Events are to be managed as per core clause 6 of the NEC3 TSC
7	Use of Equipment Plant and Materials	To be managed ss per core clause 7 of the NEC3 TSC
8	Risks and insurance	
80.1	These are additional <i>Employer's</i> risks	1. Unprotected Strike 2. Natural disaster 3.
9	Termination	To be managed as per core clause 9 of the NEC3 TSC
10	Data for main Option clause	
A	Priced contract with price list	
20.5	The <i>Contractor</i> prepares forecasts of the final total of the Prices for the whole of the <i>service</i> at intervals no longer than	Monthly (30 days) or as stated on the Task Order
11	Data for Option W1	
W1.1	The <i>Adjudicator</i>	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 ICE-SA Division
	Address	South Africa
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 Institution of Civil Engineers (London) (see www.ice-sa.org.za) or its successor body.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

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	the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.
	- if the Parties cannot agree a choice or	
	- if the arbitration procedure does not state who selects an arbitrator, is	

12 Data for secondary Option clauses

X1	Price adjustment for inflation																			
X1.1	The <i>base date</i> for indices is	A month before the tender closing date.																		
	The proportions used to calculate the Price Adjustment Factor are:	<table> <tr> <th>proportion</th><th>linked to index for</th><th>Index prepared by</th></tr> <tr> <td>0.</td><td>[•]</td><td>[•]</td></tr> <tr> <td>0.</td><td>[•]</td><td>[•]</td></tr> <tr> <td>0.</td><td>[•]</td><td>[•]</td></tr> <tr> <td>15%</td><td>non-adjustable</td><td>Fixed</td></tr> <tr> <td>100%</td><td></td><td></td></tr> </table>	proportion	linked to index for	Index prepared by	0.	[•]	[•]	0.	[•]	[•]	0.	[•]	[•]	15%	non-adjustable	Fixed	100%		
proportion	linked to index for	Index prepared by																		
0.	[•]	[•]																		
0.	[•]	[•]																		
0.	[•]	[•]																		
15%	non-adjustable	Fixed																		
100%																				
X2	Changes in the law	Becomes a Compensation Event only if the changes in the Law of the Republic of South Africa took place after the Contract Date.																		
X17	Low service damages																			
X17.1	The <i>service level table</i> is in	Annexure B																		
X18	Limitation of liability																			
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																		

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X18.3	The <i>Contractor's</i> liability for Defects due to his design of an item of Equipment 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> insurance (other than the resulting physical damage to the <i>Employer's</i> property which is not excluded) plus the applicable deductibles
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 the excluded matters, is limited to	the total of the Prices other than for the additional excluded matters. The <i>Contractor's</i> total liability for the additional excluded matters is not limited. The additional excluded matters are amounts for which the <i>Contractor</i> is liable under this contract for Defects due to his design, plan and specification, Defects due to manufacture and fabrication outside the Affected Property, loss of or damage to property (other than the <i>Employer's</i> property, 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	36 Months after the end of the service period.
X19	Task Order	
X19.3	Delay Damages	5% per day and limited to 10% of each Task Order
X19.5	The <i>Contractor</i> submits a Task Order programme to the <i>Service Manager</i> within	5 Days of receiving the Task Order
Z	The additional conditions of contract are	Z1 to Z14 always apply.

Z1 Cession delegation and assignment

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

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

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

Z2 Joint ventures

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

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

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

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

Z3.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor's* B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.

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

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

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 P4 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 *Service Manager*.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

- 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 Affected Property or any portion thereof, in the course of Providing the Service and after the end of the *service period*, requires the prior written consent of the *Service 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 *Service Manager* 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 *service*. 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 Affected Property;
 - 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 the *service*; and
 - undertakes, in and about the execution of the *service*, 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 *service*, 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 *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice in

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

accordance with the *Employer's* procedures stated in the Service 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 the last paragraph of core clause 61.3 and replace with:

If the *Contractor* does not notify a compensation event within eight weeks of becoming aware of the event, he is not entitled to a change in the Prices.

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 82.1 is provided for in 60.1(12) and the *Employer's* liability under the indemnity is limited to compensation as provided for in core clause 63 and X19.11 if Option X19 Task Order applies to this contract.

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 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 <i>Contractor</i> 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,

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

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

Z11.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.

Z11.2 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.

Z11.3 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.

Z11.4 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.

Insurance by the Employer

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

Z13 Nuclear Liability

Z13.1 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.

Z13.2 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*

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

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*.

Z13.3 Subject to clause Z13.4 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*.

Z13.4 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.

Z13.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

Z14 Asbestos

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

AAIA	means approved asbestos inspection authority.
ACM	means asbestos containing materials.
AL	means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
Ambient Air	means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means occupational exposure limit.
Parallel Measurements	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
Safe Levels	means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
Standard	means the <i>Employer's</i> 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.

Z14.1 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

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

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.

- Z14.2 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 Z14.1. Control measures conform to the requirements stipulated in the AAIA-approved asbestos work plan.
- Z14.3 The *Employer* manages asbestos and ACM according to the Standard.
- Z14.4 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.
- Z14.5 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.
- Z14.6 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.
- Z14.7 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.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

Annexure B: Table of low service damages (X17)

• Low Service Damage Description	• Value of Low Service Damages	• Limit of Low Service Damage
• Plant Safety Regulation - Supervisor must be authorised within 8 months of the contract start date. - 2 artisans must be authorised within 8 months	• 5 % of Task Order per month that PSR Authorisation of personnel is not in place.	• Limited to 10% of the Task Order value
• Rework due to poor workmanship.	• 2% of Task Order per day	• Limited to 10% of the Task Order value
• No response of NCR within 3 days	• 2% of Task Order per day	• Limited to 10% of Task Order Value
• Failure to address housekeeping in the plant or workshop	• 2% of Task order per day	• Limited to 10% of Task Order Value
• Failure to address environmental incidents like spillages, fumes, etc.	• 2% of Task order per event	• Limited to 10% of Task Order Value
• Failure to apply safety rules which results in an injury or LTI	• 2% of Task order per event	• Limited to 10% of Task Order Value

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

C1.2 Contract Data

Part two - Data provided by the *Contractor*

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

Whenever a cell is shaded in the left hand column it denotes this data is optional and would be required in relation to the option selected. In the event that the option is not required select and delete the whole row.]

Notes to a tendering contractor:

1. Please read both the both the NEC3 Term Service Contract April 2013 and the relevant parts of its Guidance Notes (TSC3-GN)³ in order to understand the implications of this Data which the tenderer is required to complete.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data.
3. Where a form field like this [] appears, data is required to be inserted relevant to the option selected. Click on the form field **once** and type in the data. Otherwise complete by hand and in ink.

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

Clause	Statement	Data
10.1	The <i>Contractor</i> is (Name): Address Tel No. Fax No.	
11.2(8)	The <i>direct fee percentage</i> is	%
	The <i>subcontracted fee percentage</i> is	%
11.2(14)	The following matters will be included in the Risk Register	
11.2(15)	The Service Information for the <i>Contractor's</i> plan is in:	
21.1	The plan identified in the Contract Data is contained in:	
24.1	The key people are: 1 Name: Job: Responsibilities: Qualifications: Experience:	

³ Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 5391902 or www.ecs.co.za

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

2 Name:

Job

Responsibilities:

Qualifications:

Experience:

CV's (and further key person's data including CVs) are in _____.

A	Priced contract with price list
11.2(12)	The <i>price list</i> is in _____
11.2(19)	The tendered total of the Prices is R _____

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

C2.1 Pricing assumptions: Option A

How work is priced and assessed for payment

Clause 11 in NEC3 Term Service Contract (TSC3) core clauses and Option A states:

- | | | |
|-------------------------------------|------|---|
| Identified and defined terms | 11 | |
| | 11.2 | (12) The Price List is the <i>price list</i> unless later changed in accordance with this contract. |
| | | (17) The Price for Services Provided to Date is the total of

the Price for each lump sum item in the Price List which the <i>Contractor</i> has completed and
where a quantity is stated for an item in the Price List, an amount calculated by multiplying the quantity which the <i>Contractor</i> has completed by the rate. |
| | | (19) The Prices are the amounts stated in the Price column of the Price List. Where a quantity is stated for an item in the Price List, the Price is calculated by multiplying the quantity by the rate. |

This confirms that Option A is a priced contract where the Prices are derived from a list of items of service which can be priced as lump sums or as expected quantities of service multiplied by a rate or a mix of both.

Function of the Price List

Clause 54.1 in Option A states: "Information in the Price List is not Service Information". This confirms that instructions to do work or how it is to be done are not included in the Price List but in the Service Information. This is further confirmed by Clause 20.1 which states, "The *Contractor* Provides the Service in accordance with the Service Information". Hence the *Contractor* does **not** Provide the Service in accordance with the Price List. The Price List is only a pricing document.

Link to the *Contractor's* plan

Clause 21.4 states "The *Contractor* provides information which shows how each item description on the Price List relates to the operations on each plan which he submits for acceptance". Hence when compiling the *price list*, the tendering contractor needs to develop his first clause 21.2 plan in such a way that operations shown on it can be priced in the *price list* and result in a satisfactory cash flow in terms of clause 11.2(17).

Preparing the *price list*

Before preparing the *price list*, both the *Employer* and tendering contractors should read the TSC3 Guidance Notes pages 14 and 15. In an Option A contract, either Party may have entered items into the *price list* either as a process of offer and acceptance (tendering) or by negotiation depending on the nature of the service to be provided. Alternatively 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 the *price list* to be prepared and priced by him.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As-and when required based on Inspection Findings. at Matla Power Station for a period of five (5) years

It is assumed that in preparing or finalising the *price list* the *Contractor*:

- Has taken account of the guidance given in the TSC3 Guidance Notes relevant to Option A;
- Understands the function of the Price List and how work is priced and paid for;
- Is aware of the need to link operations shown in his plan to items shown in the Price List;
- Has listed and priced items in the *price list* which are inclusive of everything necessary and incidental to Providing the Service in accordance with the Service 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 item within the Prices or rates of other listed items in order to fulfil the obligation to complete the *service* for the tendered total of the Prices.
- Understands there is no adjustment to items priced as lump sums if the amount, or quantity, of work within that item later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the (lump sum) Prices is as a result of a compensation event.

Format of the *price list*

(From the example given in an Appendix within the TSC3 Guidance Notes)

Entries in the first four columns in the *price list* in section C2.2 are made either by the *Employer* or the tendering contractor.

If the *Contractor* is to be paid an amount for the item which is not adjusted if the quantity of work in the item changes, the tendering contractor enters the amount in the Price column only, the Unit, Expected Quantity and Rate columns being left blank.

If the *Contractor* is to be paid an amount for an item of work which is the rate for the work multiplied by the quantity completed, the tendering contractor enters the rate which is then multiplied by the Expected Quantity to produce the Price, which is also entered.

If the *Contractor* is to be paid a Price for an item proportional to the length of time for which a service is provided, a unit of time is stated in the Unit column and the expected length of time (as a quantity of the stated units of time) is stated in the Expected Quantity column.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As-Needed” based on Inspection Findings. at Matla Power Station for a period of five (5) years

C2.2 the *price list*

							Rate	Amount over 5 years
Item	Description	Unit	Quantity	Period				
1	Preliminaries and General							
1.1	Site Establishment	Sum	1	1				
1.2	Site De-establishment	Sum	1	1				
1.3	Accommodation	Monthly	1	60				
1.4	Safety File	Yearly	1	5				
1.5	PPE and Medicals (entry, exit & police clearance)	Yearly	1	5				
1.6	Double Cab	Monthly	1	60				
1.7	15 seater transport	Monthly	2	60				
								R
								-
2	Plant and equipment	Unit	Quantity	Month			Rate	Amount
2.1	Hand Cleaning Equipment	Monthly	1	60				
2.2	Power Cleaning Equipment (Electrical or Pneumatic)	Monthly	1	60				
2.3	Abrasive Blast Cleaning	Monthly	1	60				
2.4	High Pressure Cleaning Equipment 2000 – 2500 bar	Monthly	1	60				
2.5	Tools and equipment (mechanical fitter)	Monthly	1	60				
2.6	Quality Control Testing Equipment	Monthly	1	60				

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As-Needed” based on Inspection Findings. at Matla Power Station for a period of five (5) years

2.7	Specialised Equipment		Monthly	1	60			
								R -
3	Labour		Unit	Quantity	Hrs	Months	Rate	Amount
3.1	Site Manager		No.	1	173	60		
3.2	Site Supervisor		No.	1	173	60		
3.3	Safety Officer		No.	1	173	60		
3.4	Artisan		No.	6	173	60		
3.5	Semi-Skilled Labourers		No.	6	173	60		
3.6	Coating Applicators / Painters		No.	4	173	60		
3.7	Coating Inspectors		No.	2	173	60		
3.8	Safety Valve Artisans		No.	2	173	60		
3.9	Safety Valve Supervisor		No.	1	173	60		
								R -
							TOTAL	R -

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As-Needed” based on Inspection Findings. at Matla Power Station for a period of five (5) years

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As-Needed” based on Inspection Findings. at Matla Power Station for a period of five (5) years

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

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

C3.1: EMPLOYER’S SERVICE INFORMATION

Contents

Part 3: Scope of Work.....Error! Bookmark not defined.

C3.1: Employer’s service Information..... **2**

1 Description of the service **11**

1.1 Executive overview 11

1.2 *Employer’s* requirements for the *service*..... 11

1.3 Interpretation and terminology 15

2 Management strategy and start up..... **15**

2.1 The *Contractor’s* plan for the *service* 19

2.2 Management meetings..... 19

2.3 *Contractor’s* management, supervision and key people 20

2.4 Provision of bonds and guarantees 20

2.5 Documentation control 20

2.6 Invoicing and payment 20

2.7 Contract change management..... 20

2.8 Records of Defined Cost to be kept by the *Contractor* 20

2.9 Insurance provided by the *Employer* 21

2.10 Training workshops and technology transfer 21

2.11 Design and supply of Equipment 21

2.12 Things provided at the end of the *service period* for the *Employer’s* use 21

2.12.1 Equipment 21

2.12.2 Information and other things..... 21

2.13 Management of work done by Task Order..... 21

3 Health and safety, the environment and quality assurance **21**

3.1 Health and safety risk management 24

3.2 Environmental constraints and management..... 25

3.3 Quality assurance requirements 25

4 Procurement **26**

4.1 People 26

4.1.1 Minimum requirements of people employed 26

4.1.2 BBBEE and preferencing scheme..... 26

4.1.3 Accelerated Shared Growth Initiative – South Africa (ASGI-SA)**Error! Bookmark not defined.**

4.2 Subcontracting 26

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

4.2.1	Preferred subcontractors	28
4.2.2	Subcontract documentation, and assessment of subcontract tenders	28
4.2.3	Limitations on subcontracting	28
4.2.4	Attendance on subcontractors.....	28
4.3	Plant and Materials	28
4.3.1	Specifications	28
4.3.2	Correction of defects	28
4.3.3	<i>Contractor’s</i> procurement of Plant and Materials	28
4.3.4	Tests and inspections before delivery	28
4.3.5	Plant & Materials provided “free issue” by the <i>Employer</i>	29
4.3.6	Cataloguing requirements	29
5	Working on the Affected Property	29
5.1	<i>Employer’s</i> site entry and security control, permits, and site regulations	29
5.2	People restrictions, hours of work, conduct and records	29
5.3	Health and safety facilities on the Affected Property	29
5.4	Environmental controls, fauna & flora	29
5.5	Cooperating with and obtaining acceptance of Others	29
5.6	Records of <i>Contractor’s</i> Equipment	30
5.7	Equipment provided by the <i>Employer</i>	30
5.8	Site services and facilities	30
5.8.1	Provided by the <i>Employer</i>	30
5.8.2	Provided by the <i>Contractor</i>	30
5.9	Control of noise, dust, water and waste	30
5.10	Hook ups to existing works	30
5.11	Tests and inspections	30
5.11.1	Description of tests and inspections.....	30
5.11.2	Materials facilities and samples for tests and inspections	30
6	List of drawings	31
6.1	Drawings issued by the <i>Employer</i>	31

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

Part 3

3.1 SCOPE OF WORK: SECTION 1 – SANDBLASTING, INTERNAL & EXTERNAL CORROSION PROTECTION (ORGANIC COATING AND/OR RUBBER LINING), PRESSURE TESTING AND CALIBRATION OF SAFETY VALVES.

3.1.1 Normative/Informative References

All parties with vested in this Scope of Work shall ensure they are conversant with the requirements and apply the most recent edition of the documents listed below to all Sections withing this document. In the event of any omission or conflict between this document and the documents listed below, the requirements of the National Regulations, Eskom Manuals and Standards shall prevail and take precedent.

Normative:

- [1.] Guidance Notes to the Pressure Equipment Regulations July 2009, Department of Labour, Occupational Health and Safety Act, 1993 Revision 2.
- [2.] 240-154283718 Pressure Equipment Regulations Compliance Manual.
- [3.] 240-69258336 Pressure Relieving Safety Devices Standard.
- [4.] 240-84513751 Material Specification and Certification Guideline for Power Generation Plant.
- [5.] 240-101712128 Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings.
- [6.] 240-106365693 Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings.
- [7.] 240-145581571 Standard for the Identification of the Contents of Pipelines and Vessels.
- [8.] GAM.MAT.22.234 Matla Rubber Lining Specification.
- [9.] GAM.MAT.22.235 Matla Internal Coating Specification.
- [10.] 240-71432150 Plant Labelling Standard
- [11.] 557-2508 Inspection and Testing of Pressure Vessels.

NOTE: This Scope of Work does not elaborate on all requirements to the extent of the above listed reference documents, which is why all stakeholders must familiarise themselves with these detailed documents. Examples of details elaborated on in the standards include:

- Specific Requirements relating to internal lining, rubber lining, external coating, etc.
- General Requirements which include Equipment Design Considerations for supplied equipment such as Safety Valves.
- Contractor Skill Requirements.
- Requirements for the Contractor's Measuring and Test Equipment, Spray Equipment, Blast Cleaning Equipment, Powe Mixers etc.
- Paint Material requirements.
- Surface preparation.
- Paint Application.
- Safety Precautions.
- Inspection and Testing Requirements.
- Quality Assurance to be provided by the Contractor.
- Specific Rubber Lining Requirements.
- Maintenance Painting and Touch-ups by the Contractor.
- Guarantees to be provided by the Contractor.
- Handling and Storage Requirements.
- Record keeping and documents to be made available to Eskom.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

IT EM NO.	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION
3.1.2	Conduct Internal and/or External Surface Preparation on Vessels prior to Corrosion Protection on an "As Needed" Basis which is determined by Eskom Engineering and the On-Site AIA representative.	Areas on or entire Vessels that require surface preparation (sandblasting, etc.) and internal and/or external corrosion protection will be explicitly stated on individual task orders issued for Maintenance on an "As Required Basis" as determined by Eskom Engineering and the On-Site AIA(is) on specific Pressure Vessels as listed in Appendix I. Internal surface preparation shall meet the requirements of the project specific specifications (Refer to Appendix IV) as well as Section 4.7 of 240-101712128: Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping and Linings. The following project specific internal corrosion protection specifications are provided in Appendix IV of this document: - GAM.MAT.22.234: Matla Rubber Lining Specification - GAM.MAT.22.235: Matla Internal Coating Specification External surface preparation shall meet the requirements of the project specific specifications (Refer to Appendix V) as well as Section 4.6 of 240-106365693: Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings. In addition to the requirements for surface preparation from the Standard, the <i>Contractor</i> will be responsible to adhere to the requirements as stated in the project specific specifications to: - Photograph and record all nameplate data and ensure vessel name plates are protected prior to any surface preparation or application of corrosion protection systems. - Certain vessels may need to be sandblasted in-situ. Vessels that cannot be done in-situ will be removed by <i>Contractor</i> and taken to the sandblasting workshop on site for the corrosion protection to re-instate or repair the corrosion protection system. - The <i>Contractor</i> will ensure that all sandblasting grid is appropriately contained to prevent damage to, or foreign material ingress into any adjacent equipment. - The <i>Contractor</i> may be held liable for any damages arising from the sandblasting process on the specified vessels or surrounding equipment. - The <i>Contractor</i> will be responsible for cleaning and environmentally friendly disposal of sandblasting grit out of the workplace. - Vessels removed to the sandblasting workshop is to be re-installed by <i>Contractor</i>.
3.1.3	Conduct External Corrosion Protection with Coatings on an "As Needed" Basis determined	Areas on or entire Vessels that require surface preparation (sandblasting, etc.) and internal and/or external corrosion protection will be explicitly stated on individual task orders issued for Maintenance on an "As Required Basis" as determined by Eskom Engineering and the On-Site AIA(is) on specific Pressure Vessels as listed in Appendix I.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

ITEM NO.	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION
	by Eskom Engineering and the On-Site AIA representative. Estimated Surface Areas and Volumes provided in Appendix II.	The Colour of the External Corrosion Protection shall meet the requirements of 240-1453 Standard for the Identification of the Contents of Pipelines and Vessels as detailed in Appendix III for the specific vessels. The External Corrosion Protection shall meet all the requirements of the project specific corrosion protection specification (CPS) as detailed in Appendix V, as well as 240-10630 Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping Coatings. The approximated external surface areas for each vessel is provided in Appendix II.
3.1.4	Conduct Internal Corrosion Protection with Coatings or Rubber Lining on an "As Needed" Basis determined by Eskom Engineering and the On-Site AIA.	Areas on or entire Vessels that require surface preparation (sandblasting, etc.) and internal and/or external corrosion protection will be explicitly stated on individual task orders issued by Maintenance on an "As Required Basis" as determined by Eskom Engineering and the On-Site AIA(is) on specific Pressure Vessels as listed in Appendix I. Internal Corrosion Protection and Rubber Lining shall meet all the requirements of the project specific corrosion protection specification (CPS) as provided in Appendix IV, as well as the requirements of 240-101712128: Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings. Appendix I (Design Information), Appendix II (Surface Areas and Volumes) and Appendix III (Colour Identification & Corrosion Protection Specifications) is provided as an alternative to Annexure C of the Standard 240-101712128 because of the number of vessels and different operating environments.
3.1.5	Conduct Hydrostatic Pressure Testing on All Portable Compressors and on an "As Needed" Basis determined by Eskom Engineering and the On-Site AIA representative.	Hydrostatic Pressure Testing to the specified pressures may be required on portable compressors as indicated in Appendix I (Item 49 to Item 55). Additional vessels that require hydrostatic pressure testing will be explicitly stated on individual task orders issued by Maintenance on an "As Required Basis" and as determined by Eskom Engineering and the On-Site AIA(is) on specific Pressure Vessels. NOTE: Where in-service statutory hydraulic pressure testing is required, such testing shall be performed to a minimum 1.25 times the design pressure as defined in PER sub-regulation 11.1(c) or 11.1(d). • Adherence to 240-154283718 Pressure Equipment Regulations - Compliance Manual • Contractor to submit an ITP and method statement for pressure testing the specified vessels for approval by Engineering and the AIA. • Contractor to supply and utilise a Low Flow rate of 2.6 Litres / Min Max mobile pressure raising pump.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

ITEM NO.	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION
		- Minimum water temperature = 16°C for pressure testing. - The Eskom Representative, Contractor, and the AIA(is) shall ensure that the stipulated pressure is reached or marginally exceeded (2% of test pressure value or 50 kPa whichever is the higher) during a pressure test and that the pressure gauge used in the test is in the correct range (test pressure to be achieved shall be within 40-70% of the indicated pressure range). - The Eskom MMD shall supply the pressure gauges and calibration certificates during the Hydrostatic Pressure Test. The pressure gauge latest calibration date as stated on the calibration certificate shall not be older than 12 months prior to the date of pressure testing. Calibration test shall be performed by a SANAS accredited Test Laboratory. - The pressure equipment shall hold / maintain test pressure for at least 30 minutes on each of the large vessels at least sufficient time to perform a full visual inspection. The Contractor will log the pressures at intervals as agreed with the AIA(is). - A shorter time frame may be agreed to by the System Engineer and AIA(is) in cases where the pressure decay is due to a passing isolating valve or blocking device. - Blanks / Cover Plates and gaskets to be provided by Eskom MMD department and removed by Contractor.
3.1.6	Conduct Safety Valve Calibration / Trevi-Testing of Safety Valves.	Safety Valves listed in Appendix VI require calibration / trevi-testing and may require refurbishment. The exact requirement will be explicitly stated on individual task orders issued for Maintenance on an "As Required Basis" and as determined by Eskom Engineering and the Site AIA(is) on specific Safety Valves and will adhere to the requirements of 240-692583 Pressure Relieving Safety Devices Standard. - All valves will be removed from the vessel and taken to the <i>Contractor's</i> (by the Contractor) workshop for overhaul, testing and setting. - Valve lift setting will be witnessed by an Eskom Engineer representative and the AIA(is). - A formal report will be issued by the <i>Contractor</i> detailing the condition of the components found AND after refurbishment, as a minimum, i.e. - Initial pressure setting - spring - bellows - seat - set screw - spindle - body - spring washer - guide bush

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

IT EM NO.	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION
		• The seat may be dye penetrant tested on assessment. (contractor to budget for even to be tested) • The seat will be "blue checked" to verify seating. ○ the seat will be lapped ○ the seat will be fully blued to be acceptable. • After valve setting the safety valve is to be sealed/ tagged to prevent unauthorised adjustment. Tag to detail date, set pressure, serial number, and lead seal number. • A SANAS approved safety valve calibration certificate will be submitted for approval AIA(is), indicating: ○ Safety Valve Serial Number ○ Date of Calibration ○ Set Pressure ○ Test Method (Pneumatic or Hydraulic) ○ Pressure Gauge Serial Number ○ Lock Nut and Screw Heights ○ Contractor's Supervisor's signature and acceptance ○ The safety valve make, model, accessories fitted, Inlet and Outlet Sizes • A refurbishment certificate will be issued <u>prior to installation</u> on each valve refurbishing stating: ○ Valve description and KKS/AKZ. ○ Valve make, model and serial number. ○ repaired components. ○ and initial (as found) and final set pressure. NOTE: In instances where Safety Valves cannot be refurbished, and replacement is required refer to Section 3.2.1

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

3.2 SCOPE OF WORK – SECTION 2: REPLACEMENT OF SAFETY VALVES AND VESSEL NAME PLATES ON "AS-NEEDED" BASIS.

ITEM NO.	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION
3.2.1	Replace Safety Valves on an "As Needed" Basis determined by Eskom Engineering and the On-Site AIA Representative.	In instances where Safety Valves require replacement, this will be explicitly stated on inspection task orders issued by Maintenance on an "As Required Basis" and as determined by Eskom Engineering and the On-Site AIA(is) on specific Safety Valves of Appendix VI. Replacement Safety Valves shall meet the requirements of: • 240-69258336 Pressure Relieving Safety Devices Standard. • 240-154283718: Pressure Equipment Regulations Compliance Manual, • 240-84513751 Material Specification and Certification Guideline for Power Generation • Department of Labour Guidance Notes to the Pressure Equipment Regulations July 2001, Occupational Health, and Safety Act, 1993 Revision 2. Safety Valves are pressure accessories as defined in PER. All imported valves need to be subjected to a conformity assessment review by the Importer, to declare conformance to national legislation. The South African (local) AIA(m) is not required to counter-sign this declaration. This conformity assessment review certificate shall be issued to Eskom for acceptance. The conformity assessment shall clearly indicate the Health and Safety Standard (including year of issue), pressure testing and material certification in accordance with EN 10204 and the conformity assessment module used during the manufacture. Valves shall be manufactured and designed in accordance with an accredited valve manufacturing Health and Safety Standard such as ASME B16.34, EN 12516 or an internationally accepted valve design Health and Safety Standard. The User will ensure that the selected valve complies with the temperature and body pressure rating for applicable Valve body rating stated in the applicable Health and Safety Standard and is suitable for the design conditions of the piping system. Valves will be supplied complete with material certificates in accordance with EN 10204 certification for low alloy materials and basic carbon steel or stainless steel. For complex materials the requirements of 240-84513751 will apply. Batch produced valves shall be supplied with EN10204 2.2 certification. For new safety / relief valves a full sizing certificate of valve capacity must be issued. Certificate must include the maximum flow rates and media as well as the Health and Safety Standard the flow capacity is based on.
3.2.2	Manufacture and Install Replacement Pressure Vessel Name Plates on an "As Needed" Basis determined by Eskom Engineering and the On-Site AIA representative.	In instances where nameplates require replacement, this this will be explicitly stated on inspection task orders issued by Maintenance on an "As Required Basis" and as determined by Eskom Engineering and the On-Site AIA(is). • All manufactured name plates shall meet the requirements of 240-71432150 Plant Labeling Standard. • All manufactured nameplates shall contain the minimum information as stated in the Pressure Equipment Regulations, Regulation 9:

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

		○ Name of manufacturer. ○ Country of origin. ○ Year of manufacture. ○ Manufacturer's serial number. ○ Reference number, date and edition of the health and safety standard. ○ Design pressure in units of Pascal. ○ Design temperature for both minimum and maximum in degrees Celsius. ○ Capacity in cubic metres. ○ Unique mark of an approved inspection authority as applicable; and ○ The hazard category in accordance with the requirements of SANS 340. • Nameplate size and lettering will be confirmed for each specific vessel. • The <i>Contractor</i> will cut the plate to size and engrave the lettering into then nameplate with a laser well machine and rivet the plate to the vessel in an appropriate manner. • Nameplate material: Stainless Steel, Make provision of Approximately 4m² of 2mm thick stainless-steel plate. • <i>Contractor</i> to make provision for the equivalent of 140 Nameplates. • Contractor to price for 42 000 characters (equivalent to 140 nameplates of 300 characters each).
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Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

1.Description of the service

1.1. Executive overview

This contract covers the provision of specialized maintenance services for statutory and non-statutory pressure vessels at Matla Power Station over a period of five (5) years. The services are executed on an “as-needed” basis, driven by inspection findings, operational requirements, and compliance obligations.

The primary objective of this contract is to ensure the safe, reliable, and compliant operation of pressure vessels through systematic maintenance, refurbishment, testing, and certification activities. The scope includes surface preparation, internal and external corrosion protection (coatings and/or linings), pressure testing, safety valve calibration and refurbishment, and the manufacture and installation of pressure vessel nameplates.

These activities are critical in maintaining plant integrity, extending equipment lifespan, and ensuring compliance with applicable legislation, including the Pressure Equipment Regulations (PER), Occupational Health and Safety Act (OHS Act), and relevant SANS and Eskom standards. The work is executed in accordance with approved engineering specifications, inspection standards, and quality assurance requirements.

The contract adopts a task order-based execution model under NEC3 TSC Option A, enabling flexibility in responding to varying plant conditions and maintenance priorities. Work is initiated through Task Orders issued by the Service Manager, ensuring that resources are allocated efficiently and that maintenance interventions are aligned with plant operational demands.

Key focus areas of the contract include:

- Ensuring compliance with statutory inspection and certification requirements for pressure vessels and safety valves
- Implementation of corrosion protection systems suitable for varying environmental conditions
- Execution of hydrostatic pressure testing and non-destructive examination where required
- Calibration, refurbishment, and certification of pressure relief devices
- Accurate identification and traceability through compliant nameplate manufacturing and installation

The Contractor is required to provide competent personnel, appropriate equipment, and certified processes to deliver the services in accordance with Eskom standards and industry best practices. Quality control, safety management, and environmental compliance are integral to all activities performed under this contract.

This contract supports Eskom’s maintenance philosophy by enabling proactive and corrective maintenance interventions, reducing the risk of equipment failure, and ensuring continuous, safe, and efficient power generation.

1.2 Employer’s requirements for the service

1.2.1 Scope of Services

The Contractor provides specialised maintenance and refurbishment services for statutory and non-statutory pressure vessels at Matla Power Station on an “as-needed” basis. The

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

service ensures compliance with statutory regulations, enhances equipment reliability, and supports safe plant operation.

The scope of services includes, but is not limited to:

- Surface preparation of pressure vessels for corrosion protection
- Internal corrosion protection using approved coatings and/or rubber linings
- External corrosion protection for varying environmental conditions
- Hydrostatic pressure testing of vessels
- Calibration, testing, and refurbishment of pressure relief/safety valves
- Manufacture, supply, and installation of compliant pressure vessel nameplates

These services are executed in accordance with Eskom engineering standards, applicable SANS codes, and statutory requirements.

1.2.2 Service Delivery Model (NEC3 TSC)

The contract is implemented under the NEC3 Term Service Contract using a Task Order-based approach.

- The Service Manager issues Task Orders defining the scope, location, and timing of each service activity
- The Contractor executes the works in accordance with the accepted Task Order and programme
- Activities are prioritised based on plant operational requirements and inspection outcomes
- The Contractor provides all labour, supervision, tools, equipment, and consumables required

1.2.3 Technical Requirements

All services shall comply with the latest applicable standards and specifications, including:

- Pressure Equipment Regulations (PER) under the Occupational Health and Safety Act
- Relevant SANS standards (e.g., SANS 347, SANS 10227)
- Eskom standards and specifications for corrosion protection and safety devices
- Approved Inspection and Test Plans (ITPs) and Quality Control Plans

The Contractor shall ensure that all procedures, materials, and workmanship meet the required engineering and safety standards.

1.2.4 Corrosion Protection Requirements

1.2.4.1 Internal Protection

- Application of approved coatings or rubber linings as specified
- Compliance with detailed product data sheets and approved application procedures
- Surface preparation and environmental control to ensure coating integrity

1.2.4.2 External Protection

- Application of coating systems suitable for environmental exposure conditions

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

- Coating selection aligned with temperature ranges and aggressiveness of environment
- Full compliance with Eskom corrosion protection specifications

1.2.4.3 Pressure Testing

- Hydrostatic pressure testing shall be conducted in accordance with applicable codes and standards
- Test equipment must be calibrated and certified
- Test results shall be recorded and submitted for approval
- Testing shall be witnessed where required by Eskom or an Approved Inspection Authority (AIA)

1.2.4.4 Safety Valve Calibration and Refurbishment

- Calibration and refurbishment shall be performed at approved facilities
- All safety valves shall be tested, adjusted, and certified in accordance with PER requirements
- Calibration equipment must be traceable to accredited standards
- Certificates of compliance shall be issued for all serviced valves

1.2.4.5 Nameplate Manufacturing and Installation

Nameplates shall comply with Pressure Equipment Regulations and SANS standards

Information must include:

- Manufacturer details
- Serial number and year of manufacture
- Design pressure and capacity
- Hazard classification and applicable codes

Installation shall ensure durability, visibility, and traceability

1.2.4.6 Quality Assurance and Control

The Contractor shall:

- Implement a Quality Management System aligned with ISO 9001
- Submit Inspection and Test Plans (ITPs) for approval
- Maintain full traceability of materials and workmanship
- Provide quality records, test certificates, and inspection reports

1.2.4.7 Health, Safety and Environmental Requirements

- All activities shall comply with the Occupational Health and Safety Act
- The Contractor shall develop and implement a site-specific Health and Safety Plan
- Risk assessments and method statements shall be approved prior to execution
- Environmental protection measures shall be implemented to prevent contamination

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

1.2.4.8 Personnel and Competency Requirements

The Contractor shall provide suitably qualified and experienced personnel, including:

- Certified coating inspectors (e.g., NACE / SAQCC)
- Qualified technicians for safety valve calibration
- Competent supervisors and site management personnel
- Personnel trained in pressure equipment maintenance and safety compliance

1.2.4.9 Documentation and Reporting

The Contractor shall submit:

- Method statements and work procedures
- Daily, weekly, and completion reports
- Inspection and test records
- Certificates of compliance and calibration
- As-built and maintenance records

1.2.4.10 Performance Requirements

The Contractor's performance shall be measured against the Key Performance Indicators (KPIs) attached in: **Appendix VIII**:

The Contractor's performance will be measured against the Key Performance Indicators (KPIs) defined in this schedule.

These KPIs are intended to monitor service delivery, compliance, safety, and maintenance effectiveness relating to pressure vessels.

Performance against KPIs shall be:

- Reported at the agreed frequency
- Reviewed during contract performance meetings
- Used to identify improvement actions where performance falls below target

No financial penalties or incentives are linked to these KPIs. However, persistent underperformance may trigger:

- Corrective action plans
- Increased oversight or audits

Review of service delivery arrangements in accordance with the contract

The Contractor shall:

- Execute services within agreed timeframes
- Ensure minimal disruption to plant operations
- Maintain high standards of workmanship and safety
- Achieve compliance with all technical and statutory requirements

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

1.2.4.11 Acceptance Criteria

Work will be accepted based on:

- Compliance with specifications and standards
- Successful completion of inspections and testing
- Submission of all required documentation
- Approval by the Service Manager and/or AIA

1.2.4.12 Risk and Compliance

The Contractor shall:

- Identify and manage risks associated with pressure vessel maintenance
- Ensure full compliance with statutory and Eskom requirements
- Prevent defects, failures, and unsafe conditions

Failure to comply may result in rejection of work or corrective actions.

Interpretation and terminology

The following abbreviations are used in this Service Information:

Abbreviation	Meaning given to the abbreviation
PSR	Plant safety regulations
BA	Breathing Apparatus
Ltd	Limited
BU	Business Unit
HR	Human Resources
OH & S	Occupational Health and Safety

DEFINITIONS:

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Definition:	Description:
2.1	Accreditation Authority	means the South African National Accreditation System (SANAS) es Assessment, Calibration and Good Laboratory Practice Act, 2006 (A
2.2	Authorised Person	means a person who is registered as competent within the scope of work f registered that person: a) SAQCC (CP) competent person for in service inspection b) SAQCC (IPE) inspector of pressurised equipment c) SAQCC (Gas) registered gas practitioner in the applicable field d) SAQCC (Fire) registered fire technician
2.3	Calibration of Safety Valves	Process followed to adjust a safety relief valve, for it to lift at a given set p the design pressure of the pressure equipment it protects. This action can b from the line / vessel). Butt-welded valves are normally set in situ by mea Safety Devices Standard.
2.4	Certificate of Conformance	means a written declaration of conformance to the Pressure Equipment Re a) For Regulation 17 a Certificate of Conformance (CoC) is issued by a Gas equipment conform to the PER. Where the gas practitioner is also the man b) Certificate of manufacture means written declaration of conform relevant health and safety standard(s) and to the relevant national le
2.5	Certificate of Manufacture	A written declaration of conformance by the Manufacturer of conformance Act) and Pressure Equipment Regulations as defined in OHS Act for pressu
2.6	Conformity Assessment	Process undertaken by the Manufacturer and / or the Importer verified by th to demonstrate that the statutory requirements are satisfied.
2.7	Construction	includes materials, design, fabrication, modification, repair, installati
2.8	Corrective Maintenance	Maintenance carried out after fault recognition and intended to put an
2.9	Critical Valves	Valves that effect the safe operation of pressurised equipment, such
2.10	Design Pressure	means the gauge pressure used in the design formulae to determine the dim a) When equipment is subjected primarily to static head and the applied p kPa, then such equipment is excluded from the PER. b) PER does not regulate external pressure (vacuum)
2.11	Design Temperature	means the temperature used in the design formulae to determine equipment;
2.12	Equipment	Individual item that is part of a system, equipment is comprised of an vessels, pressure relief devices, piping, boilers, and heaters.
2.13	Fluid	means gases, liquids, vapours in pure phase and mixtures thereof a

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Definition:	Description:
2.14	Gas	<i>means gases, liquefied gases, gases dissolved under pressure, vapours, and greater than 50 kPa above normal atmospheric pressure.</i> <i>a) For example: Liquid water at 300°C at elevated pressure is defined as a gas.</i> <i>b) When containment is lost and the fluid changes from liquid to gas.</i>
2.15	Health and Safety Standard (Code of Construction)	Standard that is approved in terms of Occupational Health and Safety Act which contains requirements for the design, manufacture, repairs, modification and maintenance of pressure equipment.
2.16	Importer	The Importer is an entity that imports pressure equipment for use in the Republic of South Africa. The Importer must be a juristic person in RSA and the entity shall assume liability for the equipment. The Importer must formally declare conformance to the PER in the form of the Import Declaration. The Importer must import pressure equipment Hazard category I to category IV. For steam generators, pressure vessels and assemblies the AIA(m) must be issued for category II and higher and countersign such document (as applicable) for category I to IV. The Importer shall ensure that all pressure equipment has been categorised in terms of the PED does not need to be re-categorised. Importer shall ensure that a certificate of manufacture is issued and comply with regulation 4.3. The Importer shall take all reasonable steps as specified in the regulation to be adequately addressed. Importer shall ensure that the foreign inspection and certification body is accredited in terms of regulation 7.3(b) with respect to ISO 17020, 17021 or higher accreditation and complies with the Health and Safety Standard.
2.17	Inspection	An examination or measurement to verify whether an item or activity complies with the requirements of the authority and relevant Health and Safety Standard.
2.18	Maintenance	Combination of all technical, administrative, and managerial actions necessary to maintain or restore it to, a state in which it can perform the required function.
2.19	Manufacturer	Any person who has overall control and is responsible for the conformity of the pressure equipment in the Republic of South Africa.
2.20	Manufacturer's Data Book	An organised collection of Manufacturer's design, AIA(m) verification records, inspection / test records for the new equipment components and / or assemblies.
2.21	Modification	<i>means any change to the original design conditions of pressure equipment, which could affect the integrity of the pressure equipment, and</i> <i>a) Component replacement with different material types is deemed a modification.</i>

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Definition:	Description:
		b) Component replacement with different material grades or the modification, depending on the rules and requirements of the applicable safety standards.
2.22	Pressure Accessory	<i>means devices with an operation function having pressure bearing housing</i> a) Some examples included but are not limited to: pressure gauges, valves, strainers, bellows, flow meter, magnetic level indicators and
2.23	Pressure Equipment	means a steam generator, pressure vessel, piping, pressure accessories and fire extinguisher and includes, but is not limited to an accumulator
2.24	Pressure Vessel	<i>means a housing designed and manufactured to contain a fluid under a design pressure</i> a) Includes but is not limited to storage vessels, beer kegs, plate heat exchangers, tankers, intermediate bulk containers (ICB's), ISO containers, accumulators, gas containers, fired heaters, hermetic compressors, etc. but excludes vessels which have their own definitions.
2.25	Preventative Maintenance	Maintenance carried out at predetermined intervals or according to a schedule of failure or the degradation of the functioning of an item.
2.26	Repair	<i>means restoration to original design standard by the application of heat treatment, expanded tubes, and in the case of non-metallic equipment it means the application of thermo-set;</i> a) Component replacement with different material grades or the replacement where not changes to the original design are affected. The repair shall comply with the applicable health and safety standard or in-service health and safety
2.27	Repairer / Modifier	<i>An entity that performs any work during the in-service period of pressure equipment. The entity is deemed to be the Manufacturer for all in-service activities as defined in the applicable health and safety standard or in-service health and safety standard. A certificate repair / modification (as applicable) shall be issued by the Repairer / Modifier.</i>
2.28	Safety Accessory	<i>means a device designed to protect pressure equipment.</i> a) For example: pressure relief valves or bursting disks b) This excludes non-pressurised safety accessories
2.29	SANS 10227	means the Standard Specification for the criteria for the operation and maintenance of the Pressure Equipment Regulations, SANS10227, published by the

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Definition:	Description:
2.30	SANS 10228	means the Standard Specification for the identification and classification of steel, published by the South African Bureau of Standards;
2.31	SANS 347	means the Standard Specification for categorisation and conformity testing of steel, SANS 347, published by the South African Bureau of Standards;
2.32	The Act	means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

Management strategy and start up.

The *Contractor's* plan for the service

List technical reporting and scheduling requirements which are to be incorporated into the *Contractor's* plan.

The method of carrying out particular items of work, timing, plan, task order, supplier to provide the technical reporting certificates to the Contracts Manager.

Management meetings:

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

Title and purpose	Approximate time & interval	Location	Attendance by:
Risk register and compensation events	Discussions to take place as soon as a risk is notified	Matla Power Station	Contractor & Contract Manager
Daily Toolbox meeting	Week days 07:15 – 08:00	Workshop	Contractor & Site Manager
Plant focus meeting	Week days 08:00 – 09:30	Production Board room or MS Teams	Site Manager & Outside plant Team
Overall contract progress and feedback	Once a Months in Matla Power Station	Office of contract Manager in Matla Power Station	<i>Contractor</i> & Contract Manager
Main SHEQ Meeting	Once a Month	MS Teams or Thandanani	<i>Contract Manager</i> & <i>Safety Manager</i>
Maintenance Monthly SHEQ Meeting	Once a Month	TBC	<i>Contract Manager</i> & <i>Safety Manager</i>
Environmental monthly meeting.	Once a Month	TBC	<i>Contract Manager</i> & <i>Site Manager</i>
Contractors Meeting with the GM	Once a Month	Thandanani	<i>Contract Manager</i> and <i>Site Manager</i>

Meetings of a specialist nature may be convened as specified elsewhere in this Service Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *service*. Records of these meetings shall be submitted to the *Service 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

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

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.

Contractor's management, supervision and key people

N/A

Provision of bonds and guarantees

N/A

Documentation control:

All Communications will be filed and kept on site as it is crucial to have the correct communication structures.

Invoicing and payment

Within one week of receiving a payment certificate from the *Service 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 *Service Manager's* payment certificate. She/he can submit the invoice to Eskom account email below

The *Contractor* shall address the tax invoice to

Eskom Holdings SOC Ltd
Reg. No. 2002/015527/30
Accounts Payable
Email to: Invoiceseskomlocal@eskom.co.za

and include on each invoice the following information:

Name and address of the *Contractor* and the *Service 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)

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

Contract change management

This section is intended to deal with any additional requirements to the compensation event clauses in section 6 of the core clauses; such as the use of standard forms. Not the same thing as documentation control.

Records of Defined Cost to be kept by the Contractor

N/A – Option A Applies.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

Insurance provided by the *Employer*

N/A

Training workshops and technology transfer

N/A

Design and supply of Equipment

N/A

Things provided at the end of the *service period* for the *Employer’s* use

Equipment

Information and other things

N/A

Management of work done by Task Order

A Task is work within the *service* which the *Service Manager* may instruct the *Contractor* to carry out within a stated period of time.

A signed Task Order is the *Service Manager’s* instruction to carry out a Task.

Task Completion is when the *Contractor* has done all the work in the Task and corrected Defects which would have prevented the *Employer* or Others from using the Affected Property and Others from doing their work.

Task Completion Date is the date for completion stated in the Task Order unless later changed in accordance with this contract.

A Task Order includes:

- A detailed description of the work in the Task
- A priced list of items of work in the Task in which items taken from the Price List are identified.
- The starting and completion dates for the Task
- Conditions of the *service agreement* is in accordance with the Task Order issued

No Task Order is issued after the end of the service period.

Work will not commence on site without the *Contractor* receiving a signed detailed task order that has been agreed upon by the *Service Manager* and the *Contractor*.

Health and safety, the environment and quality assurance

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 (Refer to 1.4)
- All QCP’s to be submitted to Engineering, AIA and Quality for approval prior to outage/project or maintenance work commencement.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION
1.1	Occupational Health and Safety	- Health and safety file should be approved by Safety risk management department 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 standards requirements. BUY QUIET: All stakeholders are encouraged to purchase or rent quieter machinery and equipment, and tools to reduce worker noise exposure, contribute towards compliance to OHSA noise exposure limits and ultimately reduce the risk of noise induced hearing loss.
1.2	Environmental Management.	- 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 Management 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 sheet (Annexure C: OMOP 4402) of designated area. - EMS file based on ISO14001 will be required.
1.3	Quality Management	- The contractor/executioner of work will be responsible for drawing up a quality management plan and documentation and this must be approved by engineering and authorised by the Department before commencing with the work. - 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 scope approved by quality - The contractor is subjected to quality auditing at any point in time during execution of scope
1.4	Documents and Records Management	- The documents and records management work instruction 557-4418 shall be adhered to in managing business documents and records. - Pressure Equipment Records:

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

		○ Service providers shall submit all final inspection, test, repair, and modification records on statutory pressure equipment to the relevant plant engineering representative within 21 days of completion of the <i>works</i>. ○ The Engineering representative shall ensure that all inspection, test, repair, and modification records related to statutory pressure equipment as received from the service provider is reviewed and approved / signed-off by the relevant stakeholders. ○ The following stakeholders must review and approve records related to statutory pressure equipment in respect to this scope of work: ▪ The service provider's operator (e.g. SAQCC qualified applications engineer) ▪ The service provider's authoriser (Evaluator / Supervisor). ▪ Eskom's Representative / Client (The System Engineer). ▪ Authorised Inspection Authority Representative (AIA). • The Engineering representative shall submit the approved hard copies of all inspection, test, repair, and modification records to the Document Control for registration no later than two months after the completion of the inspection, test, repair. • Each engineering department is accountable for compliance with records control instruction regarding the management of department specific records. The engineering representative which receives pressure equipment records from service providers shall be responsible for ensuring that all relevant data is supplied, the records are legitimate, the records are submitted to the Eskom Documentation Centre within the stipulated timeframe. • Contents of Records: ○ All records shall be completed in full, identifiable, item (where necessary) and product and the contract/order to which they refer. ○ Records shall be signed if a signature is required, unless the records are computerised, and dated by the originator. ○ Pressure equipment and RBI records, shall as a minimum, include the following: ▪ Unique identification of the item or part of item inspected. ▪ Unique identification of the calibration and reference blocks used. ▪ Unique identification of the equipment and consumable numbers. ▪ Personnel qualification levels. ▪ Limitation encountered. ▪ Recording criteria. ▪ Sizing and methodology used. ▪ All flaws detected and the evaluation of such. ▪ The method or procedure and acceptance codes and standards used (e.g. ASME V Article 6 and ASME VIII). ▪ Supplier operator's name and signature. ▪ Date of inspection ▪ Supplier's authorization counter signature.
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Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

		▪ Eskom Representative's signature. ▪ Authorised Inspection Authority's signature. ○ The content of records shall provide evidence that: ▪ The requirements of ISO 9001, 14001 and 45001 are met. ▪ The product meets contractual requirements. ▪ Personnel are qualified and trained to the appropriate level. ▪ Corrective actions are implemented and effective. ○ The document registration form will be maintained at documentation centre as a proof for all records received for filing or archiving. ○ All records shall be legible, which is a prime requirement and applies to records and copies.
1.5	Inputs from other departments	Works provided by the Contractor will be subject to approval by the on-site AIA and Engineering representatives, prior to acceptance.
1.6	Commissioning reference	• Prior to Commissioning, a Release Note or Certificate of Continuance must be issued by the AIA representative.

Health and safety risk management

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

1. Safety

1. The *Contractor* must ensure that the works complies with the OHS Act 85 of 1993, with specific reference to section 10 as well as the construction regulations (GNR 1010 of 18 July 2003).
2. The *Contractor* will provide all SABS Approved Personal Protective Equipment to its employee's as identified in the Risk Assessment
3. The *Contractor* is responsible for procurement of PPE and equipment in accordance with the OHS act and site- specific requirements, including the use thereof as necessary.
4. The *Contractor* shall provide and demonstrate to the *Employer* a suitable and sufficiently documented health and safety plan, based on the *Employer's* documented health and safety specifications, which shall be applied from the date of commencement of and for the duration of the construction work. The plans will be approved by the *Employer* and Matla Power Station Safety Officer.
5. The *Contractor* shall ensure that all the documents required by Safety check list are in place within 14 days from date of contract awards. No Access will be granted to site if the required documents are not submitted.
6. The *Contractor* will provide all relevant training records and the total of years' experience in his/her possession to the *Employer* to verify the competency of all the key personnel for e.g. Trade Test Certificates for Artisans, Qualifications for Site Supervisors, Safety Officers.
7. The *Contractors* employees will be required to abide by the cardinal rules on site.

2. Risk assessments

1. Site risk assessments to be conducted by the *Contractor* prior to each event as per the current approved risk assessment method, thus to ensure a healthy and safe environment.
Note: Should be available on request.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

2. The *Contractor* must submit a Risk Management Plan and Control Process within 14 days from date of contract award, detailing their risk management methodology. Such methodology must be aligned to the Generation Risk Management model. Such methodology shall accommodate the Risk Assessment; Risk Planning, Risk Handling and Risk Monitoring components.
3. The following matters will be included in the Risk Register
 - Matters as highlighted by 240-30008949 (Table 1) check list
 - Compliance with the cardinal rules/lifesaving rules 32-421
 - Pre-job debrief, risk assessment and on job observations

Environmental constraints and management

It should always be noted that Matla Power Station is ISO14001 certified and therefore promotes Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development. All activities taking place within Matla Power Station must consider section 28 of the National Environmental Management Act (107 of 1998) which makes provision for the duty of care approach. The contractor's team must commit to review and to continually improve environmental management, with the objective of improving overall environmental performance. The *Contractor* must consult with Matla Environmental section on a regular basis for on-going assistance and advices.

Quality assurance requirements

1. The *Employer* in the process of implementing an ISO 9001:2008 series, therefore the *Contractor* will be expected to implement a quality system and maintain the quality system until the completion of this contract. The *Contractor* will comply with the provisions of the ISO9001:2008 and 14000 series
2. The *Contractor* ensures that all plant and materials for the works are to the standard and quality accepted by the *Employer* and ensures that they are suitable for the purpose intended by the manufacturer.
3. The *Contractor* provides a Quality Control Plan (QCP) withhold points for the *Employer* for approval 2 weeks prior to commencement of work.
4. No *Contractor* shall appoint a construction safety officer to assist in the control of quality related aspects on the site unless the *Contractor* is reasonably satisfied that the construction quality controller has the necessary competencies and qualifications.
5. The *Contractor* will provide all relevant training records and the total of years' experience in the *Contractor's* possession to the *Employer* to verify the competency of all the key personnel in terms of Hazmat.

The Contract's Manager has the right to stop the *Contractor's* work activities which, in the opinion of Contract Manager, does not meet the requirements of the system and will have a detrimental effect on plant performance. The *Contractor* may only continue with work activities when all deficiencies have been corrected to the Contract Manager's satisfaction. The *Contractor* shall have no claim against the *Employer* in respect of delay due to the above.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

Procurement

People

Minimum requirements of people employed

It is the Contractor's sole responsibility to ensure all its employees have permits to perform work in the Republic of South Africa.

BBBEE and preferencing scheme

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

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

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

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

Supplier Development and Localisation

a. Corporate Social Investment – CSI (Not a weighted criterion)

The tenderer is required to submit a CSI Proposal to a value of at least 2% of the contract value as a direct benefit to the Local to site communities.

Criteria	Eskom's Target (%)	Tenderer's Proposal (%)
CSI	2%	

Eskom will furnish the number of approved CSI projects to be executed by the contractor to the successful tenderer after the contract award. Once CSI project execution is complete, the handover event will be handled by Eskom.

Section 1: Specific Goals

A maximum of 10/20 points may be awarded to a tenderer for the specific goal specified for the tender. The points scored for the specific goal must be added to the points scored for price and the total must be rounded off to the nearest two decimal places. Subject to section 2(1)(f) of the Preferential Procurement Policy Framework Act, the contract must be awarded to the tenderer scoring the highest points.

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

NB: The following documents are required to claim preference points,

- Valid B-BBEE certificate issued by a SANAS accredited verification agency / sworn affidavit / CIPS affidavit
- Proof of ownership / shareholding (preferably CIPC documentation) inclusive of shareholding breakdown
- Certified ID copies of shareholder(s)
- Proof of Disability (where applicable)

Tenderer failing to provide documentation for the allocation of preference points will not be disqualified, but'

- May only score point out of 90/80 for price
- Scores 0 points out of 10/20 for specific goals

Section 2: Objective Criteria

The inclusion of objective criteria is not mandatory but a condition for contract award. If the tenderer does not meet objective criteria; it may lead to the second-ranked tenderer being recommended for award.

2.1 Mandatory Subcontracting as condition of award

Tenderers will upon negotiations subcontract some of the works to the following designated groups:

- an EME or QSE which is 51% owned by black people

NOTE 2: Tenderers shall submit the following mandatory returnable for Subcontracting:

- Letter of intent to subcontract

Potential scope to be subcontracted and/or outsourced:

- Safety PPE
- Medical Clearance
- Accommodation
- LDV's
- HWH transportation of employees
- +/- 108 resources
- Tools and equipment
- Consumables

Section 3: SDL&I Undertaking

Section 4: SD&L Penalty



Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

Eskom will apply a penalty of 2.5% of the Contract Value for failure to meet SDL&I obligations. For the duration of the contract, Eskom will retain 2.5% of every invoice (excluding VAT) as security for the fulfilment of all SDL&I Obligations. The retained amounts shall only be released to the Contractor upon fulfilment of all SDL&I obligations at the end of the contract.

Section 5: Reporting and Monitoring

- The suppliers shall on a quarterly basis submit a report to Eskom in accordance with Data Collection Template on their compliance with the SDL&I obligations described above.
- Eskom shall review the SDL&I reports submitted by the suppliers within 30 (thirty) days of receipt of the reports and notify the suppliers in writing if their SDL&I obligations have not been met.
- Upon notification by Eskom that the suppliers have not met their SDL&I obligations, the suppliers shall be required to implement corrective measures to meet those SDL&I obligations before the commencement of the following report, failing which Retention clauses shall be invoked.
- Every contract shall be accompanied by the SDL&I Implementation Schedule, which must be completed by the suppliers and returned to SDL&I representative for acceptance 28 days after contract award. This will be used as a reference document for monitoring, measuring and reporting on the supplier's progress in delivering on their stated SDL&I commitments

Subcontracting

Preferred subcontractors

N/A

Subcontract documentation, and assessment of subcontract tenders

N/A

Limitations on subcontracting

N/A

Attendance on subcontractors

N/A

Plant and Materials

Specifications

N/A

Correction of defects

N/A

***Contractor's* procurement of Plant and Materials**

N/A

Tests and inspections before delivery

The contractor will service, inspect and test fire fighting equipment as per the scope of work prior to delivery.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

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

N/A

Cataloguing requirements by the *Contractor*

N/A

Working on the Affected Property

The working hours is from 07:00 to 16:00 from Monday to Friday unless in an emergency. the contractor should be accompanied by Eskom employee if is going inside the plant.

***Employer's* site entry and security control, permits, and site regulations**

The contractor will be required to go for induction and obtain gas access to the station. The contractor must adhere to the Eskom cardinal rule, speed limit on site.

People restrictions, hours of work, conduct and records

The working hours is from 07:00 to 16:15 from Monday to Thursday, 07:00 – 12h00 Friday unless for emergency. the contractor should be accompanied by Eskom employee if is going inside the plant.

Health and safety facilities on the Affected Property

Contractor must comply to Eskom' life-saving rules:

Five Life Saving Rules have been developed that will apply to all Eskom employees, agents, consultants and contractors.

Rule 1: Open, Isolate, Test, Earth, Bond, And / Or Insulate before touch - that is any plant operating above 1 000 V.

Rule 2: Hook up at heights - no person may work at height where there is a risk of falling.

Rule 3: Buckle up – no person may drive any vehicle on Eskom business and/or on Eskom premises: unless the driver and all passengers are wearing seat belts.

Rule 4: Be sober (no person is allowed to work under the influence of drugs and alcohol.)

Rule 5: Use a permit to work – where an authorization limitation exists, no person shall work without the required permit to work.

Environmental controls, fauna & flora

N/A

Cooperating with and obtaining acceptance of Others

N/A

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

Records of *Contractor's* Equipment

N/A

Equipment provided by the *Employer*

N/A

Site services and facilities

Provided by the *Employer*

The employer will provide the contractor with tap water and ablution facility on site

Provided by the *Contractor*

N/A

Control of noise, dust, water and waste

N/A

Hook ups to existing works

N/A

Tests and inspections

Description of tests and inspections

As per the scope of work.

Materials facilities and samples for tests and inspections

As per the scope of work.

Communication

The *Contractor* shall address all communications (after contract award) including tele faximilies to:

Service Manager
Matla Power Station
Private Bag X5012
Kriel
2271

Att :
Tel :
Cell :
Fax :
E-Mail :

All communications from the *Contractor* shall carry the Enquiry Number or Contract Number after Contract Award, as well as the Title of the Works. All communication by the *Contractors* shall go through the buyer.

They shall be headed with the subject of the communications, and be numbered sequentially on the basis of the subject of the communication.

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No recruiting is allowed on Eskom property. (Eskom property includes the area outside the main security gate).

List of drawings

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.

Drawing number	Revision	Title
N/A	N/A	N/A

Appendices

1 APPENDIX I: OUTSIDE PLANT VESSELS DESIGN INFORMATION

Appendix I provides the design information for a list of vessels on the outside plant that may require surface preparation, internal and/or external corrosion protection with coatings and/or or rubber lining, depending on inspection findings. NOTE: This pressure vessels list is live document and updated as required. Additional vessels may be added as and when needed.

No.	Vessel Description:	Design Standard:	Quantity:	Serial No's:	Location:	Shell Design Temperature (°C):	Shell Design Pressure (kPa):	In-Service Hydrostatic Test Pressure (kPa):	Design Volume
1	Diesel Generator Air Receivers	ASME VIII 1977	8	IA 825 IA 7088 IA 3024 IA 5305 IA 5306 IA 7089 IA 7092 IA 7093	Unit 1 Unit 1 Unit 3 Unit 4 Unit 4 Unit 5 Unit 6 Unit 6	40.000	4000.000	5000.000	0.1650
2	Diesel Generator Air Receivers	PD5500 Cat.2 - 2006	2	2009-0320CDR-002	Unit 2 Unit 2	40.000	6000.000	7500.000	0.1920

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Vessel Description:	Design Standard:	Quantity:	Serial No's:	Location:	Shell Design Temperature (°C):	Shell Design Pressure (kPa):	In-Service Hydrostatic Test Pressure (kPa):	Design Volume
				2009-0320CDR-001					
3	Diesel Generator Air Receivers	PD5500 Cat.2 - 2006	2	19339 19340	Unit 3 Unit 5	40.000	6000.000	7500.000	0.1920
4	Generator 20kV Breaker Air Receivers (20MPa)	Lloyds Rules, Recertified to PD5500 - 2009	10	201713 201714 201958 201712 201954 201955 201710 201959 201957 201711	Unit 1 Unit 1 Unit 2 Unit 3 Unit 4 Unit 4 Unit 4 Unit 4 Unit 5 Unit 6	50.000	22000.000	27500.000	0.3000
5	Generator 20kV Breaker Air Receivers (20MPa)	Lloyds Rules, Recertified to PD5500 - 2009	2	201709 201956	Unit 1 Unit 1	50.000	22000.000	27500.000	0.3000
6	Generator 20kV Breaker Air Receivers (15MPa)	Lloyds Rules	4	8407/1/11/76 75/47011V 75/47006V 8407/1/14/76	Unit 1 Unit 1 Unit 4 Unit 4	80.000	21574.600	26968.250	0.0470
7	Unitized H2 Dryers	ASME VIII Div.1 - 2010/A'11	12	Unknown Unknown Unknown Unknown F194942 F194943 F192957 F192958 F194946 F194947 55466-A 55466-B	Unit 1 Unit 1 Unit 2 Unit 2 Unit 3 Unit 3 Unit 4 Unit 4 Unit 5 Unit 5 Unit 6 Unit 6	232.222	1034.214	1292.767	0.0275
8	Unitized Air Dryers	ASME VIII Div.1 - 2010	12	Unknown Unknown Unknown Unknown 712406 712410 712411 712414 712407 712408 719198 719200	Unit 1 Unit 1 Unit 2 Unit 2 Unit 3 Unit 3 Unit 4 Unit 4 Unit 5 Unit 5 Unit 6 Unit 6	232.222	1378.951	1723.689	0.0387
9	Hydrogen Storage Vessels	BS5500 - 1976	3	G47/1 G47/2 G47/3	H2 Plant	40.000	3030.000	3787.500	19.2570
10	Diesel / Standby Compressor 1 Desiccant Dryers	RSA/CIF-81-2001A2001	2	ILP 4565 ILP 4572	LP Pump House (Internal)	50.000	2000.000	2500.000	0.6900
11	Diesel / Standby Compressor 2 Desiccant Dryers	ASME VIII Div.1 - 1980	2	1413 1414	LP Pump House (Internal)	50.000	700.000	875.000	0.5000
12	Diesel / Standby Compressor 2 After Filter (Tegnon)	ASME VIII Div.1	1	1356	LP Pump House (Internal)	50.000	1000.000	1250.000	0.0600

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Vessel Description:	Design Standard:	Quantity:	Serial No's:	Location:	Shell Design Temperature (°C):	Shell Design Pressure (kPa):	In-Service Hydrostatic Test Pressure (kPa):	Design Volume
13	Atlas Copco Compressor Filter 1	ASME VIII Div.1	1	ARF 513654	LP Pump House (Internal)	150.000	1600.000	2000.000	0.0360
14	Atlas Copco Compressor Filter 2	EN 286: Part 1 - 2001	1	ARF 511096	LP Pump House (Internal)	120.000	1600.000	2000.000	0.0365
15	Atlas Copco Compressor Filter 3	ASME VIII Div.1	1	ARF 514150	LP Pump House (Internal)	150.000	1600.000	2000.000	0.0360
16	Centac Compressor Desiccant Dryers (1000kPa)	RSA/CIF 81 9500	4	ILP 5819 ILP 5820 ILP 5576 ILP 5577	LP Pump House (Internal)	50.000	1000.000	1250.000	1.2000
	Centac Compressor Desiccant Dryers (1000kPa, Galvanized)	RSA/CIF 81 9500	2	ILP 5574 ILP 5575	LP Pump House (Internal)	50.000	1000.000	1250.000	1.2000
17	Centac Compressor Desiccant Dryers (De-Rated)	ASME VIII Div.1 2010	2	ILP 5818 ILP 5821	LP Pump House (Internal)	50.000	735.000	918.750	1.2000
18	Centac Compressor 1 After Filter (Tegnon)	Not Available	1	Not Available	LP Pump House (Internal)	50.000	1200.000	1500.000	0.0600
19	Centac Compressor 2 After Filter (Tegnon)	RSA/CIF-81-07A08	1	26057	LP Pump House (Internal)	50.000	1200.000	1500.000	0.0600
20	Centac Compressor 3 After Filter (Zander)	PD5500 Cat.3 - 2011	1	22928	LP Pump House (Internal)	50.000	1600.000	2000.000	0.0230
21	Control Air Receivers	BS 1515 Part I - 1965 + Rev	4	A9566-1 A9566-2 A9566-3 A9566-4	LP Pump House (External)	50.000	720.000	900.000	23.0000
22	Service Air Receivers	BS 1515 Part I - 1965 + Rev	1	A9567	LP Pump House (External)	50.000	720.000	900.000	23.0000
23	Hydrobin Air Receivers	RSA-CIF-81-95A96	4	13437 11224 13652 13651	Hydrobins	50.000	750.000	937.500	0.1500
24	Wet Ash Slurry Receiver	ASME VIII 1989 Div.1	1	KE360-0115	Slurry Plant	100.000	700.000	875.000	3.2300
25	Dust Conveying Centac After Coolers	RSA/CIF 8-1 2001	5	354/800/1 354/800/2 354/800/3 354/800/4 354/800/5	Blower House (External)	65.000	550.000	687.500	0.3300
26	Dust Conveying Centac After Filters (Dryer Inlets)	RSA/CIF 81 2007/A2008	5	42472 42103 43091 42593 41593	Blower House (External)	50.000	1000.000	1250.000	0.2210
27	Dust Conveying Centac After Filters (Dryer Outlets)	RSA/CI/OHSA - 8.1-2017	5	32707 32709 32710 32711 32708	Blower House (External)	100.000	1000.000	1250.000	0.2210

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Vessel Description:	Design Standard:	Quantity:	Serial No's:	Location:	Shell Design Temperature (°C):	Shell Design Pressure (kPa):	In-Service Hydrostatic Test Pressure (kPa):	Design Volume
28	Dust Plant Instrument Air Dryer IR D13500IN (External)	Not Available	1	2200181475	Blower House (External)	65.000	1200.000	1500.000	0.2950
29	Dust Plant Instrument Air Dryer Filter (External)	DGRL 97/23/E6 - EN13445	1	110695/06	Blower House (External)	250.000	1600.000	2000.000	0.2000
30	Dust Plant Instrument Air Dryer Cooler IR (External)	AD 2000	1	398239850001	Blower House (External)	65.000	900.000	1125.000	0.3300
31	Dust Plant Instrument Air Desiccant Dryers (Inside)	EN 13445 - 2009	2	130850/01 130850/02	Blower House (Internal)	250.000	1200.000	1500.000	1.7500
32	Dust Plant Instrument Air Filters 1 - 3 (Inside)	PED 97/23 ED EN 13445 (2009)	3	130452/08 130452/09 130452/10	Blower House (Internal)	250.000	1600.000	2000.000	0.1100
33	Dust Plant Control Air Receiver U1	RSA/CIF 81-89A89	1	ILP 1852	Unit 1 Dust Plant	50.000	760.000	950.000	2.5800
34	Dust Plant Control Air Receiver U4	RSA/Ci/OHSA-8-1-10A11	1	AG 1884	Unit 4 Dust Plant	100.000	700.000	875.000	2.0000
35	Dust Plant Control Air Receiver U5	RSA/Ci/OHSA-8-1-10A11	1	AH 1883	Unit 5 Dust Plant	100.000	700.000	875.000	2.0000
36	Dust Plant Control Air Receiver U6	RSA/CIF 81-10A00	1	AG 9921	Unit 6 Dust Plant	100.000	700.000	875.000	2.0000
37	North Water Treatment Plant Air Receiver	BS 5500 1979	1	K046	North Water Treatment Plant	50.000	720.000	900.000	20.0000
38	South Water Treatment Plant Air Receiver	BS 1515 Part I - 1965 + Rev	1	A9568	South Water Treatment Plant	50.000	720.000	900.000	23.0000
39	Ammonium Hydroxide Re-use Tank	BS 1515	1	515	South Water Treatment Plant	40.000	185.000	231.250	22.0000
40	Caustic Bulk Storage Vessel No.1 (G001)	BS 1515 Part I - 1965	1	504	South Water Treatment Plant	50.000	200.000	250.000	40.0000
41	Caustic Bulk Storage Vessel No.2 (G002)	BS 1515 Part I - 1965	1	505	South Water Treatment Plant	50.000	200.000	250.000	40.0000
42	Caustic Re-use Tank	BS 1515 Part I - 1965	1	495	South Water Treatment Plant	60.000	185.000	231.250	7.4000
43	Hot Water Tank No.1 (G002)	BS 1515 Part I - 1965	1	506	South Water Treatment Plant	120.000	500.000	625.000	14.3000
44	Hot Water Tank No.2 (G001)	BS 1515 Part I - 1965	1	507	South Water Treatment Plant	120.000	500.000	625.000	6.5000
45	Sulphuric Acid Re-Use Tank	BS 1515 Part I - 1965	1	520	South Water Treatment Plant	50.000	185.000	231.250	9.8000

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Vessel Description:	Design Standard:	Quantity:	Serial No's:	Location:	Shell Design Temperature (°C):	Shell Design Pressure (kPa):	In-Service Hydrostatic Test Pressure (kPa):	Design Volume
46	Sulphuric Acid Bulk Storage Vessel No.1 South	BS 1515 Part I - 1965	1	509	South Water Treatment Plant	50.000	170.000	212.500	22.0000
47	Sulphuric Acid Bulk Storage Vessel No.2 South	BS 1515 Part I - 1965	1	508	South Water Treatment Plant	50.000	170.000	212.500	22.0000
48	Sulphuric Acid Bulk Storage Vessel North	BS 1515 Part I - 1965	1	8437	North Water Treatment Plant	50.000	268.000	335.000	22.0000
49	Portable Air Receiver for Plater Shop	Not Available	1	500779/061	Suspect this to be a rented compressor trailer	N/A	N/A	N/A	N/A
50	Portable Compressors with Receiver Model CQ092X	CODAP Ed. 2010	4	474 100169 818 85926	Air Conditioning Central Tool Store Fire Station PTM	100.000	1100.000	1375.000	0.0900
51	Portable Compressors with Receiver Model NN200X	CODAP Ed. 2000	4	85918 63952 L017440- 85LZ309 L017868- 85LZ309	Garage Horticulture Sewage Plant (New) Sewage Plant (New)	100.000	1100.000	1375.000	0.2000
52	Portable Compressors with Receiver Model NN270X	CODAP Ed. 2000	3	41009 40972 40985	Garage MMD Fitters MMD Welders	100.000	1100.000	1375.000	0.2700
53	Portable Compressor with Receiver Model 5H500	CODAP Ed. 2000	1	15963	MMD Welders	120.000	1100.000	1375.000	0.5000
54	Portable Air Receiver for Welding Shop	RSA/CI/OHSA81-2013	1	ITL 2896	Welding Shop	40.000	1400.000	1750.000	0.5000
55	Portable Compressors with Receiver Model NF200X	CODAP Ed. 2000	2	68018 68023	Sewage Plant (Old) Sewage Plant (Old)	100.000	1100.000	1375.000	0.2000
TOTAL NO. VESSELS:			139						

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

2 APPENDIX II: OUTSIDE PLANT VESSEL SURFACE AREAS AND VOLUMES

Appendix II provides the calculated / approximated inner and outer surface areas as well as the volumes for the vessels located on the outside plant, which may require surface preparation, internal and/or external corrosion protection with coatings and/or rubber lining depending on inspection findings as needed basis.

No.	Vessel Description:	Quantity:	Shell Length (mm):	Shell OD (mm):	Shell Nominal Wall (mm):	Shell Corr. Allow. (mm):	Head Design:	Head Nominal Wall (mm):	Head Wall A/F (mm):	Head Corr. Allow. (mm):	Calc. Volume per Vessel (m³):
1	Diesel Generator Air Receivers	8	1271.000	406.400	9.530	1.000	2:1 Semi Ellipsoidal	9.520	Not Available	1.000	0.165
2	Diesel Generator Air Receivers	2	1500.000	406.400	9.530	1.000	2:1 Semi Ellipsoidal	9.520	Not Available	1.000	0.192
3	Diesel Generator Air Receivers	2	1500.000	406.400	9.530	1.000	2:1 Semi Ellipsoidal	9.520	Not Available	1.000	0.192
4	Generator 20kV Breaker Air Receivers (20MPa)	10	1670.000	521.000	30.000	0.000	Ellipsoidal Cap	20.000	15.000	0.000	0.319
5	Generator 20kV Breaker Air Receivers (20MPa)	2	1550.000	523.550	33.000	0.000	Ellipsoidal Cap	20.000	15.000	0.000	0.296
6	Generator 20kV Breaker Air Receivers (15MPa)	4	1321.000	229.000	9.000	0.000	Hemispherical	15.000	9.000	0.000	0.051
7	Unitized H2 Dryers	12	1549.400	171.450	7.112	1.600	Flat Covers	25,4 (Top) 9,4234 (Bottom)	N/A	1.600	0.029
8	Unitized Air Dryers	12	1193.800	203.200	2.692	0.000	2:1 Semi Ellipsoidal	2.692	2.388	0.000	0.039
9	Hydrogen Storage Vessels	3	6930.000	1878.000	25.000	1.600	2:1 Semi Ellipsoidal	28.000	25.000	1.600	19.787
10	Diesel / Standby Compressor 1 Desiccant Dryers	2	1880.000	662.000	8.000	0.000	2:1 Semi Ellipsoidal	8.000	6.400	0.000	0.687
11	Diesel / Standby Compressor 2 Desiccant Dryers	2	1800.000	580.000	6.000	Not Available	2:1 Semi Ellipsoidal	6.000	4.500	Not Available	0.504
12	Diesel / Standby Compressor 2 After Filter (Tegnon)	1	1200.000	260.000	5.000	Not Available	2:1 Semi Ellipsoidal & Flanged	5.000	Not Available	Not Available	0.061
13	Atlas Copco Compressor Filter 1	1	1000.000	212.000	2.000	Not Available	2:1 Semi Ellipsoidal	2.000	Not Available	Not Available	0.036
14	Atlas Copco Compressor Filter 2	1	1000.000	212.000	2.000	Not Available	2:1 Semi Ellipsoidal	2.000	Not Available	Not Available	0.036
15	Atlas Copco Compressor Filter 3	1	1000.000	212.000	2.000	Not Available	2:1 Semi Ellipsoidal	2.000	Not Available	Not Available	0.036
16	Centac Compressor Desiccant	4	1850.000	862.000	6.000	0.000	2:1 Ellipsoidal	6.000	4.500	0.000	1.211

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No.	Vessel Description:	Quantity:	Shell Length (mm):	Shell OD (mm):	Shell Nominal Wall (mm):	Shell Corr. Allow. (mm):	Head Design:	Head Nominal Wall (mm):	Head Wall A/F (mm):	Head Corr. Allow. (mm):	Calc. Volume per Vessel (m³):	
	Dryers (1000kPa)											
	Centac Compressor Desiccant Dryers (1000kPa, Galvanized)	2	1850.000	862.000	6.000	0.000	2:1 Ellipsoidal	6.000	4.500	0.000	1.211	6
17	Centac Compressor Desiccant Dryers (De-Rated)	2	1850.000	862.000	6.000	0.000	2:1 Ellipsoidal	6.000	3.920	0.000	1.211	6
18	Centac Compressor 1 After Filter (Tegnon)	1	1200.000	260.000	5.000	Not Available	2:1 Semi Ellipsoidal & Flanged	5.000	Not Available	Not Available	0.061	1
19	Centac Compressor 2 After Filter (Tegnon)	1	1200.000	260.000	5.000	Not Available	2:1 Semi Ellipsoidal & Flanged	5.000	Not Available	Not Available	0.061	1
20	Centac Compressor 3 After Filter (Zander)	1	1000.000	168.300	2.000	Not Available	2:1 Semi Ellipsoidal & Flanged	2.000	Not Available	Not Available	0.022	0
21	Control Air Receivers	4	4800.000	2316.000	8.000	1.500	2:1 Ellipsoidal	10.000	Not Available	1.500	23.128	4
22	Service Air Receivers	1	4800.000	2316.000	8.000	1.500	2:1 Ellipsoidal	10.000	Not Available	1.500	23.128	4
23	Hydrobin Air Receivers	4	412.000	1060.000	6.000	Not Available	2:1 Ellipsoidal	6.000	6.000	Not Available	0.150	1
24	Wet Ash Slurry Receiver	1	2400.000	1228.000	8.000	1.500	2:1 Ellipsoidal	8.000	8.000	1.500	3.235	1
25	Dust Conveying Centac After Coolers	5	1349.000	520.000	4.500	0.000	2:1 Ellipsoidal	4.500	3.000	0.000	0.312	2
26	Dust Conveying Centac After Filters (Dryer Inlets)	5	1200.000	468.000	5.000	0.000	2:1 Ellipsoidal & Flanged	6.000	4.700	0.000	0.210	2
27	Dust Conveying Centac After Filters (Dryer Outlets)	5	1200.000	468.000	5.000	0.000	2:1 Ellipsoidal & Flanged	6.000	4.800	0.000	0.210	2
28	Dust Plant Instrument Air Dryer IR D13500IN (External)	1	3390.000	1150.000	6.000	Not Available	2:1 Ellipsoidal	6.000	Not Available	Not Available	3.834	1
29	Dust Plant Instrument Air Dryer Filter (External)	1	1200.000	468.000	5.000	Not Available	2:1 Ellipsoidal & Flanged	5.000	Not Available	Not Available	0.210	2
30	Dust Plant Instrument Air Dryer Cooler IR (External)	1	1325.000	540.000	4.500	Not Available	2:1 Ellipsoidal	4.500	Not Available	Not Available	0.333	2
31	Dust Plant Instrument Air Desiccant	2	1900.000	1012.000	6.000	Not Available	2:1 Ellipsoidal	6.000	Not Available	Not Available	1.754	8

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Vessel Description:	Quantity:	Shell Length (mm):	Shell OD (mm):	Shell Nominal Wall (mm):	Shell Corr. Allow. (mm):	Head Design:	Head Nominal Wall (mm):	Head Wall A/F (mm):	Head Corr. Allow. (mm):	Calc. Volume per Vessel (m³):	
	Dryers (Inside)											
32	Dust Plant Instrument Air Filters 1 - 3 (Inside)	3	680.000	440.000	4.000	Not Available	2:1 Ellipsoidal & Flanged	4.000	Not Available	Not Available	0.110	
33	Dust Plant Control Air Receiver U1	1	3000.000	1012.000	6.000	0.000	2:1 Ellipsoidal	6.000	4.500	0.000	2.618	
34	Dust Plant Control Air Receiver U4	1	2210.000	506.000	6.000	Not Available	2:1 Ellipsoidal	6.000	6.000	Not Available	1.998	
35	Dust Plant Control Air Receiver U5	1	2210.000	506.000	6.000	Not Available	2:1 Ellipsoidal	6.000	6.000	Not Available	1.998	
36	Dust Plant Control Air Receiver U6	1	2210.000	506.000	6.000	Not Available	2:1 Ellipsoidal	6.000	6.000	Not Available	1.998	
37	North Water Treatment Plant Air Receiver	1	4800.000	2316.000	8.000	1.500	2:1 Ellipsoidal	8.000	Not Available	1.500	23.128	
38	South Water Treatment Plant Air Receiver	1	4800.000	2316.000	8.000	3.000	2:1 Ellipsoidal	10.000	Not Available	3.000	23.128	
39	Ammonium Hydroxide Re-use Tank	1	5200.000	2200.000	10.000	3.000	2:1 Ellipsoidal	10.000	7.000	2.000	22.121	
40	Caustic Bulk Storage Vessel No.1 (G001)	1	5200.000	2900.000	10.000	1.000	2:1 Ellipsoidal	12.000	7.000	1.000	40.129	
41	Caustic Bulk Storage Vessel No.2 (G002)	1	5200.000	2900.000	10.000	1.000	2:1 Ellipsoidal	12.000	7.000	1.000	40.129	
42	Caustic Re-use Tank	1	5200.000	1315.000	10.000	0.000	2:1 Ellipsoidal	10.000	7.000	0.000	7.418	
43	Hot Water Tank No.1 (G002)	1	3250.000	2150.000	8.000	2.000	2:1 Ellipsoidal	8.000	7.000	2.000	14.168	
44	Hot Water Tank No.2 (G001)	1	3250.000	1500.000	10.000	2.000	2:1 Ellipsoidal	10.000	7.500	2.000	6.440	
45	Sulphuric Acid Re-Use Tank	1	5200.000	1500.000	10.000	0.000	2:1 Ellipsoidal	10.000	7.000	0.000	9.794	
46	Sulphuric Acid Bulk Storage Vessel No.1 South	1	5200.000	2200.000	10.000	3.000	2:1 Ellipsoidal	12.000	7.000	3.000	22.121	
47	Sulphuric Acid Bulk Storage Vessel No.2 South	1	5200.000	2200.000	10.000	3.000	2:1 Ellipsoidal	12.000	7.000	3.000	22.121	
48	Sulphuric Acid Bulk Storage Vessel North	1	5200.000	2200.000	10.000	3.000	2:1 Ellipsoidal	12.000	7.000	3.000	22.121	
49	Portable Air Receiver for Plater Shop	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

No.	Vessel Description:	Quantity:	Shell Length (mm):	Shell OD (mm):	Shell Nominal Wall (mm):	Shell Corr. Allow. (mm):	Head Design:	Head Nominal Wall (mm):	Head Wall A/F (mm):	Head Corr. Allow. (mm):	Calc. Volume per Vessel (m³):	
50	Portable Compressors with Receiver Model CQ092X	4	744.000	374.800	2.400	0.300	2:1 Ellipsoidal	2.350	2.350	0.300	0.093	
51	Portable Compressors with Receiver Model NN200X	4	1136.000	451.700	2.850	0.400	2:1 Ellipsoidal	2.800	2.800	0.400	0.201	
52	Portable Compressors with Receiver Model NN270X	3	1190.000	509.700	2.850	0.400	2:1 Ellipsoidal	2.800	2.800	0.400	0.266	
53	Portable Compressor with Receiver Model 5H500	1	1601.600	600.000	4.000	Not Available	2:1 Ellipsoidal	3.500	3.500	Not Available	0.495	
54	Portable Air Receiver for Welding Shop	1	1601.600	600.000	4.000	Not Available	2:1 Ellipsoidal	3.500	Not Available	Not Available	0.495	
55	Portable Compressors with Receiver Model NF200X	2	1136.000	451.700	2.850	0.400	2:1 Ellipsoidal	2.800	2.800	0.400	0.201	
Totals:		139										

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

3 APPENDIX III: COLOUR IDENTIFICATION & CORROSION PROTECTION SPECIFICATIONS

Appendix III provides the Eskom Colour Identification Codes as per Eskom's Standard 240-145581571: Standard for the Identification of the Contents of Pipelines and Vessels, the External Corrosion Protection Specification (CPS) as per Eskom's Standard 240-106365693: Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings, as well as the Internal Corrosion Protection Specification as per Eskom's Standard: 240-101712128 Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings for the vessels on the Outside Plant.

NOTE: Corrosion Protection Systems as developed by Eskom Asset Management shall be used. Any corrosion protection system proposed by the Contractor shall be subject to the approval from Eskom Asset Management as detailed in the above-mentioned Standards.

General					External Corrosion Protection Spec							
No.	Vessel Description:	Quantity:	External Insulation:	Fluid & Function	Eskom External CPS:	Basic Colour & Code:	Primary Colour & Code:	Secondary Colour & Code:	Eskom Colour Identification Standard:	Eskom External Corrosion Protection Standard:	Internal Rubber Lining	Internal CPS:
1	Diesel Generator Air Receivers	8	None	Control Air	CPS 03	Arctic Blue Code: F28	Salmon Pink Code: A40	N/A	240-145581571	240-106365693	None	GAM/MAT/22/235
2	Diesel Generator Air Receivers	2	None	Control Air	CPS 03	Arctic Blue Code: F28	Salmon Pink Code: A40	N/A	240-145581571	240-106365693	None	GAM/MAT/22/235

APPENDIX IV: SECTION 1 - GAM/MAT/22/234 INTERNAL CORROSION PROTECTION SPECIFICATION RUBBER

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

To be considered as Annexure D of 240-101712128: “Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings”	
Vessel/Components	Various Existing Rubber Lined Statutory Pressure Vessels including Vessel Piping attachments and Flange Faces. These vessels include: - Hot Water Tanks - Sulphuric Acid Re-use Tank - Caustic Re-use Tank NOTE: For any statutory pressure vessels that are not mentioned above but are rubber lined by design, it is recommended that before this specification is used, Eskom Material Plant & Integrity, Corrosion Section shall be consulted. For detailed data with respect to type, sizes, quantities, access, manholes sizes and quantity, manufacturing standards etc. refer to Scope of Work section of the enquiry document.
Material/Substrate	Existing steel - Internally rubber lined (aged rubber).
Environment (Internal Immersed)	Aqueous Solution/Mixture - Hot Water/Steam - Sulphuric Acid Solution - Caustic Soda Solution Design Pressure 100 – 500 (kPa) Design Temperature Ambient – 120 (°C) NOTE: In terms of the high temperatures it is imperative that the Tenderer consult/consider and then comply with the requirements in section 4.2.1 especially with respect to the proposed product's recommended service/operating temperature limits. NB – refer to more specific details in the Scope of Work document.
Generic System (Internal Surface): Pre-cured Butyl Rubber Lining (Grade B): 40 - 70 IRHD as per SANS 1198. The adhesion of the rubber lining to substrate shall be ≥ 3.5 N	

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

Rubber Lining Thickness	Lining thickness shall be 5 mm.
Rubber Lining Options	Rubber lining options shall be determined by inspection findings: - Rubber Lining Patch Repairs. - Complete Rubber Lining Replacement.
Surface Preparation	Internal Surface – Steel Material: - Abrasive blast clean to Grade Sa 3 (ISO 8501-1). - For localised areas: mechanical clean to Grade St 3 (ISO 8501-1). In both cases the final surface profile shall be as specified by the rubber lining and adhesive Manufacturer's requirements.
The corrosion protection of the vessels and associated piping will be performed in situ at Matla Power Station	
1. Rubber Lining Patch Repairs The scope of work for Option 1 (Rubber Lining Patch Repairs) shall include the following: 1.1. Conduct a detailed visual inspection and pin-hole detection testing (no more than 3 kilovolts per mm) on the existing rubber to check the condition of the rubber lining and identify the defects. Identify and mark-up the defects or the areas requiring the repairs. Eskom shall witness all aspects of the inspection and be responsible for the selection of repair areas or complete relining. 1.2. The piping supports and nozzles inside the vessels may require removal in order to allow access inside the vessel. 1.3. 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 existing rubber in the marked-up areas. For smaller areas to be patch repaired where abrasive cleaning is impractical the Rubber Liner or Contractor shall propose suitable cleaning method/s. The cleaning method/s shall be submitted to Eskom for review and approval before commencement of the work.	

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

- 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 to Eskom for approval.
- 1.4. Power and hand tool cleaning is only applicable to localised patch repairs. Hand-tool cleaning for isolated/localised areas may be utilised provided the required standard of finish is achieved. For all internal applications final mechanical cleaning shall be by bristle blaster in order to create a surface profile.
- 1.5. Cleaning by means of hand or power-tools, i.e. wire brushes, chipping hammers, scrapers, grinders, sanders, needle descalers, bristle blasters etc. may only be used where accepted by the Eskom engineer.
- 1.6. Burnishing of the surface shall not be permitted.
- 1.7. 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. Unnecessary traffic prior to painting/lining shall be avoided.
- 1.8. 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.
- 1.9. Once the above activities have been completed conduct rubber lining patch repairs of the affected areas. In the event that the pre-cleaned substrate has been exposed for more than 4 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.
- 2. Complete Rubber Lining Replacement**

The scope of work for option 2 (Complete Rubber Lining Replacement) will include the following:

 - 2.1. Internal parts such as piping supports and nozzles that are removable shall be removed from the vessel, the old rubber stripped out and replaced with butyl rubber grade B with 40-70 IRHD.
 - 2.2. All components in the vessel shall be rubber lined except components constructed from stainless steel or plastic.
 - 2.3. 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.

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GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

- 2.4. Inspect and assess the extent of possible pitting and corrosion of the underlying steel substrates, it may be necessary to determine the need for possible mechanical repairs i.e. welding. Should these repairs be required the Contractor shall propose substrate repair procedures and submit these to Eskom for approval.
- 2.5. Proceed with rubber lining operation once the above inspections and welding repairs have been completed.
- 2.6. Subsequent surface preparation shall be by means of abrasive blast cleaning method. Abrasive blast cleaning to grade Sa 3 in accordance with ISO 8501-1.

3. General Requirements

- 3.1. The Eskom standard 240-101712128 (Section 5 in particular), SANS 1201, SANS 1198 and BS 6374-5 shall apply for the Manufacturer, selection and installation of rubber lining.
- 3.2. The Rubber Liner or 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 (III), (V) and (VI)) shall apply.
- 3.3. Surface preparation by abrasive blasting shall be performed by means of conventional handheld blasting equipment capable of removing remaining/residual rubber, corrosion product, rust and suitably preparing the substrate to the required cleanliness - Grade Sa 3 in accordance with ISO 8501-1.
- 3.4. After the old rubber lining is removed and surface preparation complete, a detailed visual inspection shall be carried out to check for defects on steel substrates. Unfortunately, this inspection can only be carried out once the surfaces have been prepared for lining. Based on the damage on the vessel it may be required to conduct mechanical and repairs before rubber lining.
- 3.5. The Contractor shall submit the above repair procedures to Eskom for the review and approval. Repair procedures for the works shall include the welding and non-destructive testing requirements on the steel surfaces.
- 3.6. Rubber lining processes, whether patch or complete relining, shall only proceed once all mechanical repairs or activities on the vessels have been completed and released in terms of the applicable manufacturing/fabrication Quality Control Plan (QCP).
- 3.7. Pre-cured Butyl rubber grade B with 40-70 IRHD is the specified material for the internal surfaces. Pre-cured rubber lining sheet is typically inflexible (not pliable) relative to other rubbers. The Rubber Liner or Contractor shall propose the application method to ensure the correct bond and adhesion strength between the vessel support geometries and rubber lining.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

- 3.8. The rubber lining thickness of 5mm is specified. The Rubber Liner or Contractor shall confirm the specified thickness as satisfactory for the application.
- 3.9. The Manufacturer/s of the rubber lining material and adhesive or Contractor shall select the relevant primer and or adhesive systems for the type of rubber lining (butyl rubber) material, substrate and service conditions to ensure compatibility. All the products to be used in the system shall be supplied by the same Manufacturer.
- 3.10. All parts comprising corrosion protection systems required in the table above shall be supplied by the same Manufacturer. Should this not be possible the rubber lining Supplier shall confirm suitability or compatibility of the particular product with his system.
- 3.11. The responsibility for selecting the type of rubber system required by Eskom for the application above rests solely with the Applicator and his material (primer, compound and adhesive) Suppliers.
- 3.12. Prior to rubber lining installation the Contractor shall supply test sample panels of about 200 mm X 300 mm X 3 mm with a rubber lining thickness of 5 mm. Properties such as hardness and adhesion will be tested by Eskom to ensure compliance to both the product data sheet and the above-mentioned standard (SANS 1201), including all the Normative references contained therein.
- 3.13. In addition to the panel samples above, representative (considering different batches), loose rubber sheeting 500 mm X 500 mm X 5 mm shall be submitted for confirmation of correct rubber type (by Fourier Transform Infrared Spectroscopy) and tensile testing before the commencement of any lining in order to ensure compliance to both the product data sheet and the standard (SANS 10037), including all the Normative references contained therein.
- 3.14. 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.
- 3.15. During corrosion protection application of the vessel the Rubber Liner shall prepare (200 mm X 300 mm X 3 mm) test panels with a rubber lining thickness of 5 mm at the same time and under the same conditions as the vessel. The prepared test panels shall be sent to Eskom for adhesion/peel testing as per the requirements of SANS 1201 section 9.4.
- 3.16. The Corrosion Protection Applicator or Contractor shall supply the relevant batch certificates for each of the lining products used.
- 3.17. It is strongly recommended that engineering subject matter experts (welding engineers and NDT subject matter experts) are consulted for mechanical repair activities.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

- 3.18. The engineering experts in consultation with the Rubber Liner or Contractor and Lining Manufacturer shall compile detailed application procedures for the works. The procedure shall be submitted to Eskom for review and approval. The Contractor shall be wholly responsible for the surface preparation and lining application.
- 3.19. Weld beads with a surface irregularity exceeding 3 mm or with sharp crests having a radius less than 3 mm shall be ground.
- 3.20. All welds shall be free of slag, slag inclusions and pinholes. Adjacent areas shall be free of weld spatter, which shall be removed by grinding or scraping.
- 3.21. All surfaces shall be completely dry and free from contaminants such as traces of oil, grease, etc., before surface preparation is carried out.
- 3.22. 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.
- 3.23. 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.
- 3.24. 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.
- 3.25. Prior to any surface preparation all surfaces that are, or are likely to be contaminated with oil or grease as a result of the fabrication or repair process shall be solvent cleaned with a suitable water-soluble biodegradable alkaline cleaner/detergent or with appropriate organic solvents.
- 3.26. 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.
- 3.27. 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.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

- 3.28. 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.
- 3.29. The Contractor shall ensure that during surface preparation and rubber lining activities the relative humidity (RH) in open, undercover shop environments 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 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.
- 3.30. During periods of inclement or cold weather conditions the environmental parameters shall be measured and recorded hourly. In the event that 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 240-101712128.
- 3.31. 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.
- 3.32. Different grades and types of blasting media exist. It is important that the correct abrasive be used in combination with a specific rubber lining 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.
- 3.33. Only inert mineral grit or steel grit abrasives shall be used. Steel grit is preferred in sensitive plant areas such as Water Treatment Plants in order to ensure no contamination of plant. Sand or silica-based abrasives shall not be used. Abrasive material for blast cleaning shall be used in line with local environmental regulations.
- 3.34. 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 in order to minimize the amount of waste grit and dust generated and contamination of the surfaces.
- 3.35. The use of re-cycled blasting media for the final blast is strictly prohibited.
- 3.36. All abrasive media shall be stored in an area that is completely dry, covered and protected from weather.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

- 3.37. 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.
- 3.38. All compressed air for blasting 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.
- 3.39. After surface preparation, all dust, grit blasting media or any other deleterious matter shall be removed from the surfaces by vacuuming. The process shall be repeated until the required level of dust and debris removal is achieved. It is imperative that all surface dirt and contaminants are completely removed before primer or the adhesion of the rubber shall be impaired.
- 3.40. On completion of grit blasting the surface shall be thoroughly vacuumed until no loose dust is evident. The level of cleanliness required shall be less than "dust quality rating" 1 when tested in accordance with ISO 8502-3.
- 3.41. In order to avoid recontamination and flash rusting of the surfaces, the primer shall be applied within 4 hours after final surface preparation of the steel surfaces. Under no circumstances shall the blast be permitted to stand overnight.
- 3.42. The profile height of the blasted surfaces should be within the range of the specified system. Refer to the Manufacturers Product Data Sheets.
- 3.43. 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.
- 3.44. 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.
- 3.45. 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.
- 3.46. All joints of lined rubber shall be strapped as per BS 6374-5.
- 3.47. All surfaces shall be pinhole tested (only after completion of all handling, moving and equipment and scaffolding removal) 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.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

3.48. For all inspections of all surface preparation and 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.

3.49. The installed lining shall present a smooth appearance and be free of voids, blisters, pinholes, cracks, open seams, excessive squeeze out of adhesive at the joints (>10 mm on either side), entrapped air or any other defects which will impair its use. Defective areas shall be cause for rejection of the lining.

4. Tender Returnables

4.1. Mandatory Tender Returnables

4.1.1 At the time of tender verifiable evidence shall be submitted, clearly indicating, that the Rubber Liner has experience in the application of rubber lining systems in comparable environments i.e. tanks/confined spaces. In this regard the experience shall, as a minimum, be equal to the surface area (m²) 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 and contact details for the listed reference projects.

4.2. Tender Returnables for Evaluation

4.2.1 The System Supplier or Rubber Liner or 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 and solvents. As a minimum the following shall be submitted:

- A description of the generic type of rubber lining.
- Physical and chemical properties as per Table 4 of SANS 1198.
- Recommended and non-recommended uses.
- Surface preparation requirements.
- 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.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

- Service temperatures and chemical resistance limits. For the chemical resistance, special property (I), (III), (V) and (VI) as per 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. Special property (V & VI) as per 240-101712128 and SANS 1198. The approved test results or certificates from the independent laboratory shall be written in English.

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 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 rubber 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.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

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 application. Inspections during lining application shall at least cover a compressed air blotter test for blasting, 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.

4.2.5 The applied lining shall be guaranteed jointly by the rubber lining manufacture and Rubber Liner or Contractor. This guarantee with proposed terms and conditions shall be submitted at the time of tender. The applied rubber lining system shall perform in the given environment for a minimum of 10 years.

5. Safety Requirements and Considerations

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

5.2. 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.

5.3. 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.

5.4. Walking / Working Surfaces and Visibility: Poor lighting may add to hazards caused by an irregular, sloped, or constricted working surface.

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

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

- 5.6. Special care needs to be taken when working with all coatings/linings. Prior to the use of any coating/lining material, the Material Safety Data Sheets shall be obtained from the relevant Manufacturer. The Contractor shall be familiar with the contents of these 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.
- 5.7. 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 provide for all necessary safety precautions and risk assessments.
- 5.9. All materials shall be stored in designated areas in storage facilities that meet the storage requirements of the Rubber Liner 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.
- 5.10. The Contractor's Safety File for the area to be worked it 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.
- 5.11. The Contractor shall ensure that the abrasive materials used conform to all National Health and Safety Standards.

Specifically with respect to CSs and based on the descriptions and definitions of safety risks as per the above points it is imperative that the Contractor's Method Statement shall describe in detail, the measures and mitigation steps for the risks and hazards as identified in this specification sheet.

It is compulsory that these safety risks/mitigation measures and any others as identified by the Contractor be included in the Method Statement. Prior to the commencement of any work the Method Statement shall be submitted for review, acceptance/rejection by the respective Power Station Risk and Safety office/department.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

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. 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".
- 6.3. SANS 1198: The manufacture of rubber sheeting for rubber lining.
- 6.4. BS 6374-5: Lining of equipment with polymeric materials for the process industries.
- 6.5. SANS 1201: The application of rubber linings to pipes, pipe fittings and vessels.
- 6.6. SANS 10037: Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties.
- 6.7. ASTM D5162: Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates.
- 6.8. ASTM E376: Measuring coating DFT by magnetic field or eddy current electromagnetic test Methods.
- 6.9. ASTM F21: Standard Test Method for Hydrophobic Surface Films by the Atomizer Test.
- 6.10. 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.
- 6.11. 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).
- 6.12. 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.
- 6.13. 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).

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

GAM/MAT/22/234: Matla Power Station Statutory Pressure Vessels Corrosion Protection Rubber

6.14. SIS 055900: Swedish Code of Practice - Pictorial surface preparation standard for painted steel surfaces. (Can be used as alternative to ISO 8501 – 1).

Submitted by:



Accepted by:



Name: N. Pheta

Name: K. Northcott

Title: Senior Advisor

Title: Senior Consultant

Date: 12 December 2022

Date: 12 December 2022

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

APPENDIX IV: SECTION 2 - GAM/MAT/22/235 INTERNAL CORROSION PROTECTION SPECIFICATION ORGANIC LINING

GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining Specification

Table 1a. Generic Internal System for low temperatures < 50°C = Solvent Free Epoxy.	
Primer (Optional)	Should a primer be required for holding the blast then the use of a suitable epoxy primer may be considered and then proposed by the Manufacturer/Contractor. The primer as selected by the manufacturer shall be compatible with the subsequent top coats and shall be a primer system that is normally used for immersion. Note: The thickness of the primer shall consider complete "Wetting" of the surface with due consideration of blast profile height.
First Coat	After allowing sufficient time (as recommended by the coating Manufacturer) for the primer coat to cure, then immediately prior to spray application of the first intermediate coat all accessible edges, weld seams, bolt holes and other crucial areas shall be stripe coated by brush using the first/intermediate coating. Regardless of whether a primer is used or not, stripe coating shall be performed. Apply by airless spray, one coat Two Component Solvent Free Amine Cured Epoxy coating from 350 - 450 micron. Thinning in excess of 5% shall not be permitted.
Final Coat	After allowing sufficient time for the first coat and stripe coating to cure, the Manufacturer's recommendations shall be adhered to in this regard, apply by airless spray, one coat Two Component Solvent Free Amine Cured Epoxy coating from 350 - 450 micron. Thinning in excess of 5% shall not be permitted. Total System Minimum Dry Film Thickness (DFT), excluding Primer = 700 – 900 microns.
Table 1b. Generic Internal System for temperatures of 50 - 65°C = High Solids Flake Filled Vinyl Ester or Epoxy/Novolac Epoxy.	
Primer (Optional)	Should a primer be required for holding the blast then the use of a suitable epoxy primer may be considered and then proposed by the Manufacturer/Contractor.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

	The primer as selected by the manufacturer shall be compatible with the subsequent top coats and shall be a primer system that is normally used for immersion. Note: The thickness of the primer shall consider complete "Wetting" of the surface with due consideration of blast profile height.
First Coat	After allowing sufficient time (as recommended by the coating Manufacturer) for the primer coat to cure, then immediately prior to spray application of the first intermediate coat all accessible edges, weld seams, bolt holes and other crucial areas shall be stripe coated by brush using the first/intermediate coating. Apply by airless spray, one coat Two Component High Solids Flake Filled Vinyl Ester or Epoxy/Novolac from 400 – 500 microns. Thinning in excess of 5% shall not be permitted.
Final Coat	After allowing sufficient time for the first coat and stripe coating to cure, the Manufacturer's recommendations shall be adhered to in this regard, apply by airless spray, one coat Two Component High Solids Flake Filled Vinyl Ester or Epoxy/Novolac from 400 – 500 microns. Thinning in excess of 5% shall not be permitted. The colour of the final coat or repairs shall be different from the first coat. Total System Minimum Dry Film Thickness (DFT), excluding Primer = 800 – 1000 microns.
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.	
This specification sheet caters for, and is applicable to new vessels, old vessels, off-site, on-site, in-situ corrosion protection by organic coatings. The applicable requirements for each of the above cases as included in this sheet shall apply. This specification sheet also caters for coating of new steel, repair to existing coatings or complete removal and recoating. The appropriate specific clause/section for each case/scenario shall apply. If so required, the Corrosion Section should be contacted on a case-by-case basis for input into the possible scenarios and appropriate system selection described above.	

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

1. Specific Requirements

- 1.1. The detailed scope of work; vessel sizes and quantities are specified in the Scope of Work document for this project.
- 1.2. The vessels are new steel or previously epoxy coated and corroded. Corrosion protection shall be by abrasive grit blasting (surface preparation) followed by coating.
- 1.3. A detailed visual inspection shall be carried out by the Eskom engineer to identify and mark-up all areas that need to be repaired/reinstated OR completely recoated. Based on the inspection (section 4.13 of 240-101712128 can assist in providing guidance) as well as NDT results. The Eskom Engineer will instruct the Applicator whether to perform patch repairs of the coating or complete recoating.
- 1.4. Corrosion Protection shall only proceed once all mechanical repairs, fabrication, manufacturing activities i.e. cutting and welding have been completed and released in terms of the manufacturing/fabrication Quality Control Plan (QCP).
- 1.5. The more stringent requirement shall apply in cases where there may be contradictory or conflicting requirements between this specification sheet and referenced standards in Section 6.
- 1.6. The Applicator shall take cognisance of the fact that after initial surface preparation as above, Eskom may require further inspection and assessment to determine the need for possible mechanical repairs i.e. welding. Unfortunately, this inspection can only be carried out once the surfaces have been blast cleaned in preparation for coating. The depth and morphology of corrosion damage, extent of component wall thickness loss and pitting needs to be considered. For steel, the following guide (obviously dependent on installed wall thickness) can be applied to all areas of extensive deep pitting:
 - All pits less than 2mm in depth and all edges and weld seams shall be stripe coated after application of the primer/first coat.
 - All pits in excess of 2mm and up to 5 mm in depth shall be filled using a compatible two component solvent free epoxy filler. The filler to be used shall be supplied by the same supplier as the rest of the coating system and confirmed to be compatible to the specified coating system.
 - If accessible, severely grooved/corroded welds shall be filled by welding (repair procedure shall be submitted to Eskom for approval). Perforations and defects, pitting etc. which are close to approaching the wall thickness shall be repaired by welding in steel plate. The plate shall be welded onto the internal/immersed surface.
- 1.7. At all times care shall be taken to ensure adequate protection of any surfaces and parts of components or systems not requiring blast cleaning and coating (as an example valve seats/trim, pump inlets) and every effort shall be taken to prevent grit, water and other dirt entering drain systems, tank/vessel inlet/outlet piping or settling on isolating valves seats, shafts etc.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 1.8. Equipment name plates and identification plates shall be protected from coatings. No coatings shall be applied over any surfaces where these will adversely affect the performance of the item or component.
- 1.9. All materials, i.e. paint, solvents and cleaning agents for a specific paint system shall be supplied by the same Manufacturer. The solvents used shall be those recommended and manufactured by the paint 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.
- 1.10. The technique/method of application shall be agreed between the Applicator and coating Manufacturer and presented in the Method Statement as required further below. The Method Statement shall be reviewed by Eskom for acceptance prior to commencement of any work.
- 1.11. In cases of refurbishment/recoating of existing components which have been exposed to air that has been contaminated with raw or cooling water, the steel substrate shall be tested for chloride contamination, according to ISO 8502-6.
- 1.12. Casting substrates which may be pitted and/or rough and porous are inherently susceptible to soluble salt contamination. Testing shall be performed prior to final surface preparation.
- 1.13. 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 100mg/m²), the surfaces shall 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.
- 1.14. Soluble salt testing shall be repeated on representative test patches which shall be blast cleaned to Grade Sa 3. 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.
- 1.15. Prior to any surface preparation all surfaces that are, or are likely to be contaminated with oil or grease as a result of the service conditions or fabrication/manufacturing process shall be solvent cleaned with a suitable water-soluble biodegradable alkaline cleaner/detergent or with appropriate organic solvents.
- 1.16. Cleaning may be performed by using rags (for small areas), an immersion tank (for small items) 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.
- 1.17. Degreased and water washed surfaces shall be checked for residual oil and grease using the atomized water spray test as per reference 6.8 and further degreasing shall be carried out if residual oil or grease is found to be present.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 1.18. A black light test shall be used to check for oil contamination. Zero oil and grease contamination is 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.
- 1.19. Freedom of dust and debris shall be checked as far as is accessible to perform the test. The level of cleanliness required shall be less than "dust quality rating" 1 when tested in accordance with ISO 8502-3.
- 1.20. With regards to specifically patch repairs, the compatibility between the existing aged coating and the subsequent coating, as per the above table in this specification shall first be checked prior to proceeding with large scale repairs.
- 1.21. The new/repair system shall be applied to a test area. If no softening of the existing coating occurs, then full scale repair can proceed.

2. General Requirements

- 2.1. The Applicator shall be wholly responsible for the surface preparation and coating application. The coated surfaces shall meet the DFT as required by this specification sheet and aspects thereof in referenced documents.
- 2.2. Rounded edges are required in order to be able to apply the protective coating uniformly and to attain adequate coating DFTs on sharp edges, refer to ISO 12944-3 should more detail be required.
- 2.3. All sharp edges from the original fabrication shall be rounded or chamfered and burrs around holes and along other cut edges shall be removed. All edges to be rounded off with a grinder to a radius of 3mm or more.
- 2.4. Weld beads with a surface irregularity exceeding 3mm or with sharp crests having a radius less than 3mm shall be ground.
- 2.5. Power and hand tool cleaning is only applicable to very localised touch ups or patch repairs. Specific requirements for patch repairing a coating system are defined in section 4.8.6 of 240-101712128.
- 2.6. Hand-tool cleaning for isolated/localised areas may be utilised provided the required standard of finish is achieved. For all immersion applications final mechanical cleaning shall be by bristle blaster in order to create the required surface profile.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 2.7. Cleaning by means of hand or power-tools, i.e. wire brushes, chipping hammers, scrapers, grinders, sanders, needle descalers, 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 and where the protective coating system is designed for application to brushed or ground surfaces i.e. specifically formulated surface tolerant coatings.
- 2.8. All welds shall be free of slag, slag inclusions and pinholes. Adjacent areas shall be free of weld spatter, which shall be removed by grinding or scraping.
- 2.9. Oil and grease deposits shall be removed prior to cleaning as detailed earlier in this specification. Special attention shall be paid to drillings, bolt holes, etc.
- 2.10. Burnishing of the surface shall not be permitted.
- 2.11. In all cases, after wire brushing or grinding, all traces of loose material shall be removed from the surface by compressed air or vacuum cleaning. Cleaned surfaces shall not be contaminated with oil, grease, rust or other deposits before coating.
- 2.12. Different grades and types of blasting media exist. It is important that the correct abrasive be used in combination with a specific coating system to achieve the specified surface profile. The required blast profile height should be carefully considered. The Applicator shall select an appropriate abrasive type and mesh size to attain the specified surface profile.
- 2.13. Only inert mineral grit or steel grit abrasives shall be used. Steel grit is preferred in sensitive plant areas such as Water Treatment Plants in order to ensure no contamination of plant processes due to excessive dust.
- 2.14. Sand or silica-based abrasives shall not be used. Abrasive material for blast cleaning shall be used in line with local environmental regulations.
- 2.15. 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 in order to minimize the amount of waste grit and dust generated and contamination of the surfaces.
- 2.16. The use of re-cycled blasting media for the final blast is strictly prohibited.
- 2.17. All abrasive media shall be stored in an area that is completely dry, covered and protected from weather.
- 2.18. 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 75 microns is recommended for most coatings systems.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 2.19. It is important that the blast profile does not exceed the specified DFT of the primer or first coat. Blast cleaning of severely corroded surfaces may result in high profiles i.e. > than 100 microns. In these cases, the primer or first coat shall be applied by brush/roller to ensure complete wet-out of the pitted/jagged surface. In addition a different primer or first coat may be required. However, agreement should be reached between the Applicator and coating Manufacturer as to the most suitable profile range, with due consideration of the application method, for a specific coating system.
- 2.20. The Applicator shall consider and detail these potential scenarios or eventualities in the required Method Statement which shall be reviewed by Eskom for acceptance/rejection prior to any work. Ultimately, the Applicator shall be responsible for any risk that could arise or be attributed to this choice.
- 2.21. The requirement for surface preparation of all metallic surfaces for immersion conditions or internal surfaces 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.
- 2.22. All compressed air for blasting 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.
- 2.23. After surface preparation, all dust, grit blasting media or any other deleterious matter shall be removed from the surfaces by vacuuming. In The process shall be repeated until the required level of dust and debris removal is achieved. It is imperative that all surface dirt and contaminants are completely removed before coating or the adhesion of the coating shall be impaired.
- 2.24. Cleaned surfaces shall not be contaminated with oil, grease, rust or other deposits before coating. Unnecessary traffic prior to painting shall be avoided.
- 2.25. The Applicator shall ensure that during surface preparation and coating activities the relative humidity (RH) in open, undercover shop environments is less than 80% RH and for tank/vessels (confined spaces) 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.
- 2.26. During periods of inclement or cold weather conditions the environmental parameters shall be measured and recorded hourly. In the event that 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 240-101712128.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 2.27. For all inspections of all surface preparation and coating activities the surfaces shall be clean allowing unhindered visual access to the surface. The Applicator shall provide sufficient and adequate lighting (Cool White) to enable inspections. Cell phone lighting is not acceptable.
- 2.28. In order to avoid recontamination and flash rusting of the surfaces, the primer or first coat shall be applied within 4 hours after final surface preparation of the steel surfaces. Under no circumstances shall the blast be permitted to stand overnight.
- 2.29. Many modern organic coatings can be applied without the use of a primer. However, should a primer coat be required for holding of the blast, or otherwise, the Applicator shall indicate/describe the reasoning for the need of such a primer i.e. as a holding primer or as a means of enhancing adhesion of the system? Details shall be provided in the Method Statement for the type of primer, generic resin, solvent borne or free, maximum DFT and compatibility with subsequent coats. The detailed Method Statement shall be submitted and reviewed by Eskom for acceptance/rejection prior to any work. Ultimately, the Applicator shall be responsible for any risk that could arise or be attributed to this choice.
- 2.30. All edges, weld seams, bolts and nuts, and other crucial areas shall be stripe coated by brush immediately before spray application, with the same material as the first sprayed coat.
- 2.31. Multiple coats shall be applied as per the tables at the top of this specification sheet. Single coat systems are not permissible.
- 2.32. Where more than one coat is applied, the colour of each coat shall be different from the previous coat. In the case where aesthetic requirements are secondary, repairs after final testing shall be carried out using a different colour.
- 2.33. Where the first coat has been contaminated with dust washing shall be carried out between coats. Where the coating has completely cured or allowed to age before finishing, before application of a subsequent coat the internal surface shall be sweep blasted to establish a profile to provide a key/mechanical bond for the subsequent coat/s.
- 2.34. 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.
- 2.35. The number of coats and DFT per coat required to achieve the total film DFT shall be agreed between the Applicator and coating Manufacturer and will be dependent upon the method of application chosen.
- 2.36. 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.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 2.37. 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. 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.
- 2.38. 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.
- 2.39. Unless otherwise instructed by the Eskom engineer for flange surfaces at least one coat of the coating system shall be brought around onto a third of the surface area of the flange face. In the case of flange face (gramophone surface finish) with compressed fibre gaskets, blasting and coating is not permitted.
- 2.40. The Applicator shall perform pinhole detection using appropriate "spark" testing equipment at a voltage setting as per the coating Manufacturer's requirements. Wet sponge testing shall not be acceptable.
- 2.41. It is imperative that wherever possible pinhole detection and general patch repairs are to be performed before final cure of the coating system.
- 2.42. With the exception of access limitations or as instructed by the Eskom engineer all areas of coating damage shall be patch repaired by brush application. 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 Applicator'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 abrasive blast cleaning to Grade Sa 3 (ISO 8501-1) is required.
- 2.43. 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. The patch primer used shall be in accordance with the requirements of the relevant coating system.
- 2.44. 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.
- 2.45. All shop coated surfaces shall be inspected and examined for coating damage on arrival at site. If the damage is excessive it may be preferable to repair the transport damage before installation/assembly/erection whilst access is easier.
- 2.46. Provision shall also be made for the repair of handling damage to the coating after installation/assembly/erection/scaffolding removal. Spot repairs shall reinstate each of the previous coats and shall commence directly after surface preparation.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 2.47. All immersed surfaces shall be pinhole tested (only after completion of all handling, moving and equipment and scaffolding removal) to ensure the coating 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 coating is achieved.
- 2.48. After completion of the coating activities sufficient curing time of the coating system shall be given prior to operation "immersion" as per the requirements of the Product Data Sheet. Accelerated curing is not permitted. All coated surfaces shall be adequately ventilated until full cure has been achieved. At the end of the curing period and before immersion the full cure of the applied coating shall be verified by the Applicator and/or coating Manufacturer.
- 3. Tender Returnables**
- Note that the returnables as detailed below shall be returned as part of the Contractor's Tender document/submission.
- 3.1. Mandatory Tender Returnables**
- 3.1.1. At the time of tender the Contractor shall provide verifiable evidence of relevant experience in the application of coating of vessels similar sized projects in comparable environments. In this regard the experience shall, as a minimum, be equal to the surface area (m²) as defined in this enquiry and Scope of Work (SOW) documents.
- This verifiable evidence shall be for projects where vessels has been successfully coated/lined by the Contractor, within the last eight years. The verifiable evidence shall include formal signed off QCP's or release certificates and contact details for the listed reference projects.
- 3.2. Tender Returnables for Evaluation**
- 3.2.1. The coating system Manufacturers shall have a Quality Management System that meets or exceeds the requirements of ISO 9001. A valid and current certification to be provided with the tender.
- 3.2.2. The coating Manufacturer/Contractor shall supply individual product data sheets and material safety datasheets (MSDS) for all products comprising the system. The Product Data Sheet/s shall be signed by the Manufacturer and Contractor. This is to ensure that the Manufacturer is aware of this specification, the conditions under which it will be applied and to allow for technical back-up where required.
- A description of the generic type of product.
 - Confirmation that the corrosion protection system is suitable for the intended method of application.
 - Recommended and non-recommended uses.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 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. The particular system rating shall consider the above temperatures as continuous service i.e. not intermittently.
- Chemical resistance limits.
- Surface preparation.
- Application conditions and details including but not limited to: application temperatures, dilutions, pot-life, application techniques and DFT for the particular application method, over-coating intervals, and curing times required before immersion.

The signed Product Data Sheet/s shall be deemed to be a binding reference document (as part of the QCP). It shall be specific to this project any further/other subsequent revisions of the Product Data Sheet/s shall be submitted to Eskom for reacceptance clearly stating the variations/deviations. No further use/application of the related product, for this project, is permitted until acceptance is granted by Eskom.

3.2.3. A detailed Method Statement explaining all required steps as specified in this specification sheet shall be provided at the time of tender. 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 coats 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, and possible overspray onto adjacent surfaces still requiring additional coats.
- The Method Statement shall also consider the most efficient methods and sequencing to avoid unnecessary delays between coats that may have an impact i.e. time required for removal of spent abrasive grit and dust/debris, delay due to material handling, time required to handle, rig and move the component etc.
- All inspection interventions during and after completion of final coats shall be considered and included.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

3.2.4. The project specific QCP shall be submitted. The QCP shall be based on the detailed Method Statement and shall contain all intervention points and relevant criteria as per the information as described in the Product Data Sheet/s and this specification sheet. Eskom reserves the right to request further revision, clarification or additions in accordance with or as required by this specification sheet.

3.2.5. At the time of tender the Contractor/coating Manufacturer shall provide a definitive statement with respect to exclusions or deviations from this specification. If there are none then the statement needs to reflect this. If no exclusions or qualifications are submitted at the time of tender, the requirements as prescribed in this specification and all other referenced standards shall apply.

4. Handling, Transportation, Storage and Erection of Vessels

4.1. Every precaution must be taken to correctly support and protect the vessels during handling, transportation, storage and erection.

4.2. Prior to commencement of any work the Contractor shall submit a procedure for handling, transportation, storage and erection for Eskom's approval.

5. Safety Requirements and Considerations

5.1. During the applications of all coatings/lining, care shall be taken to ensure adequate ventilation, to allow for good visibility and proper curing of the coatings and to avoid/minimise health and safety risks.

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

5.3. The Applicator shall be familiar with the contents of these 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.

5.4. 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.

5.5. The Applicator 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 Applicator shall provide the personnel with the appropriate required PPE.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 5.6. The Applicator shall provide for all necessary safety precautions and risk assessments.
- 5.7. The Applicator shall advise Eskom of all hazardous materials to be brought on site.
- 5.8. All painting materials on site shall be stored in designated areas in storage facilities that meet the storage requirements of the paint Manufacturer and the safety requirements of the specific site. The Contractor shall be responsible for the provision of appropriate storage/shipping containers as required.
- 5.9. 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 Manufacturers recommendations.
- 5.10. The Applicator's Safety File for the area to be worked it shall address all the hazardous activities of abrasive blast cleaning and spray painting. The Applicator shall verify that the personnel carrying out these activities are suitably qualified.
- 5.11. The Applicator shall ensure that the abrasive materials used conform to all National Health and Safety Standards.

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. BS EN ISO 16961: Petroleum, petrochemical and natural gas industries — Internal coating and coating of steel storage tanks.
- 6.3. 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."
- 6.4. 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.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

- 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. ISO 2409: Paints and varnishes – Cross cut test.
- 6.10. ISO 4624: Paints and varnishes – Pull-off test for adhesion.
- 6.11. 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.
- 6.12. 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.
- 6.13. 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.
- 6.14. 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).
- 6.15. 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.
- 6.16. ISO 8503-4: Preparation of steel substrates before application of paint and related products – Surface roughness characteristics of blast-cleaned steel substrates.
- 6.17. 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 12944-3: Paint and varnishes – Corrosion protection of steel structures by protective paint systems. Part 3: Design considerations.
- 6.19. ISO 9223: Corrosion of metal and alloys – Corrosivity of atmospheres – Classification.

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

**GAM/MAT/22/235: Matla Power Station Statutory Pressure Vessels Organic Lining
Specification**

6.20. SANS / ISO 2808: Paints and Varnishes: Determination of film DFTs (Can be used as alternative to ASTM E376). 6.21. 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. 6.22. 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 micrometer profile gauge (Can be used as alternative to ISO 8503-4). 6.23. SIS 055900: Swedish Code of Practice - Pictorial surface preparation standard for painted steel surfaces. (Can be used as alternative to ISO 8501 – 1).	
Submitted by:  	Accepted by: 
Name: N. Pheta Title: Senior Advisor Date: 09 December 2022	Name: K. Northcott Title: Senior Consultant Date: 12 December 2022

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

APPENDIX V: EXTERNAL CORROSION PROTECTION SPECIFICATIONS

CPS 03 - Non-Aggressive External Environment - < 80°C		
Environment	Atmospheric – Inland – ISO 12944 C3	
Material	Mild steel	
Temperature	Ambient to 80°C	
Typical Applications	This system is applicable to all steel work, conveyor structures, plate work, the external surfaces of piping and external surfaces of ducting with wall thickness greater than 2mm internal and external to buildings operating at temperatures up to 80°C.	
New Works Surface Preparation	Abrasive blast clean to Grade Sa 2½ Surface profile as specified by the primer coating manufacturer	
	Primer	Finishing
Generic System	two component recoatable epoxy zinc phosphate primer DFT was per manufacturers technical data sheet	two component polyurethane acrylic finishing coat DFT was per manufacturers technical data sheet
Notes: 1. Stripe coating to be carried out in accordance with Clause 4.7.3 (h). using the primer. 2. All site repairs to handling and erection damage shall be carried out in accordance with Clause 4.7.6. 3. Finishing coat applied on site after erection in accordance with Clause 4.7.9 (g). 5. All 'black' nuts and bolts to be patched with the primer and intermediate coats prior to the application of the finishing coat. 6. All galvanized nuts and bolts to be patched with intermediate coat prior to the application of the finishing coat.		

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

CPS 04 - Internal or External Environment - 81°C to 200°C - Un-Lagged		
Environment	Atmospheric – Inland, Marine and Industrial – ISO 12944 C1 to C5-M/I	
Material	Mild steel – un-lagged	
Temperature	81°C to 200°C	
Typical Applications	This system is applicable to all un-lagged steel work, plate work, the external surfaces of piping and ducting with wall thickness greater than 2mm internal and external to buildings operating at temperatures from 80°C to 200°C.	
New Works Surface Preparation	Abrasive blast clean to Grade Sa 2½ Surface profile as specified by the primer coating manufacturer	
	Primer	Finishing
Generic System	two component zinc ethyl silicate primer (min 85% zinc in the dry film) DFT was per manufacturers technical data sheet	ambient temperature curing silicone acrylic DFT was per manufacturers technical data sheet
Notes: 1. Stripe coating to be carried out in accordance with Clause 4.7.3 (h). using the finishing coat. 2. All site repairs to handling and erection damage shall be carried out in accordance with Clause 4.7.6. 3. Finishing coat to be applied on site after erection in accordance with Clause 4.7.9 (g). 4. All 'black' nuts and bolts to be patched with the epoxy zinc primer prior to the application of the finishing coat. 5. All galvanized nuts and bolts to be patched with finishing coat prior to the application of the full finishing coat.		

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

CPS 05 - Internal or External Environment - 201°C to 540°C - Un-Lagged		
Environment	Atmospheric – Inland, Marine and Industrial – ISO 12944 C1 to C5-M/I	
Material	Mild steel – un-lagged	
Temperature	201°C to 540°C	
Typical Applications	This system is applicable to all un-lagged steel work, plate work, the external surfaces of piping and ducting with wall thickness greater than 2mm internal and external to buildings operating at temperatures from 200°C to 540°C.	
New Works Surface Preparation	Abrasive blast clean to Grade Sa 2½ Surface profile as specified by the primer coating manufacturer	
	Primer	Finishing
Generic System	two component zinc ethyl silicate primer (min 85% zinc in the dry film)	ambient temperature curing heat resisting silicone aluminium
Notes: 1. Primer coat to be applied in the shops. 2. Stripe coating to be carried out in accordance with Clause 4.6.3 (h) using the finishing coat. 3. All site repairs to handling and erection damage shall be carried out in accordance with Clause 4.7.6. 4. Finishing coat to be applied on site after erection in accordance with Clause 4.7.9 (g). 5. All nuts and bolts to be patched with the finishing coat prior to the application of the full finishing coat.		

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

CPS 06 - Internal or External Environment - < 150°C - Lagged Works		
Environment	Atmospheric – Inland, Marine and Industrial – ISO 12944 C1 to C5-M/I	
Expected Durability	ISO 12944 High	
Material	Mild steel - lagged	
Temperature	Ambient to 150°C	
Typical Applications	This system is applicable to all lagged steel work, plate work, piping and ducting with wall thickness greater than 2mm internal and external to buildings operating at temperatures from ambient to 150°C.	
New Works Surface Preparation	Abrasive blast clean to Grade Sa 2½ Surface profile as specified by the primer coating manufacturer	
	Primer	Finishing
Generic System	two component heat resisting epoxy phenolic primer DFT was per manufacturers technical data sheet	two component heat resisting epoxy phenolic finishing coat DFT was per manufacturers technical data sheet
Notes: 1. Both coats to be applied in the shops. 2. Stripe coating to be carried out in accordance with Clause 4.6.3 (h) using the primer. 3. All site repairs to handling and erection damage shall be carried out in accordance with Clause 4.7.6. 4. All nuts and bolts to be patched with the primer prior to the application of the finishing coat.		

APPENDIX VI: SAFETY VALVE INFORMATION

Vessel Information			Safety Valve (SV) Information						
No.	Vessel Description:	Vessel Quantity:	SV Manufacturer:	SV Model No.	SV Inlet:	SV Outlet:	SV Accessories:	SV Set Pressure (kPa):	Safety Valve per Vessel
1	Diesel Generator Air Receivers	8	LESER	4590.2522	20mm BSP Male	40mm BSP Female	H2 Top	4000	1
2	Diesel Generator Air Receivers	4	LESER	4373.2602	20mm BSP Male	20mm BSP Female	H2 Top	4000	1
3	Generator 20kV Breaker Air Receiver (20MPa)	2	LESER	4373.2612	15mm BSP Male	15mm BSP Female	H2 Cap	22000	1
4	Generator 20kV Breaker Air Receivers (20MPa)	10	LESER	4594.2162	20mm BSP Male	25mm BSP Female	H2 Cap	22000	1
5	Generator 20kV Breaker Air Receivers (15MPa)	4	LESER	4592.2502	25mm BSP Male	25mm BSP Male	H2 Cap	19617	1
6	Unitized H2 Dryers	12	N/A	N/A	N/A	N/A	N/A	N/A	0
7	Unitized Air Dryers	12	Nugen Technologies	Nugen Part No. DA0320P35	1" / 25,4mm Male	N/A	N/A	1000	1
8	Hydrogen Storage Vessels	3	LESER	Not Available	20mm BSP Male	25mm BSP Female	Not Available	3000	1
9	Diesel / Standby Compressor 1 Desiccant Dryers	2	N/A	N/A	N/A	N/A	N/A	N/A	0

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

Vessel Information			Safety Valve (SV) Information						
No.	Vessel Description:	Vessel Quantity:	SV Manu-facturer:	SV Model No.	SV Inlet:	SV Outlet:	SV Accessories:	SV Set Pressure (kPa):	Saf Valve pe Ves
10	Diesel / Standby Compressor 2 Desiccant Dryers	2	N/A	N/A	N/A	N/A	N/A	N/A	0
11	Diesel / Standby Compressor 2 After Filter (Tegnon)	1	N/A	N/A	N/A	N/A	N/A	N/A	0
12	Atlas Copco Compressor Filter 1	1	N/A	N/A	N/A	N/A	N/A	N/A	0
13	Atlas Copco Compressor Filter 2	1	N/A	N/A	N/A	N/A	N/A	N/A	0
14	Atlas Copco Compressor Filter 3	1	N/A	N/A	N/A	N/A	N/A	N/A	0
15	Centac Compressor Desiccant Dryers (1000kPa)	6	N/A	N/A	N/A	N/A	N/A	N/A	0
16	Centac Compressor Desiccant Dryers (De-Rated)	2	N/A	N/A	N/A	N/A	N/A	N/A	0
17	Centac Compressor 1 After Filter (Tegnon)	1	N/A	N/A	N/A	N/A	N/A	N/A	0
18	Centac Compressor 2 After Filter (Tegnon)	1	N/A	N/A	N/A	N/A	N/A	N/A	0
19	Centac Compressor 3 After Filter (Zander)	1	N/A	N/A	N/A	N/A	N/A	N/A	0
20	Control Air Receivers & Service Air Receiver	5	LESER	Not Available	65mm Flanged to BS 4505 Table 16/3	Not Available	Not Available	720	1
21	Hydrobin Air Receivers	4	Bailey Birkett	3376	32mm BSP Screwed Male	32mm BSP Screwed Female	None	750	1
22	Wet Ash Slurry Receiver	1	Bailey Birkett	Not Available	20mm BSP Male	40mm BSP Female	Not Available	700	1
23	Dust Conveying Centac After Coolers	5	N/A	N/A	N/A	N/A	N/A	N/A	0
24	Dust Conveying Centac After Filters (Dryer Inlets)	5	N/A	N/A	N/A	N/A	N/A	N/A	0
25	Dust Conveying Centac After Filters (Dryer Outlets)	5	N/A	N/A	N/A	N/A	N/A	N/A	0
26	Dust Plant Instrument Air Dryer IR D13500IN (External)	1	Not Available	Not Available	Not Available	Not Available	Not Available	1200	0
27	Dust Plant Instrument Air Dryer Filter (External)	1	N/A	N/A	N/A	N/A	N/A	N/A	0
28	Dust Plant Instrument Air Dryer Cooler IR (External)	1	N/A	N/A	N/A	N/A	N/A	N/A	0
29	Dust Plant Instrument Air Desiccant Dryers (Inside)	2	N/A	N/A	N/A	N/A	N/A	N/A	0
30	Dust Plant Instrument Air Filters 1 - 3 (Inside)	3	N/A	N/A	N/A	N/A	N/A	N/A	0

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

Vessel Information			Safety Valve (SV) Information						
No.	Vessel Description:	Vessel Quantity:	SV Manu-facturer:	SV Model No.	SV Inlet:	SV Outlet:	SV Accessories:	SV Set Pressure (kPa):	Saf Valve pe Ves
31	Dust Plant Control Air Receiver U1	1	Bailey Birkett	Not Available	76.2mm	101.6mm	Not Available	760	1
32	Dust Plant Control Air Receiver U4	1	Not Available	Not Available	Not Available	Not Available	Not Available	700	1
33	Dust Plant Control Air Receiver U5	1	Not Available	Not Available	Not Available	Not Available	Not Available	700	1
34	Dust Plant Control Air Receiver U6	1	Not Available	Not Available	Not Available	Not Available	Not Available	700	1
35	North Water Treatment Plant Air Receiver	1	TUV	Not Available	65mm Flanged to BS 4505 Table 16/3	Not Available	Not Available	720	1
36	South Water Treatment Plant Air Receiver	1	LESER	Not Available	50mm Flanged to BS 4505 Table 16/3	Not Available	Not Available	720	1
37	Ammonium Hydroxide Re-use Tank	1	N/A	N/A	N/A	N/A	N/A	N/A	0
38	Caustic Bulk Storage Vessel No.1 (G001)	1	N/A	N/A	N/A	N/A	N/A	N/A	0
39	Caustic Bulk Storage Vessel No.2 (G002)	1	N/A	N/A	N/A	N/A	N/A	N/A	0
40	Caustic Re-use Tank	1	N/A	N/A	N/A	N/A	N/A	N/A	0
41	Hot Water Tank No.1 (G002)	1	PIER	Not Available	25.4mm	Not Available	Not Available	500	1
42	Hot Water Tank No.2 (G001)	1	PIER	Not Available	25.4mm	Not Available	Not Available	500	1
43	Sulphuric Acid Re-Use Tank	1	N/A	N/A	N/A	N/A	N/A	N/A	0
44	Sulphuric Acid Bulk Storage Vessel No.1 South	1	N/A	N/A	N/A	N/A	N/A	N/A	0
45	Sulphuric Acid Bulk Storage Vessel No.2 South	1	N/A	N/A	N/A	N/A	N/A	N/A	0
46	Sulphuric Acid Bulk Storage Vessel North	1	N/A	N/A	N/A	N/A	N/A	N/A	0
47	Portable Air Receiver for Plater Shop	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48	Portable Compressors with Receiver Model CQ092X, NN200X, NN270X, 5H500 & NF200X	14	Padovan Valerio	Not Available	9.525mm BSP	N/A	None	1100	1
49	Portable Air Receiver for Welding Shop	1	Not Available	Not Available	15mm	N/A	None	1600	1
50	Safety Valves on Blower House Centac /	5	LESER	4411.4423	DN 65 PN 16 Flanged	DN 100 PN 16 Flanged	H3 Cap	550	1

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Vessel Information			Safety Valve (SV) Information						
No.	Vessel Description:	Vessel Quantity:	SV Manufacturer:	SV Model No.	SV Inlet:	SV Outlet:	SV Accessories:	SV Set Pressure (kPa):	Safety Valve per Vessel
	Conveying Air Compressors								
	Totals:	139							

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APPENDIX VII: TYPICAL RESOURCE REQUIREMENTS

No.	Applicable Scope of Work Section:	Qualification Requirement and Description:	Minimum National Qualification Framework Level:	Recommended Number of Personnel:
1.	Corrosion Protection	Site Manager with Project Management Skills	NQF 6: Council on Higher Education (CHE) - Diploma / Advanced Certificate	1
2.	Corrosion Protection	Site Supervisors qualified to SAQCC (Corrosion Protection) Module PS1: General Painting Supervisor	ABET Level 4 - 8 Years Schooling (Standard 6 / Grade 8) / NQF 1 - Umalusi General Certificate of Education.	2
3.	Corrosion Protection	Coating Applicators / Painters qualified to SAQCC (Corrosion Protection) Module PA1: General Heavy Duty Coatings Applicator	ABET Level 2 - Literacy / 4 Years Schooling (Standard 3 / Grade 5) / NQF 1 - Umalusi General Certificate of Education.	4
4.	Corrosion Protection	Coating Inspectors Qualified to SAQCC (Corrosion Protection) Coating Inspector Level 1 (Shop Inspector), Level 2 (Site Inspector) or NACE Coating Inspection Programme (CIP)	ABET Level 5 - Written exam equivalent Schooling (Standard 8 / Grade 10) / NQF 2 - Umalusi Elementary Certificate.	2
5.	Safety Valve Overhaul & Calibration			

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement “As- and when required” based on Inspection Findings. at Matla Power Station for a period of five (5) years

APPENDIX VIII: TYPICAL FACILITIES & EQUIPMENT REQUIREMENTS

No.	Applicable Scope of Work Section:	Equipment Description:
1.	Corrosion Protection	Hand Cleaning Equipment: • Wire Brushes • Scrapers • Sandpaper • Chipping Hammers
2.	Corrosion Protection	Power Cleaning Equipment (Electrical or Pneumatic): • Needle Guns • Power Wire Brushes • Power Sanders
3.	Corrosion Protection	Abrasive Blast Cleaning: • Compressors • Blast Pots • Hoses and Nozzles
4.	Corrosion Protection	Water Cleaning: • High Pressure Cleaning Equipment 68 – 680 bar (1000 – 10 000 psi) • Ultra-High Pressure Cleaning Equipment 2000 – 2500 bar (30000 – 36 000 psi)
5.	Corrosion Protection	Lining Application: • Brushes • Rollers • Conventional Spray Equipment and/or • Airless Spray Equipment
6.	Corrosion Protection	Specialised Equipment: • Media Removal Equipment (Conveyors, etc.) • Vacuum Cleaners • Dehumidifying Equipment • Lighting Equipment • Ventilation Equipment
7.	Corrosion Protection	Quality Control Testing Equipment: • Hydrometer • Wet Film Thickness (WFT) Gauges • Depth Profile Gauge (or Testex Tape) • Surface Temperature Gauge • Electronic Dry Film Thickness (DFT) Gauge • Pin-hole Detection Equipment (Wet Sponge / High Spark)
8.	Safety Valve Overhaul & Calibration	Equipment Register including SANAS Calibration Certificates where applicable for: • Pressure Sources • Test Pressure Gauges • Test Rigs • Load Cells • Online Testing Equipment

Provision of Maintenance Services: Vessels Surface Preparation, Internal & External Corrosion Protection (Coatings and/or Linings), Pressure Testing, Safety Valve Calibration and/or Name Plate Replacement "As- and when required" based on Inspection Findings. at Matla Power Station for a period of five (5) years

APPENDIX VIII: Schedule of KPIs

Category	KPI	Definition	Measurement Method	Target	Reporting Frequency
Safety & Compliance	Zero Harm	Number of incidents related to pressure vessels	Incident reports & safety logs	0 incidents	Monthly
Safety & Compliance	Statutory Compliance	Compliance with codes and regulations	RBI/Insurance/Station Audits & certification review	100% compliance	Quarterly
Safety & Compliance	Inspection Compliance	Planned inspections completed on time	Schedule vs completion SAP PMs	100%	Monthly
Safety & Compliance	PTW Compliance	Work executed under approved PTW	PTW audits	100%	Monthly
Safety & Compliance	Safety Audit Findings	Major audit non-conformances	Audit reports	0 major findings	Quarterly
Safety, Health & Environmental Compliance	Environmental Incident Management	Failure to identify, report, and respond to environmental incidents (e.g. spillages, gas leaks, fumes) during maintenance activities	Incident reports, SHE audits, environmental logs or lack thereof in terms of reporting (Contract Managers & Supervisor's discretion)	100% incidents reported and addressed within required timeframe	Monthly
Operational Performance	Equipment Availability	Percentage uptime	Operational logs	≥ 98%	Monthly
Operational Performance	Response Time	Time to respond to breakdown	Call logs	≤ 2 hrs critical	Monthly
Operational Performance	MTTR	Average repair time	Maintenance records	Improvement trend	Monthly
Operational Performance	Unplanned Failures	Number of failures	Incident logs (SAP Stats CMs Break in %)	Reduction trend <10% of emergent work added during the work week	Monthly

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Maintenance Effectiveness	PM Schedule Compliance	Scheduled maintenance completed	SAP Stats	≥ 95%	Monthly
Maintenance Effectiveness	PM/CM Ratio	Preventive vs corrective ratio	Work order analysis: Measure PM/CM ratio per work week which is required to be at 80/20	Achieve 80/20 and sustain until contract expiration.	Monthly
Maintenance Effectiveness	Defect Identification	Defects during inspections	Inspection records/Check sheet translated to CMs	Increasing plant reliability with decreased breakdowns	Monthly
Maintenance Effectiveness	RCA issues and Actions Completion	RCAs issues and Actions completed on time	G-drive: Risk and assurance Occurrence management folder	100% = 0 ISSUES and 0 ACTIONS	Monthly
Quality Assurance	Rework Rate	Work requiring rework	QA/QC records (QCPs/ITPs)	0 incidents	Quarterly
Quality Assurance	Documentation Compliance	Complete job packs	Document audits	100%	Quarterly
Cost & Efficiency	Budget Adherence	Actual vs planned spend	Financial reports	±5%	Monthly
Cost & Efficiency	Emergency Callouts	Number of reactive callouts	Maintenance logs: P1s and P2s	Reduction trend	Quarterly
Governance & Reporting	Reporting Compliance	Reports submitted on time	Submission register	100%	Quarterly

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Governance & Reporting	Audit Closure	Audit findings closed	Audit tracker	100%	Quarterly
People & Competency	Competency Compliance	Certified personnel	HR records	100%	Quarterly
People & Competency	Tool Calibration	Valid calibrated tools	Calibration records	100%	Bi-annually