

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.



NEC3 Term Service Contract (TSC3)

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

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

for The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years as and when required.

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

CONTRACT No. [Insert at award stage]

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

PART C1: AGREEMENTS & CONTRACT DATA

Contents:	No of pages
C1.1 Form of Offer and Acceptance	[•]
[to be inserted from Returnable Documents at award stage]	
C1.2a Contract Data provided by the <i>Employer</i>	[•]
C1.2b Contract Data provided by the <i>Contractor</i>	[•]
[to be inserted from Returnable Documents at award stage]	
C1.3 Proforma Guarantees	[•]

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance 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 a contract for the procurement of:

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

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*.

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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)

Name(s)

Capacity

**for the
Employer**

(Insert name and address of organisation)

Name &
signature of
witness

Date

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

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

Note:

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

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

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

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

For the tenderer:

For the Employer

Signature

Name

Capacity

On behalf
of

(Insert name and address of organisation)

(Insert name and address of organisation)

Name &
signature
of witness

Date

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C1.2 TSC3 Contract Data

Part one - Data provided by the *Employer*

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option:	
		A: Priced contract with price list
	dispute resolution Option	W1: Dispute resolution procedure
	and secondary Options	
		X1: Price adjustment for inflation
		X2: Changes in the law
		X17: Low service damages
		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):	Millicent Phukuntsi
	Address	Duvha Power Station Old Bethal Road
	Tel	013 690 0507
	Fax	N/A

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

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e-mail		PhukunNM@eskom.co.za
11.2(2)	The Affected Property is	Duvha Power Station
11.2(13)	The <i>service</i> is	The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years as and when required.
11.2(14)	The following matters will be included in the Risk Register	Road Closure Matters notified as early warnings, Decisions resulting from risk reduction meetings
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	Non Outage periods: two (2) working days for general correspondence, except otherwise agreed by parties in the relevant Task Order. Outage period: twenty four (24) hours
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 <i>Contractor</i> submits a first plan for acceptance within	With Submission of the Task Order Proposal
3	Time	
30.1	The <i>starting date</i> is.	TBC
30.1	The <i>service period</i> is	5 Years
4	Testing and defects	Testing and defect on suppliers' site before delivered to Duvha power Station. Final quality inspection will be done at main stores at Duvha Power Station for exception 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

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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 20th and 25th day of each successive month. Final assessment within four weeks after completion date of a task order.
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 be necessary to prove) for amounts due in Rands and
6	Compensation events	All Compensation Events are to be managed as per core clause 6 of the NEC3 TSC this Contract Data
7	Use of Equipment Plant and Materials	To be managed as per core clause 7 of the NEC3 TSC
8	Risks and insurance	
80.1	These are additional <i>Employer's</i> risks	1. N/A
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	

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	final total of the Prices for the whole of the service at intervals no longer than	4 weeks.									
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 by ICE-SA Division.									
	Address	[•]									
	Tel No.	[•]									
	Fax No.	[•]									
	e-mail	[•]									
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.									
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	South Africa Johannesburg									
	The person or organisation who will choose an arbitrator										
	- if the Parties cannot agree a choice or	the Chairman for the time being or his nominee									
	- if the arbitration procedure does not state who selects an arbitrator, is	of the Association of Arbitrators (Southern Africa) or its successor body.									
12	Data for secondary Option clauses										
X1	Price adjustment for inflation	CPA will be applied 16 months after base date maturity									
X1.1	The <i>base date</i> for indices is	[•].									
	The proportions used to calculate the Price Adjustment Factor are:	<table> <tr> <td>proportion</td><td>linked to index for</td><td>Index prepared by</td></tr> <tr> <td>0.</td><td>[•]</td><td>[•]</td></tr> <tr> <td>0.</td><td>[•]</td><td>[•]</td></tr> </table>	proportion	linked to index for	Index prepared by	0.	[•]	[•]	0.	[•]	[•]
proportion	linked to index for	Index prepared by									
0.	[•]	[•]									
0.	[•]	[•]									

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		0.	[•]	[•]
		0.	[•]	[•]
		0.	[•]	[•]
		[•]	non-adjustable	
		1.00		
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	Annexture A		
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		
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),		

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		• death of or injury to a person and • infringement of an intellectual property right.
X18.5	The <i>end of liability date</i> is	12 months after the end of the completion of each Task Order.
X19	Task Order	
X19.3	Delay Damages are	Delays in refurbishment of Motors or unavailability of required spares. Two percent (2%) of the Task Order Value per day from the day of delayed completion until the actual completion of the services, to be capped at the maximum of Ten percent (30%) of the Total Task Order Values
X19.5	The <i>Contractor</i> submits a Task Order programme to the <i>Service Manager</i> within	2 Days of receiving the Task Order
Z	The <i>additional conditions of contract</i> are	Z1 to Z16 always apply.

Z1 Cession delegation and assignment

- Z1.1 The *Contractor* does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer*.
- Z1.2 Notwithstanding the above, the *Employer* may on written notice to the *Contractor* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.

Z2 Joint ventures

- Z2.1 If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Employer* for the performance of this contract.
- Z2.2 Unless already notified to the *Employer*, the persons or organisations notify the *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.

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- 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*.
- 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*:

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-
- 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 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.

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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 *Contractor* or a third party, such party's employees, agents, or Subcontractors or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,

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

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

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

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Z12 Insurance

Z 12 .1 Replace core clause 83 with the following:

Insurance cover 83

- 83.1 When requested by a Party, the other Party provides certificates from his insurer or broker stating that the insurances required by this contract are in force.
- 83.2 The *Contractor* provides the insurances stated in the Insurance Table A from the *starting date* until the earlier of Completion and the date of the termination certificate.

INSURANCE TABLE A

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

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Z 12.2 Replace core clause 86 with the following:

Insurance by the Employer

86

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

INSURANCE TABLE B

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

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* 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

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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 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

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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.

Z15 Security Clearance/ Criminal Checks

These clauses are not only, but are especially, applicable for accessing critical infrastructure in terms of the Critical Infrastructure Protection Act, 2019 (previously referred to as National Key Points), but may include other sites, and/or where persons are rendering a service or have given notice of intention to render a service to an organ of state, which service may (1) give him or her access to classified information and intelligence in the possession of the organ of state; or (2) give him or her access to or information concerning areas designated as critical infrastructure.

- Z15.1 The *Contractor* and its subcontractors implement risk and security management processes and measures to mitigate any threats against any premises, installations or sites, systems, or information of the *Employer* with only persons with criminal verification record security clearance certificates being given access after verification of these and identifying documents by the *Employer's* security system.
- Z15.2 The *Contractor* provides, at the *Contractor's* cost, to the *Employer*, criminal verification record security clearance certificates for each person the *Contractor* or its subcontractors requires to access any premises, installations or sites, systems, or information of the *Employer*, with copies of their identifying documents, such as passports, before allowed such access by the *Employer*.

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The *Employer's* refusal to allow access to premises, installations or site/s, systems or information is at the *Employer's* sole discretion and is not a compensation event.

- Z15.3** The criminal verification record security clearance certificates provided are to have been issued by a service provider which is to be a reputable screening company accredited by the South African Police Services, are to be no older than four weeks since issue and valid for as long as each person is required to access premises, installations or sites, systems or information. The *Employer* may require updated certificates and identifying documents every 26 to 52 weeks, subject to safety and security concerns and the risk rating of the works or services undertaken and/or premises, installations or sites, systems or information.
- Z15.4** If any such criminal verification record security clearance certificates is cancelled, withdrawn, invalidated, amended, or expires, or a criminal conviction is noted against any person requiring access, even if an appeal against the criminal conviction has been noted, the *Service Manager* may instruct the *Contractor* to ensure that such person leaves the premises, installations or site/s and is blocked from systems and information and the giving of this instruction is not a compensation event.

Z16 Protection of Personal Information Act Compliance

- For the purposes of this clause, the terms "Data Subject", "Personal Information", "Processing" and "Regulator" and "Responsible Party" have the meanings given to them in the Protection of Personal Information Act, 2013 ("POPIA").
- Each Party acknowledges that it may disclose and/or receive Shared Personal Information processed in terms of this contract ("Shared Personal Information") and that it determines the purposes for which and the manner in which the Shared Personal Information is, or is to be, processed.
- Each Party shall always comply with POPIA when performing its obligations under this contract and shall not perform any of their respective obligations under this contract in such a way as to cause the other Party to breach any of that other Party's obligations under POPIA.
- Each Party shall ensure that, in respect of all Shared Personal Information provided to the other Party and in respect of the use of that Shared Personal Information under this contract:-
- Z16.4.1** all necessary fair Processing notices have been provided to and consents obtained from Data Subjects by that Party, where required, in terms of POPIA, including to specify that the other Party is also a Responsible Party in respect of the Data Subject's Personal Information and to provide a link (for example, <https://www.eskom.co.za/about-eskom/website-terms-and-conditions/>) to the other Party's Privacy Statement or to include a statement that the other Party's Privacy Statement can be found on the other Party's corporate website; and
- Z16.4.2** all necessary steps have been taken to ensure that Shared Personal Information has been collected and processed in accordance with the principles set out in POPIA, including in particular those relating to:
- lawful, fair and transparent Processing;
 - specified, legitimate and explicit purposes of Processing; and
 - adequate, relevant and not excessive Processing.
- If either Party receives any complaint, notice or communication from the Regulator which relates directly to:
- Z16.5.1** the other Party's Processing of the Shared Personal Data; or
- Z16.5.2** a potential failure by the other Party to comply with POPIA in respect of the activities of the Parties under or in connection with this contract,
- it shall, to the extent permitted by law, promptly notify the other Party and provide such information as it shall reasonably request in that regard.
- If a Data Subject makes a written request to either Party to exercise any of their rights under POPIA, the receiving Party shall respond to that request in accordance with POPIA. To the extent the request concerns Processing of Shared Personal Information undertaken by the other Party, the receiving Party shall:
- Z16.6.1** promptly and without undue delay forward the request to the other Party; and
- Z16.6.2** cooperate and provide reasonable assistance in relation to that request to enable the other Party to respond in accordance with POPIA.
- Each Party acknowledges that the other Party may disclose Shared Personal Information to any Regulator or law enforcement authority with jurisdiction to request access to the Shared Personal Information.
- Neither Party discloses or otherwise makes available the Personal Information to any third party (including sub-contractors, but excluding its authorised employees who require access to such Personal Information strictly in order for the Parties to carry out their obligations pursuant to this contract), unless a Party has provided, to a requesting Party, its prior written consent to do so, and the requesting Party has submitted to the other Party (consenting Party), to its satisfaction, a copy of a written contract or undertaking that the requesting Party has entered into with a third party for the protection of Personal Information of the Data Subjects or unless there is an applicable exemption in terms of the law to process or further process the personal information.
- The requesting Party indemnifies and holds harmless the consenting Party and its staff, successors, cessionaries, delegates, and assigns, from any and all losses, costs, expenses and damage, as well as penalties and fines arising from the requesting Party's non-compliance with the provision of any relevant legislation applicable to Personal Information or data protection, as well as damage to the consenting Party's reputation and costs of compliance as directed by the Regulator, including but not limited to publication of the data breach.

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Annexure A
Low Services Damages

Item	Low Service Damage Description	Value of Low Service Damage	Limit of Low Service Damage
1	Failure to transport, handle, store, load or off-load motors in a manner that prevents damage, resulting in additional deterioration or defects to the motor and associated components.	5% of Task Order value per occurrence	Limited to 20% of the Task Order value
2	Failure to strip, identify, and mark motor components with a unique job number, resulting in incorrect assembly, loss of parts, or traceability issues.	2% of Task Order value per occurrence	Limited to 40% of the Task Order value
3	Failure to conduct a complete motor condition assessment, maintain evidence of failure, or submit the required assessment documentation within agreed timelines.	2% of Task Order value per day	Limited to 35% of the Task Order value
4	Failure to provide a comprehensive assessment report, including recommendations and detailed refurbishment scope for Employer approval.	2% of Task Order value per day	Limited to 10% of the Task Order value
5	Failure to execute approved refurbishment, overhaul, rewind, testing, or engineering activities in accordance with approved Process Quality Plans (PQP), OEM requirements, and applicable standards.	5% of Task Order value per occurrence	Limited to 40% of the Task Order value
6	Rework required due to poor workmanship, incorrect winding practices, assembly errors, contamination, inadequate quality control, or failure to meet specified performance requirements.	5% of Task Order value per occurrence	Limited to 40% of the Task Order value
7	Failure to identify, report, and rectify defects discovered during stripping, testing, refurbishment, or final inspection, resulting in unresolved defects upon return of the motor.	5% of Task Order value per occurrence	Limited to 40% of the Task Order value
8	Failure to submit failure reports, test results, quality records, or test certificates required under the contract.	2% of Task Order value per day	Limited to 20% of the Task Order value
9	Failure to obtain Employer approval before commencing additional repairs, tests, engineering work, or other activities	3% of Task Order value per	Limited to 30% of the Task

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Item	Low Service Damage Description	Value of Low Service Damage	Limit of Low Service Damage
	outside the approved scope of work.	occurrence	Order value
10	Failure to provide adequate qualified personnel, engineering support, specialist equipment, testing facilities, or resources required to execute the refurbishment works within contractual timeframes.	3% of Task Order value per day	Limited to 25% of the Task Order value
11	Failure to achieve agreed turnaround times or delivery dates for completed motors as specified in the Task Order or agreed schedule.	2% of Task Order value per day	Limited to 40% of the Task Order value
12	Failure of refurbished motor to meet specified electrical, mechanical, vibration, insulation resistance, winding, performance, or acceptance test requirements during FAT, routine testing, or commissioning.	5% of Task Order value per occurrence	Limited to 30% of the Task Order value
13	Failure to reassemble and return a motor declared beyond economical repair together with a complete technical failure report and justification as required by the contract.	2% of Task Order value per day	Limited to 20% of the Task Order value
14	Failure to provide skills transfer, technical guidance, or knowledge sharing to Eskom personnel where required during assessments, inspections, testing, or refurbishment activities.	2% of Task Order value per day	Limited to 15% of the Task Order value

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C1.2 Contract Data

Part two - Data provided by the Contractor

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	10% 10%
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: 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
C	Target contract with price list	

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11.2(12)	The <i>price list</i> is in
11.2(20)	The tendered total of the Prices is R
E	Cost reimbursable contract
11.2(12)	The <i>price list</i> is in

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C1.3 Forms of Securities

Pro formas for Bonds & Guarantees N/A

For use with the NEC3 Term Service Contract (TSC3)

[Note to contract compiler:

Once it has been decided which securities are required for this contract delete from this file the ones not required, revise the notes below accordingly and delete this note.]

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

Option X4: Parent company guarantee

Option X13: Performance Bond

Each of these secondary Options requires a bond or guarantee “in the form set out in the Service Information”. Pro forma documents for these bonds and guarantees are provided here for convenience but are to be treated as part of the Service Information.

The *Contractor* shall guarantee his ASGI-SA Obligations by providing the *Employer* with an ASGI-SA Guarantee in the form provided here.

[Note to contract compiler: If there are no ASGI-SA Obligations in this contract, delete the above statement and the ASGI_SA bond]

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

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

Pro forma Parent Company Guarantee (for use with Option X4)

(to be reproduced exactly as shown below on the letterhead of the Contractor's Parent Company)

**Eskom Holdings SOC Ltd
Megawatt Park
Maxwell Drive
Sandton
Johannesburg**

Date:

Dear Sirs,

Parent Company Guarantee for Contract No

With reference to the above numbered contract made or to be made between

Eskom Holdings SOC Ltd

(the *Employer*) and

{Insert registered name and address of the *Contractor*}

(the *Contractor*), for

{Insert details of the *works* from the Contract Data}

(the *works*).

I/We the undersigned

on behalf of the *Contractor's*
parent company

of physical address

and duly authorised thereto do hereby unconditionally guarantee to the *Employer* that the *Contractor* shall Provide the Service in accordance with the above numbered Contract.

1. If for any reason the *Contractor* fails to Provide the Service, we hereby agree to cause to Provide the Service at no additional cost to the *Employer*.
2. If we fail to comply with the terms of this Deed of Guarantee, the *Employer* may itself procure such performance (whether or not the Agreement be formally determined). The *Employer* is to notify us and we shall indemnify the *Employer* for any additional cost or expense it incurs.
3. Our liability shall be as primary obligor and not merely as surety and shall not be impaired or discharged by reason of any arrangement or change in relationship made between the *Contractor* and the *Employer* and/or between us and *Contractor*; nor any alteration in the obligations undertaken by the *Contractor* or in the terms of the Agreement; nor any indulgence, failure, delay by you as to any matter; nor any dissolution or liquidation or such other analogous event of the *Contractor*.
4. The *Employer* shall not be obliged before taking steps to enforce the terms of this Deed of Guarantee to obtain judgement against the *Contractor* in any court or other tribunal, to make or file any claim in liquidation (or analogous proceedings) or to seek any remedy or proceed first against the *Contractor*.
5. This Deed of Guarantee shall be governed by and construed in accordance with the laws of the Republic of South Africa and we hereby submit to the non-exclusive jurisdiction of the High Court of South Africa.

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Signed at _____ on this _____ day of _____ 200_

Signature(s)

Name(s) (printed)

Position in parent company

Signature of Witness(s)

Name(s) (printed)

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

Pro forma Performance Bond – Demand Guarantee (for use with Option X13)

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

**Eskom Holdings SOC Ltd
Megawatt Park
Maxwell Drive
Sandton
Johannesburg**

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

Date:

Dear Sirs

Performance **Bond – Demand Guarantee:** *[Drafting Note: Name of Contractor to be inserted]*

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

1. In this Guarantee the following words and expressions shall have the following meanings:-
 - 1.1 “Bank” - means [●], [●] Branch, (Registration No. [●]); *[Drafting Note: Name of Bank to be inserted]*
 - 1.2 “Bank’s Address” - means [●]; *[Drafting Note: Bank’s physical address to be inserted]*
 - 1.3 “Contract” – means the written agreement relating to the Services, entered into between Eskom and the Contractor, on or about the [●] day of [●] 200[●] (Contract Reference No. [.] as amended, varied, restated, novated or substituted from time to time; *[Drafting Note: Signature Date and Contract reference number to be inserted]*
 - 1.4 “Contractor” – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]. *[Drafting Note: Name and details of Contractor to be inserted]*
 - 1.5 “Eskom” - means Eskom Holdings SOC Ltd, a company registered in accordance with the laws of the Republic of South Africa under Registration Number 2002/015527/30].
 - 1.6 “Expiry Date” - means the earlier of
 - the date that the Bank receives a notice from Eskom stating that all amounts due from the Contractor as certified in terms of the contract have been received by Eskom and that the Contractor has fulfilled all his obligations under the Contract, or
 - the date that the Bank issues a replacement Bond for such lesser or higher amount as may be required by Eskom
 - 1.7 “Guaranteed Sum” - means the sum of R [●] ([●] Rand);
 - 1.8 “Services” - means [insert as applicable.].
2. At the instance of the Contractor, we the undersigned _____ and _____, in our respective capacities as _____ and _____ of the Bank, and duly authorized thereto, confirm that we hold the Guaranteed Sum at the disposal of Eskom, as security for the proper performance by the Contractor of all of its obligations in terms of and arising from the Contract and hereby undertake to pay to Eskom, on written demand from Eskom received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.
3. A demand for payment under this guarantee shall be made in writing at the Bank’s address and shall:
 - 3.1 be signed on behalf of Eskom by a Group Executive, Divisional Executive, Senior General

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Manager or its delegate;

3.2 state the amount claimed ("the Demand Amount");

3.3 state that the Demand Amount is payable to Eskom in the circumstances contemplated in the Contract.

4. Notwithstanding the reference herein to the Contract the liability of the Bank in terms hereof is as principal and not as surety and the Bank's obligation/s to make payment:

4.1 is and shall be absolute provided demand is made in terms of this bond in all circumstances; and

4.2 is not, and shall not be construed to be, accessory or collateral on any basis whatsoever.

5. The Bank's obligations in terms of this Guarantee:

5.1 shall be restricted to the payment of money only and shall be limited to the maximum of the Guaranteed Sum; and

5.2 shall not be discharged and compliance with any demand for payment received by the Bank in terms hereof shall not be delayed, by the fact that a dispute may exist between Eskom and the Contractor.

6. Eskom shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting our liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Contract.

7. Should Eskom cede its rights against the Contractor to a third party where such cession is permitted under the Contract, then Eskom shall be entitled to cede to such third party the rights of Eskom under this Guarantee on written notification to the Bank of such cession.

8. This Guarantee:

8.1 shall expire on the Expiry Date until which time it is irrevocable;

8.2 is, save as provided for in 7 above, personal to Eskom and is neither negotiable nor transferable;

8.3 shall be returned to the Bank upon the earlier of payment of the full Guaranteed Sum or expiry hereof;

8.4 shall be regarded as a liquid document for the purpose of obtaining a court order; and

8.5 shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the Courts of the Republic of South Africa.

8.6 Any claim which arises or demand for payment received after expiry date will be invalid and unenforceable.

9. The Bank chooses domicilium citandi et executandi for all purposes in connection with this Guarantee at the Bank's Address.

Signed at _____

Date _____

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For and behalf of the Bank

Bank Signatory: _____

Bank Signatory: _____

Witness: _____

Witness: _____

Bank's seal or stamp

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Pro forma ASGI-SA Guarantee

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

**Eskom Holdings SOC Ltd
Megawatt Park
Maxwell Drive
Sandton
Johannesburg**

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

Date:

Dear Sirs

Pro-Forma ASGI-SA Guarantee: *[Drafting Note: Name of Contractor to be inserted]*

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

1. In this Guarantee the following words and expressions shall have the following meanings:-
 - 1.1 "Bank" - means [●], [●] Branch, (Registration No. [●]); *[Drafting Note: Name of Bank to be inserted]*
 - 1.2 "Bank's Address" - means [●]; *[Drafting Note: Bank's physical address to be inserted]*
 - 1.3 "Contract" – means the written agreement relating to the Project, entered into between the *Employer* and the *Contractor*, on or about the [●] day of [●] 200[●] (Contract Reference No. [●] as amended, varied, restated, novated or substituted from time to time; *[Drafting Note: Signature Date and Contract reference number to be inserted]*
 - 1.4 "*Contractor*" – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]. *[Drafting Note: Name and details of Contractor to be inserted]*
 - 1.5 "*Contractor's ASGI-SA Obligations*" – means the *Contractor's ASGI-SA Obligations* under and as defined in the Contract.
 - 1.6 "*Employer*" - means Eskom Holdings SOC Ltd, a company registered in accordance with the laws of the Republic of South Africa under Registration Number 2002/015527/30.
 - 1.7 "Expiry Date" - means the [●] day of [●] 200[●]; *[Drafting Note: anticipated date of issue of ASGI-SA Performance Certificate to be inserted.]*
 - 1.8 "Guaranteed Sum" - means the sum of R [●] ([●] Rand);
 - 1.9 "Project" – means the
2. At the instance of the *Contractor*, we the undersigned _____ and _____, in our respective capacities as _____ and _____ of the Bank, and duly authorized thereto, confirm that we hold the Guaranteed Sum at the disposal of the *Employer*, as security for the proper performance by the *Contractor* of the *Contractor's ASGI-SA Obligations* and hereby undertake to pay to the *Employer*, on written demand from the *Employer* received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.
3. A demand for payment under this guarantee shall be made in writing at the Bank's address and shall:
 - 3.1 state the amount claimed ("the Demand Amount");
 - 3.2 state that the Demand Amount is payable to the *Employer* in the circumstances contemplated in

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the Contract.

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

Signed at _____

Date _____

For and behalf of the Bank

Bank Signatory: _____

Bank Signatory: _____

Witness: _____

Witness: _____

Bank's seal or stamp

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PART 2: PRICING DATA

TSC3 Option A

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option A	2
C2.2	The <i>price list</i>	[•]

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

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.

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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.

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C2.2 the *price list*

Item 1: Electric Feed Pump (EFP) MOTORS –GEC/Actom, 13MW, 11kV, 35000kg

	Electric Feed Pump (EFP) MOTORS –GEC/Actom, 13MW, 11kV, 35000kg			
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformers)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Polish Base Plate Feet and Top Pads			
85	Retap all mounting Holes			
86	Manufacture new Dowls			
87	Supply and fit new marine type Oil Sight Glasses			
88	Supply and fit new Felt Seals			
89	Manufacture End Plates			
90	Check and Rectify Nips			
91	Consumables			
92	Supply New Connector blocks, Din Rails & Stoppers			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

93	Supply & Fit New Lugs			
94	Pressure Test Radiator "A"			
95	Pressure Test Radiator "B"			
96	Sandblast & paint Radiator Canopy			
97	Supply & fit New Winding Thermocouples			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 2 : U1-6 Forced Draught (FD), U4-6 Induced Draught (ID), Fan Motors -MITSUBISHI/GEC/WEG, 3600 KW, 3.3KV 15000 KG

	U1-6 Forced Draught (FD), U4-6 Induced Draught (ID), Fan Motors -MITSUBISHI/GEC/WEG, 3600 KW, 3.3KV 15000 KG			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections: Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection		
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling		
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment		
5.1	Stator and Housing		
5.1.1	Inspect winding for corona discharge activities		
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)		
5.1.3	Check insulation for cracks, frays, signs of brittleness		
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)		
5.1.5	Check for foreign objects in housing		
5.1.6	Check for blocked Vent ducts		
5.1.7	Check for loose wedges		
5.1.8	Check for signs of visual stator core rub		
5.1.9	Check for loose compression figures and plates		
5.2	Rotor, Shaft and Fan		
5.2.1	Inspect for signs of overheating		
5.2.2	Inspect cleanliness (oil, dust, moisture)		
5.2.3	Inspect for loose rotor bars		
5.2.4	Inspect for blocked vent ducts		
5.2.5	Check for core migration		
5.2.6	Check for missing clamping fingers		
5.2.7	Check for security of end rings		
5.2.8	Inspect looseness between the fan and its hub		
5.2.9	Inspect journals for scratch marks and grooves		
5.3	Bearings (DE,NDE)		
5.3.1	Inspect cleanliness (dust, ash, coal)		
5.3.2	Check for signs of rust/water ingress		
5.3.3	Check for signs of bearing insulation wear		

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads (Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxiliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Manufacture 250mm Labyrinth Seals			
85	Rectify Bearing Nips			
86	Supply and Fit New Top Inspection Covers			
87	Repair Cracks at The End of Shaft Ribs & Repair			
88	Consumables			
89	Re-tap all Mounting holes			
90	Clean All Spigots & Faces			
91	Supply & fit New Connector Blocks, Din Rails & Stoppers			
92	Clean and Pressure Test Radiator 'A'			
93	Clean and Pressure Test Radiator 'B'			
94	Manufacture new 200mm Labyrinth Seals			
95	Manufacture New 280mm Labyrinth Seals			
96	Machine Seals Clean & Polish			
97	Plastic Wrap for Transportation & Storage			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

Item 3 : U1-6 Primary Air (PA) Fan Motors – GEC/Actom, 2000 KW, 3.3KV, 7000 KG,

	U1-6 Primary Air (PA) Fan Motors – GEC/Actom, 2000 KW, 3.3KV, 7000 KG,			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression fingures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorcs			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Clean, polish & rectify ovality on Oil Rings			
85	Machine seals,Re-metal & machine back to standard			
86	Supply & fit new Marine type Oil sight glasses			
87	Re-Insulate Bearing OD & machine back to standard			
88	Supply & fit new set of Pipes and clamps			
89	Replace Stripped and Missing Plugs			
90	Polish all Spigot Faces			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

91	Re-tap All Mounting Holes & Jacking Holes & Fit New Jacking Screws			
92	Clean Bundle "A" Tubes			
93	Clean Bundle "B" Tubes			
94	Plastic Wrap Motor for Storage			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 4 : U1-3 Induced Draught (ID) Fan Motors – ABB 5130kW, 11kV, 29752kg

	U1-3 Induced Draught (ID) Fan Motors – ABB 5130kW, 11kV, 29752kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contracto's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating (stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Offline Partial discharge test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84				
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 5 : North Main Cooling Water Pump (MCW), Motors – GEC/ABB, 2020kW, 3.3kV, 25000kg

	North Main Cooling Water Pump (MCW), Motors – GEC/ABB, 2020kW, 3.3kV, 25000kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

	Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Polish all Spigot Faces and flange face			
85	Re-tap all mounting holes			
86	Re-metal & Machine 180mm Thrust Pads			
87	Re-metal & Machine 360mm Guide Bearing			
88	Re-metal & Machine 400mm Guide Bearing			
89	Pressure test bearing cooler, Acid wash and repair leak			
90	Fit new "O" Ring Cord			
91	Supply and fit new Air Breathers			
92	Supply and fit new Magnetic Transmitters			
93	Supply and fit x3 Transmitters for Bearing RTD's			
94	Supply and fit new Connector Blocks, Din Rails & Stoppers			
95	Supply and fit new oil sight Glasses			
96	Supply and fit new Oil sight Oil Level Gauge			
97	Supply and fit New Air Grids			
98	Plastic Wrap for Transportation & Storage			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

Item 6 : South Main Cooling Water Pump (MCW), Motors – GEC/ABB/Actom, 1540kW, 3.3kV, 21000kg

	South Main Cooling Water Pump (MCW), Motors – GEC/ABB/Actom, 1540kW, 3.3kV, 21000kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Supply and fit new Sight Glasses			
85	Pressure Test Cooler			
86	Polish Collar			
87	Re-metal x12 Thrust Pads and Machine			
88	Manufacture new Journal Pad Ring			
89	Supply and fit New Desiccators			
90	Supply and fit Connectors, Din Rails & Stoppers			
91	Ret-ap all Mounting Holes & Jacking Holes and fit new bolts			
92	Polish all Spigots & Faces			
92	Supply and fit new sponges on x2 Silencer Boxes			
94	Manufacture New Fan Blades for Rotor			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

95	Plastic Wrap			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 7 : Extraction Pump (CEP), Motors - GEC, 3.3 KV, 1200KW, 4500kg

	Extraction Pump (CEP), Motors - GEC, 3.3 KV, 1200KW, 4500kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contracto's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete : Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating (stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression fingers and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partiall discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short cicuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxiliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84	Repair Bearing Nips Back to Standard (x2)			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

85	Manufacture new 160mm Labyrinth Seals (x4)			
86	Supply and fit new desiccator			
87	Supply and fit new connector Blocks, Din Rails & Stoppers			
88	Re tap Mounting Holes & Jacking Holes & Fit New Jacking Bolts			
89	Polish All Spigots and Spigot Faces			
90	Pallet and Plastic Wrap Motor			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 8 : Ash pump, Sluice pump, Ash Water Return (AWR) Motors, - 440kW, 450kW, 500kW, 560kW, 484kW, 3.3kV, 3500kg

	Ash pump, Sluice pump, Ash Water Return (AWR) Motors, - 440kW, 450kW, 500kW, 560kW, 484kW, 3.3kV, 3500kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contracto's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxillaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short circuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring,			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxilliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84				
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 9 : Fabric Filter Plant (FFP), Sluice Booster, Overland Conveyor 2 and 3 Motors – 260kW, 250kW, 300kW, 3000kg

	Fabric Filter Plant (FFP), Sluice Booster, Overland Conveyor 2 and 3 Motors – 260kW, 250kW, 300kW, 3000kg			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			
5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating (stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			
5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxillaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partiall discharge test			
8.1.6	Measure and record winding resistance			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			
8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short cicuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)		
8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound		
8.4	Heat exchanger		
8.4.1	Pressure test heat exchanger for CACW		
8.5	Accessories		
8.5.1	Perform IR on space heater		
8.5.2	Test Differential Protection Current Transformers		
8.5.3	Replace winding RTD resistances		
8.5.4	Test Zorc Surge Suppression Unit		
9	Deliver assessment and failure report		
10	Deliver recommended repair SOW		
11	Host repair site meeting (if necessary)		
12	Assemble scrapped motor (if necessary)		
13	Deliver scrapped motor back to Site (if necessary)		
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION	PRICE
14	Replace DE Bearing		
15	Replace NDE Bearing		
16	Polish DE Bearing		
17	Polish NDE Bearing		
18	Polish NDE Bearing Thrust and tilting Pads		
19	Re-metal DE Bearing		
20	Re-metal NDE Bearing		
21	Replace NDE Bearing Thrust Pads		
22	Polish bearing oil pickup rings (DE & NDE)		
23	Replace DE bearing oil pickup ring/s		
24	Replace NDE bearing oil pickup ring/s		
25	Replace DE bearing oil scoop kit and sight glasses		

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			
28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			
57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & desiccators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring,			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxiliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			
84				
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			
8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

Item 10 : Mill Motors 683kW, 3.3kV

	Mill Motors 683kW, 3.3kV			
	Total Price			Total price
Ref#	PHASE I SOW TASKS – Strip and Assess	TASK PROCEDURE/SPECIFICATION	Quantity	PRICE
1	Collect motor from Site and transport to contractor's workshop: Eskom 240-56361435 - Transport of Power Station Electric Motors Standard			
2	Conduct incoming visual inspections : Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
3	Conduct incoming routine test (if motor in working condition): Eskom 240-89217674 - 4.1.3.1 Incoming Inspection			
4	Disassemble motor complete :Eskom 240-89217674 - 4.1.3.2 Motor Dismantling			
5	Pre-cleaning assessment: Eskom 240-89217674 - 4.1.3.3 Pre-cleaning Assessment			
5.1	Stator and Housing			
5.1.1	Inspect winding for corona discharge activities			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.1.2	Inspect cleanliness of winding. (oil, dust, moisture)			
5.1.3	Check insulation for cracks, frays, signs of brittleness			
5.1.4	Check for signs of overheating(stator windings, heater cables, RTD cables, Current Transformer)			
5.1.5	Check for foreign objects in housing			
5.1.6	Check for blocked Vent ducts			
5.1.7	Check for loose wedges			
5.1.8	Check for signs of visual stator core rub			
5.1.9	Check for loose compression figures and plates			
5.2	Rotor, Shaft and Fan			
5.2.1	Inspect for signs of overheating			
5.2.2	Inspect cleanliness (oil, dust, moisture)			
5.2.3	Inspect for loose rotor bars			
5.2.4	Inspect for blocked vent ducts			
5.2.5	Check for core migration			
5.2.6	Check for missing clamping fingers			
5.2.7	Check for security of end rings			
5.2.8	Inspect looseness between the fan and its hub			
5.2.9	Inspect journals for scratch marks and grooves			
5.3	Bearings (DE,NDE)			
5.3.1	Inspect cleanliness (dust, ash, coal)			
5.3.2	Check for signs of rust/water ingress			
5.3.3	Check for signs of bearing insulation wear			
5.3.4	Check for signs of bearing misalignment (lay, white metal wear)			
5.3.5	Check condition of oil (colour, sludge)			
	Lubricant particle analysis			
	White Metal Bonding Test			
5.3.6	Check for condition of earthing wire/brush (loose, missing)			
5.3.7	Check for signs of mechanical damage on the housing			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

5.3.8	Assess condition of sight glasses			
5.4	Terminal Box (supply and star point) and Auxiliaries			
5.4.1	Check for any signs of overheating			
5.4.2	Check condition of desiccator			
5.4.3	Check condition of terminal bushings			
5.4.4	Check and test surge suppressors			
5.4.5	Assess phase and neutral connection stud condition			
5.4.6	Check for signs of rust/water ingress			
5.4.7	Record damaged and missing assembly bolts and nuts			
5.4.8	Check condition of explosion vents			
5.5	Heat exchanger			
5.5.1	Check for signs of water leaks			
5.5.2	Check for signs of blockages on the pipes			
5.5.3	Remove Heat Exchanger and Wash			
5.5.4	Check for the condition of gaskets and rubber seals			
5.5.5	Pressure test Radiators			
6	Clean motor components :Eskom 240-89217674 - 4.1.3.4 Cleaning			
7	Dry-out motor components :Eskom 240-89217674 - 4.1.3.5 Dry Out			
8	Post-cleaning assessment			
8.1	Stator and Housing			
8.1.1	Perform and record Insulation resistance test(General Routine Tests (IR, Induction, Hi-pot, MCA, etc))			
8.1.2	Perform and record Polarization index test			
8.1.3	Perform and record DC step voltage test			
8.1.4	Perform and record Tan delta test			
8.1.5	Perform and record Off line Partial discharge test			
8.1.6	Measure and record winding resistance			
8.1.7	Perform Core Loop Test and Watt loss Test			
	Core Test Volts/Turn			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.1.8	Perform stator core Elcid Test			
8.1.9	Perform and record surge/impulse withstand test			
8.1.10	Perform Induction test			
8.1.11	Perform corona testing activity in the dark			
8.1.12	Check for concentricity			
8.1.13	Perform wedge tightness test on stator wedges			
8.1.14	Measure Winding Temperature Detectors (RTD) Resistance			
8.1.15	Determine Insulation System Type (Rasin Rich or Vacuum Pressure Impregnated)			
8.2	Rotor, Shaft and Fan			
8.2.1	Perform bar to bar continuity test			
8.2.2	Perform Elcid test			
8.2.3	Perform dye Pen on the short cicuit end rings, Rotor Shaft and internal Fan			
8.2.4	Measure DE Bearing Journal size [DxL]			
8.2.5	Measure DE Bearing Seal Landing Size [DxL]			
8.2.6	Measure DE Bearing Housing (End Shield) size [D]			
8.2.7	NDE top hat dimensions			
8.2.8	DE Guide Bush dimensions			
8.2.8	Measure Rotor Run-Out (Truth Check)			
8.2.9	Record any Mechanical Damage			
8.3	Bearings (DE,NDE)			
8.3.1	Pressure test bearing cooler			
8.3.2	Measure bearing oil ring diametrical size [mm]			
8.3.3	Measure bearing oil seal diametrical size [mm]			
8.3.4	Measure bearing insulation thickness [mm]			
8.3.5	Measure bearing diametrical sizes			
8.3.6	Measure Bearing Housing (End Shield) diametrical size [mm]			
8.3.6	Measure and record Drive-end Journal thrust-to-thrust Distance (Referenced to normal GA/Glacier/GB/Michell/Renk bearing thrust-thrust distance 125mm)			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8.3.7	Perform Visual Inspection, Dye-Pen and Ultrasound			
8.4	Heat exchanger			
8.4.1	Pressure test heat exchanger for CACW			
8.5	Accessories			
8.5.1	Perform IR on space heater			
8.5.2	Test Differential Protection Current Transformers			
8.5.3	Replace winding RTD resistances			
8.5.4	Test Zorc Surge Suppression Unit			
9	Deliver assessment and failure report			
10	Deliver recommended repair SOW			
11	Host repair site meeting (if necessary)			
12	Assemble scrapped motor (if necessary)			
13	Deliver scrapped motor back to Site (if necessary)			
Ref#	PHASE II SOW TASKS (GENERAL OVERHAUL)	TASK PROCEDURE/SPECIFICATION		PRICE
14	Replace DE Bearing			
15	Replace NDE Bearing			
16	Polish DE Bearing			
17	Polish NDE Bearing			
18	Polish NDE Bearing Thrust and tilting Pads			
19	Re-metal DE Bearing			
20	Re-metal NDE Bearing			
21	Replace NDE Bearing Thrust Pads			
22	Polish bearing oil pickup rings (DE & NDE)			
23	Replace DE bearing oil pickup ring/s			
24	Replace NDE bearing oil pickup ring/s			
25	Replace DE bearing oil scoop kit and sight glasses			
26	Replace NDE bearing oil scoop kit and sight glasses			
27	Polish all shaft journals and seal landings			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

28	Micro-weld DE Bearing Journal and thrust faces			
29	Micro-weld NDE Bearing Journal and thrust faces			
30	Micro-weld Coupling Journal			
31	Micro-weld DE Bearing Seal Landings			
32	Micro-weld NDE Bearing Seal Landings			
33	Replace DE Bearing Seals			
34	Replace NDE Bearing Seals			
35	Replace DE Bearing RTD/Thermocouple			
36	Replace NDE Bearing RTD/Thermocouple			
37	Re-sleeve DE Bearing Housing			
38	Re-sleeve NDE Bearing Housing			
39	Replace DE Bearing Cover/Cap			
40	Replace NDE Bearing Cover/Cap			
41	Replace V-ring			
42	Repair bearing oil cooler for water leaks			
43	Replace bearing insulation			
44	Fit thrust collar & check run-out			
45	Grind thrust collar			
46	Balance rotor			
47	Replace power terminal box			
48	Overhaul terminal boxes			
49	Replace neutral bar			
50	Replace three bushings			
51	Replace three terminals			
52	Replace cable-terminal flags			
53	Supply and fit Surge Arrestors (Zorcs), Install terminal box to house zorc			
54	Overhaul heat exchanger, Replace all gaskets			
55	Repair all leaks on heat exchanger			
56	Replace all cooler pipes			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

57	Replace de-ionisers on coolers if de-ioniser rod measures more than 12mm			
58	Replace all seals and gaskets, Replace all gaskets & dessicators			
59	Assemble complete and test for any water leaks			
60	Repair all loose cooler tubes			
61	Replace all broken cooler tubes			
62	Replace broken screens			
63	Overhaul space heater, Replace wiring, incl			
64	Replace space heater			
65	General overhaul motor frame			
66	Conduct concentricity check			
67	Skim feet and Polish Stator Feet			
68	Overhaul DE bearing assembly			
69	Overhaul NDE bearing assembly			
70	Overhaul stator			
71	Replace all stator wedges			
72	Replace 50 % of stator wedges.			
73	Re-insulate tail leads			
74	Replace tail leads(Silicon)			
75	Spray stator with insulating vanish			
76	Supply and fit new auxiliary terminal box and main terminal box			
77	Overhaul rotor			
78	Clean and Polish Spigots			
79	Spray rotor with insulting vanish			
80	Reassemble motor complete: Replace all gaskets, grease pipes and nipples, replace oil sight glasses, insulation, and insulated bolts			
81	Conduct motor routine test			
82	Paint motor (emerald grey) :Eskom 240-89217674 - 4.2.3 Painting			
83	Deliver motor back to Site with Shaft Locking Device :Eskom 240-89217674 - 4.2.4			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

84	Re-tap all mounting holes and fit new Jacking Bolts			
85	Polish all Spigot Faces			
86	Re metal & machine 155mm & 145mm Seals			
87	Manufacture Bearing Stops			
88	Supply and fit New Marine Type Oil Sight Glasses			
89	Check and Rectify Bearing Nips			
90	Reinsulate Bearing OD & Machine Back to Standard			
91	Supply and fit New Felt Seals			
92	Supply and fit New Connector Blocks, Din Rails and Stoppers			
93	Supply and Fit New Coupling			
94	Machine Bore of Coupling and cut keyway			
95	Overhaul Heat Exchanger (Wash and Clean Tubes)			
96	Manufacture new Step Key			
97	Extend Stator Leads			
98	Plastic Wrap Motor for Storage			
99	Re-tap all mounting holes and fit new Jacking Bolts			
100	Polish all Spigot Faces			
101	Re metal & machine 155mm & 145mm Seals			
102	Manufacture Bearing Stops			
Ref#	PHASE III SOW TASKS (MAJOR REPAIRS)	TASK PROCEDURE/SPECIFICATION		PRICE
1	Replace rotor shaft			
2	Replace motor internal cooling fan			
3	Replace motor external cooling fan			
4	Replace CACW heat exchanger cooler bundle Radiators			
5	Replace rotor windings			
6	Replace all rotor bars			
7	Replace all rotor end-rings			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

8	Repair 100% stator core insulation to remove hot spots			
9	Repair 75% of stator core insulation			
10	Repair 50% of stator core insulation			
11	Repair 25% of stator core insulation			
12	Replace rotor core			
13	Restack 100% rotor core :Eskom 240-89217674 - 4.2.1.3.1 Rotor cage repair			
14	Re-stack 75 % of rotor core laminations.			
15	Re-stack 50 % of rotor core laminations.			
16	Re-stack 25 % of rotor core laminations.			
17	Strip stator windings from core			
18	Repair stator core insulation to remove hot spots			
19	Replace stator core			
20	Re-stack 100% of stator core			
21	Re-stack 75 % of stator core laminations.			
22	Re-stack 50 % of stator core laminations.			
23	Re-stack 25 % of stator core laminations.			
24	Design stator windings & insulation kit			
25	Replace stator windings only			
26	Conduct uncured stator winding tests			
27	VPI and Cure Stator			
28	Conduct cured stator winding tests			
29	Perform and record High Voltage AC test			
30	Install Partial Discharge Couplers 3x1phase			
31	Replace/Install Differential Protection CTs, Install CT external wiring box			
32	Drill holes to Install Vibration Sensors			
33	Conduct motor type test (Motor Full Load test)			
34	Test Spare coils			
35	Supply Complete Data Pack			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

BUDGET BILLS OF MATERIAL

(SOW OF WORK VARIATION WILL BE ISSUED ONLY IF REFURBISHMENT OR REPLACEMENT COMPONENTS EXCEED BUDGET. OTHERWISE CUTTING INSTRUCTION WILL BE USED TO COMMUNICATE WHICH COMPONENTS MUST BE REPLACED OR REFURBISHED)

SUBSYSTEM							
No	REPLACE/ REFURBISH	COMPONENT DESCRIPTION	COMPONENT / MATERIAL SPECIFICATION	OPERATING PARAMETERS	PART / NUMBER	STOCK NUMBER	DESIGN QUANTITY
1	MOTOR,AC13000KW 1494RPM 11KV 1K0004	0179118	EFP U1-6	15			
2	MOTOR,AC 3600KW 735RPM 3,3KV 800LL	0179111	FD Fan U1-6	15			
3	MOTOR,ELECT:5130KW,746RPM	247754	ID Fan U1-3	10			
4	MOTOR,AC 3600KW 746RPM 3,3KV IK8003	0179110	ID Fan U4-6	15			
5	MOTOR,AC 2000KW 1480RPM 3,3KV 500LL	0179112	PA Fan U1-6	15			
6	MOTOR,AC 1200KW 1483RPM 3,3KV	0140100	CEP U1-6	15			
7	MOTOR,ELECT;2020 KW.239 RPM	246874	North Main CWP	15			
8	MOTOR,ELECT;1540 KW.239 RPM	246873	South Main CWP	15			
9	MOTOR,AC 683KW 980RPM 3,3KV 630L1	179109	Mill Motors	30			
10	MOTOR,ELECT:440KW,3300VAC,99A,982 RPM	218932	Ash Pump Motors	30			
11	MOTOR,ELECT:560KW,3300VAC 50HZ,12A	218794	Sluice Pump Motors	30			
12	MOTOR,ELECT:260KW,2978RPM,3300VAC 3PH	2384922	FFP Compressors	10			
13	MOTOR,ELECT:350KW,2973RPM,3300V	221718	Electric Compressor	10			
14	MOTOR,ELECT;484KW,1489 RPM	246872	AWR	15			
15	MOTOR,ELECT:250KW,3.3KVAC, 979rpm	223908	Sluice Water Booster	30			
16	MOTOR,ELECT;300KW,1483RPM	256016	Overland Conveyor 2	10			
17	MOTOR,ELECT;250KW,1483RPM	256014	Overland Conveyor 3	10			
4	MOTOR,AC 3600KW 746RPM 3,3KV IK8003	0179110	ID Fan U4-6	15			
5	MOTOR,AC 2000KW 1480RPM 3,3KV 500LL	0179112	PA Fan U1-6	15			

The collection, dismantling, assessment, repair, refurbishment, rewind, assemble, test, paint and delivery of all unitised and outside plant MV Motors at Duvha Power Station during unplanned, planned outages and breakdown maintenance for a period of five (5) years. as and when required.

6	MOTOR,AC 1200KW 1483RPM 3,3KV	0140100	CEP U1-6	15			

PART 3: SCOPE OF WORK

PART C3: SCOPE OF WORK	1	C3 TSC3 COVER PAGE
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C3.1: EMPLOYER’S SERVICE INFORMATION

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8. BUDGET BILLS OF MATERIAL	Error! Bookmark not defined.

goal

This maintenance repairs prepares the unit to achieve the following performance targets with respect to the plant system this scope of work covers:

- UCLF of zero (0).
- UAGS of zero (0).

objectives

technical Criteria

- Zero forced shut down for rework after the outage
- Zero trips as a result of outage poor workmanship
- All MV Electric Motors to be fully functional until the next scheduled service

scope variations

- N/A

financial performance

- No access to Fin plan, outages and maintenance to share the cost with Engineers

time management

- N/A

summary of the scope

This scope includes the maintenance work to be done on all unitised and outside plant Medium voltage motors.

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battery limits

PLANT	START	END	EXCLUSIONS	INCLUSIONS	P&ID DRAWINGS
MV Electric Motors System	11kV	3.3kV	380V AC and 220V DC LV Motors	EFP motors, CEP motors, ID Fan motors, FD Fan motors, PA Fan motors, North Main CWP motors South Main CWP motors. Mill Motors Ash Pump Motors Sluice Pump Motors FFP Compressors Electric Compressor AWR Sluice Water Booster Overland Conveyor 2 Overland Conveyor 3	0.57/55001

general arrangement and location drawings

No	DRAWING NUMBER	TITLE
1	0.57/517	Unit 6 MV & LV ELECTRIC DIAGRAM
2	0.57/55001	Duvha Unit 1-6 MV Motor Diagram

applicable corporate/generation/international guidelines and standards

No	REFERENCE NUMBER	DOCUMENT TITLE
1	QM 58	Eskom Quality Requirement
2	OHS ACT	Occupational Health and Safety Act, Number 85 of 1993
3	OPS 0002 (rev 2)	Operating and Maintenance Manuals
4	OPR 3305 (rev 3) / 240-150642762	Eskom Plant Safety Regulation
5	GGM1526	Core principles of Reliability Basis Optimisation
6	ENS0034	MV and LV Electrical Motor Maintenance Strategy
7	240-56361435	Transport of Power Station Electric Motors Standard
8	36-396	Storage of Power Station Electric Motors
9	240-56358854	Refurbishment of Power Station Electric Motors Standard
10	474-10983	Generation Plant Engineering Life Cycle Planning Strategic Report for Electric Motors and Drives for 2025
11	240-89217674	Refurbishment and Repair of Power Station Electric Motors Work Instruction
12	240-100457684	Electric Motor Commissioning Works Instruction

applicable DUVHA powerstation standards and procedures

No	REFERENCE NUMBER	DOCUMENT TITLE
1	240-72261425	Outage Philosophy for Duvha Power Station
2	LEP0011	Motor Breakdown and Repair Request
3	OPS Boiler, Turbine, and Auxiliary Plant System	OPS Boiler, Turbine, and Auxiliary Plant System

general considerations

ACTIVITIES	SPECIFICATIONS
PRE-REQUISITES / PRE-CONDITIONS	
MV Motors must be isolated from power supplies according to Duvha Power Station standard isolation procedures and Generation Plant Safety Regulations before work can be started	
SAFETY	
The work shall be carried as per Duvha Power Station SHE specifications for principal contractors	
MV Motors must be isolated from power supplies according to Duvha Power Station standard isolation procedures before work	

can be started.	
Adherence to all safety requirements	Generation Plant Safety Regulations
Open Isolate Bond earth and or insulate before touch. Always test before touch	Life saving rule
ENVIRONMENT	
Environmental requirements are detailed in the works instruction	
QUALITY	
Work to be carried as per Eskom Quality Requirements. Supplier Quality Management: Specification	QM58, 240-105658000
Process Quality Process/Procedure (PQP/QCP) Work on the MV Motors shall be carried out in accordance with the relevant approved PQP. The PQP shall be compiled by the contractor based on this scope of work and submitted to Duvha TSS, Electrical Engineering and EMD at least 2 months before the outage for approval or before any work is executed. The QCP shall include the work that will be performed both outside the Power Station as well as on site	
Hold and witness points ➤ H&W points that form part of the QCP and have been approved prior to the start date, shall not be by-passed under any circumstances without the written concession of an authorised member of the Engineering Department. It is the Contractors responsibility to inform the Plant Project Manager and Engineer or his/her representative at the daily progress meetings when an activity will be ready for QC.	
Check Sheets Inspections to be carried out in accordance with check sheets as attached in master quality plan (QCP). All disassembly and assembly values to be recorded in relevant check sheets. No incomplete check sheets will be accepted unless the prior exemption in terms of the technical notification is obtained from Engineering. NCR will be issued for incomplete check sheets. Repair or replace all damaged/worn components out of specification or obtain a concession from engineering staff. All abnormalities to be recorded and reported with technical notifications.	OEM requirements specifications to be used on specifications unless approval to be obtained from Engineering
Quality technicians QC Technicians will be delegated by Plant Engineers to ensure quality standards and quality assurance is exercised during the repairs, replacement or refurbishment.	
Experience of staff All Engineers, technicians, supervisors and quality assurance related staff should have adequate experience to work on specified activities. All artisans should have adequate experience on specified activities and it is the responsibility of the contractor to provide assurance to Eskom that the artisan has the required experience to perform work	Short CV's of all supervisors, quality technicians, and artisans stating qualifications and relevant experience must be provided at least two weeks before commencement of outage.

at Duvha Power Station.	
General Requirements	
The importance of correct equipment spares and procedures should be included in structured toolbox talk sessions with all contractors.	

Contents Part 2

1. Description of the *service*.
2. Contract requirements and Specification.
3. Program.
4. Site services and procedures.
5. Quality Management.
6. Documentation.
7. Completion.
8. Safety and Environment Management.
9. Terms and conditions for the Refurbishment of Duvha Power Station Motors.
10. Invoicing and Payment.
11. Records of define cost.

Appendix

A. Scope of Work

1. Employer's requirements for the service

1.1. Executive overview

The works covers transportation to and from Duvha Power Station, stripping, assessment, refurbishment, Overhaul, rewind, testing, compile failure reports and supply of test certificates for refurbishment of MV induction Motors.

The Employer has limited design information on the motors. The contractor shall obtain all the design and manufacturing details required for the works. On completion of the works, motors shall be delivered to and off-loaded at Duvha Power Station Main stores (or venue preferred by the employer)

1.1.1. The preliminary scope of work covered by this contract is as follows:

- 1.1.1.1. Transportation of motors from Duvha Power Station to the contractor's works and back to site at Duvha Power Station after completion of works. The supplier accepts full responsibility for the motor/s when the motor/s is handed over to the supplier on site to be transported from Duvha site for refurbishment. Any additional damage during transport or during stripping, testing, assessment, refurbishment and re-assemble will be for the supplier's account and could include the cost for a new motor in the worst case scenario.
- 1.1.1.2. Strip the motor and mark all part with unique relevant job number.
- 1.1.1.3. Do a full assessment of the motor condition, and complete assessment sheet, ensuring that any evidence of failure or deterioration is kept for review by the employer, if not present during assessment.
- 1.1.1.4. The complete assessment report will determine the detailed scope of work for refurbishment; refer to Appendix 1 for assessment form.
- 1.1.1.5. Execute the scope of work on each individual motor as approved by employer, including the relevant Engineering work as detailed in paragraph 1.6. Ensure that quality management is incorporated in refurbishment process as defined in approved Process Quality Plan's (PQP's).
- 1.1.1.6. Should the motor be found to be beyond repair, and the employer concurs with the finding, the contractor will be required to re-assemble the motor and return the motor to Duvha Power Station accompanied by a full breakdown report on the findings and motivation for beyond repair status.
- 1.1.1.7. Where additional test or work, not covered by the contract, is required from the motor assessment, a quotation must be submitted to Duvha Power Station before any commencement of such activities.
- 1.1.1.8. The employer reserves the right to do price matching of any additional work specified in the assessment report, with the intent to ensure market related pricing of additional work.

1.2. Contract requirement and specification

1.2.1 The motors covered by this contract are as follows:

The works are to be carried out at the contractor's yard on the following Duvha Medium Voltage motors:

Electric Feed Pump (EFP) Motors
Condensate Extraction Pump (CEP) Motors
Induced Drought (ID) Fan Motors
Forced Draught (FD) Fan Motors
Primary Air (PA) Fan Motors
North Main Cooling Water Pump (NMCWP) Motors
South Main Cooling Water Pump (SMCWP) Motors
Mill Motors
Ash plant motors
All Unitised and Outside Plant MV Motors

2. CONTRACT REQUIREMENTS & SPECIFICATION

2.1 Dismantling

Dismantling of the motor should not commence until the required checks and test have been carried out by repairer and accepted by Eskom representative.

2.2 Testing

Approved qualified personnel are used for testing and inspection. The test report before and after repair, form part of the quality documentation of repair. All test certificates to be supplied on delivery of motors to site, otherwise motor will not be accepted on site.

2.2.1 Test to be performed at the repair workshop before disassembly and after assembly

The high voltage test will only be performed after the stator passed the polarization index test (refer to the acceptance criteria). All high voltage tests to be authorised by the employer prior to testing. (Test subject to employer's request and approval)

❖ STATOR TESTS

- Stator winding insulation resistance
- Stator winding polarization index
- El-cid
- Tan delta
- Partial discharge
- PT100 insulation resistance
- Space heater insulation resistance

❖ ROTOR TEST

- Bar to bar continuity test
- El-cid test
-

❖ NO LOAD TEST AND MEASUREMENT

- Bearing insulation test
- Bearing heat run test
- No load test run
- Current balance between phases
- Power at no load
- Bearing vibration tests
- Bearing temperatures
- Power factor at no load (duty point)
- Start up and run down time (Motor uncoupled)

2.3 Engineering Services as Required by Eskom Generation Standard

The Contractor is responsible for engineering services, material and labour as follows:

2.3.1 Verify the performance matching requirements of the power supply and driven machine.

- 2.3.1 Inspection and testing of the motor prior to and after repairs, recording, reporting and making recommendations and providing the necessary information where applicable.
- 2.3.2 The contractor is required to provide detailed breakdown report for each motor stating clearly the contributory and root causes of motor failure.
- 2.3.3 Evaluate of parts for possible re-use.
- 2.3.4 Select, design and procurement of new components, ensuring that replacement insulation system and other material are compiled with the existing materials. If the replacements parts are not exactly as the originals, the contractor demonstrate that the replacement meets or exceeds the capability of the original in all essential requirements.
- 2.3.5 The contractor must ensure that the employer (Contract Manager) and others (Motor System Engineer) are present during dismantling, testing and assessment to inspect any evidence of failure or aspects of defective design or workmanship uncovered. Ensure that correct photographic records are made.
- 2.3.6 Establish the suitability of the motor for rewinding to achieve the life extension required by the Employer. Perform all tests, investigations and calculation required for these purpose.
- 2.3.7 Redesigning to eliminate weaknesses. Submitting a written report recording the defects, and detailing the extent of repair and work required to achieve the life extension specified by the Employer. Obtaining the Employer's prior agreement in writing for the extent of repair and work to be done.
- 2.3.8 Design replacement stator windings when necessary or specified, with the required wedging (by means of using new poromat type of wedges which are porous, swellable, rigid and made of glass mat) and coil end-winding support systems, including means of tightening if looseness develops. The means of tightening is agreed with the Employer.
- 2.3.9 Design a replacement system for stator temperature monitoring, if necessary or specified by the Employer.
- 2.3.10 Design the supply and installation of bus couplers for on-line partial discharge monitoring, if specified.
- 2.3.11 Design the supply and installation of slot couplers for on-line partial discharge monitoring, if specified.
- 2.3.12 Where changes to the design or rating are necessary, carrying out design review and validation of the rating and suitability of the motor for the applicable environment and cooling arrangements. Where changes are introduced, carrying out design calculations of motor capability and appropriate settings for over-current protection, repeated start protection, stall protection, voltage unbalance protection, and other protection applied or required. Submission of design results and proposed protection settings to the Employer for agreement.

- 2.3.13 Inspection and testing of the motor prior to and after repairs, recording, reporting and making recommendations and providing the necessary information where applicable.
- 2.3.14 The contractor is required to provide detailed breakdown report for each motor stating clearly the contributory and root causes of motor failure.
- 2.3.15 Evaluate of parts for possible re-use.
- 2.3.16 Select, design and procurement of new components, ensuring that replacement insulation system and other material are compiled with the existing materials. If the replacements parts are not exactly as the originals, the contractor demonstrate that the replacement meets or exceeds the capability of the original in all essential requirements.
- 2.3.17 The contractor must ensure that the employer (Contract Manager) and others (Motor System Engineer) are present during dismantling, testing and assessment to inspect any evidence of failure or aspects of defective design or workmanship uncovered. Ensure that correct photographic records are made.
- 2.3.18 Establish the suitability of the motor for rewinding to achieve the life extension required by the Employer. Perform all tests, investigations and calculation required for these purpose.
- 2.3.19 Redesigning to eliminate weaknesses. Submitting a written report recording the defects, and detailing the extent of repair and work required to achieve the life extension specified by the Employer. Obtaining the Employer's prior agreement in writing for the extent of repair and work to be done.
- 2.3.20 Design replacement stator windings when necessary or specified, with the required wedging (by means of using new poromat type of wedges which are porous, swellable, rigid and made of glass mat) and coil end-winding support systems, including means of tightening if looseness develops. The means of tightening is agreed with the Employer.
- 2.3.21 Design a replacement system for stator temperature monitoring, if necessary or specified by the Employer.
- 2.3.22 Design the supply and installation of bus couplers for on-line partial discharge monitoring, if specified.
- 2.3.23 Design the supply and installation of slot couplers for on-line partial discharge monitoring, if specified.
- 2.3.24 Where changes to the design or rating are necessary, carrying out design review and validation of the rating and suitability of the motor for the applicable environment and cooling arrangements. Where changes are introduced, carrying out design calculations of motor capability and appropriate settings for over-current protection, repeated start protection, stall protection, voltage unbalance protection, and other protection applied or required. Submission of design results and proposed protection settings to the Employer for agreement.
- 2.3.25 Where changes to the design are made, producing details of the design, working drawings, repair and rewinding instructions and procedures, as well as all necessary amendments to operating and maintenance manuals) producing agreed procedures for works inspection and tests, and site commissioning and testing, all with details of acceptance criteria to be attained. Producing quality plans for the activities concerned before commencing work. Producing progress reports as required periodically by the Employer.

2.3.26 Submit details of the redesign and all drawings and documentation in quadruplicate to the Employer for agreement.

2.3.27 Produce a consolidated report on all aspects of the work, incorporating all reports, data, acceptance criteria, and quality assurance records.

2.3.28 GB Bearings (Pty) Ltd has been approved as an Eskom Sole source supplier for white metal bearings. The contractor is required to have all bearing work done by GB Bearings (Pty) Ltd unless an alternative competent and registered supplier is available. (Subject to approval by Eskom)

3. PROGRAM

- a. A detailed program should be provided in the form of bar chart or any software that will specify the plan and progress of repairs.
- b. A program must be drafted after Assessment has been done and agreed on with the Client.
- c. The failure report indicating the root cause of the failure to accompany the program for submission.

4. SITE SERVICES AND PROCEDURES

The following technical specification and procedures are applicable to this contract and are available (ESKOM related standards) on requests, only the latest revision to be used.

TITLE	DOCUMENT NUMBER
Refurbishment of Power station electric motors	GGG 0389
Power station Electrical motor procurement	GGG 0802
Storage of power station electric motors	GST 36-396
Transportation of power station electrical motors	GST 36-397
Degree of protection provided by enclosure	IEC 60592
Quality control of HV motor and process for repairs outside Eskom	PAM/233/004
MV electrical PI testing	PWM/**M/E/002
Procedure for conducting IR, PI and Tan delta tests	ELEC 175 007
White metal designated WM 90	SANS124
Requirements for Clean Condition & Access control during manufacturing, maintenance & repair of generators & large motors.	GGG 0393

5. QUALITY MANAGEMENT

The Contractor ISO 9001:2000 Registration certificate of compliance must be supplied with tender. If the Contractor is not registered, he will supply with his tender document his quality policy.

The successful contractor will hand over within one week of Contract placement to the Employer the Following:

5.1 Contractor's Quality Assurance and Quality Control

The Contractor compiles, in conjunction with the Employer and the Supervisor, product verification plan. This document shows at which stages during the contract involvement is required, and what types of inspection, testing, hold, witnessing etc. Are carried out to ensure that the requirements of the specifications are met.

5.2 Quality Control Plan

The Quality Control Plan, which should be based on the Eskom procedure, PAM/233/004, consists of the following as a minimum and is accepted by the employer and the Contractor prior to commencement of the work. The final QCP for approval will be endorsed by the Motor System Engineer for acceptance.

- A covering page which includes and makes provision for the following:
 - Document unique number.
 - Revision number
 - Page number
 - Provision to incorporate all inspection report numbers.
 - System worked on
 - High level description of work execution
 - Provision for review and approval signatures by the Contractor, the Employer Representative and the Supervisor.
 - Provision for final releases signatures by the Contractor, Employer Representative and the Supervisor.
- A page which included a logical sequence of work execution, but not detailed
 - Abbreviations.
 - Record numbers.
 - Procedure numbers.
 - Reference document numbers.
 - Certificate numbers and references.
- The work execution logic and sequence for the fabrication and erection addition to this hold, witness points etc. are also detailed.
- A material summary list which includes:
 - Material quantities and specifications.
 - Material certificate numbers

5.3 Test reports

Where tests were performed they are recorded and the positions of measurements are traceable to the specific area of testing against the records. Factory Acceptance Testing certificates to be submitted upon delivery of motor to site.

6. DOCUMENTATION

The following documents must be supplied to the Employer for each motor that is sent for repairs

- a. All electrical and mechanical tests performed before and after repairs.
- b. Detailed breakdown report for each motor indicating the cause of the failure.
- c. Balancing certificate
- d. Quality control procedures in accordance with Eskom procedure (on submission of ender)

2. COMPLETION

- a. The motor should be stripped immediately when reaching the contractors site.
- b. Delivery of the motor should be within 10 days after instruction to commence work from Employer (Order Number)

3. SAFETY & ENVIRONMENTAL MANAGEMENT

- a. The contractor to comply with the safety standards and regulations of Eskom, Duvha power station
- b. The contractor to comply with Environmental Policies and regulations of Eskom, Duvha power station.

4. TERMS & CONDITIONS FOR THE REFURBISHMENT OF DUVHA P/S MOTORS

Before the repairer invites Duvha personnel to inspect the motor and agree with the assessment report, the following should be ready.

- a. All motor components to be at the repairer's workshop.
- b. Any communication and arrangement for inspections at the Contractor's premises to be arranged through the Employers Representative.
- c. The motor should be fully assessed by the repairer before Duvha personnel (Motor System Engineer and Motor Contract Manager) are called out.
- d. Invite/ notify Duvha personnel at least 2 days before inspection.
- e. Pictures of all defective components to be taken and handed over to Employers Representative.
- f. The proposed repair scope of work should be ready and shall be finalized with Duvha personnel (Motor System Engineer) on the same day of assessment/ inspection.
- g. The preliminary quotation to be ready on the day of inspection and should reflect the item numbers and price as agreed on the contract.
- h. All additional items that are not included on the contract, prices should be included on the price column of the quotation and indicated as such.
- i. No quotations shall be blank.
- j. All quotation must be signed prior to been faxed (excluding quotes send via e-mail).
- k. All quotations shall be verified by Motor System Engineer.
- l. No work shall commence before approval and a go ahead from the Employer's Representative or the personnel acting on his behalf.

5. INVOICING AND PAYMENT

The Z clauses make reference to invoicing procedures stated here in this Service Information. Also include a list of information which is to be shown on an invoice.

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.

The *Contractor* shall address the tax invoice to

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)

The *Contractor* attaches the detail assessment of all work done for each item in the Price List to each tax invoice showing

- the Price for each lump sum item in the Price List or Task Order which the *Contractor* has completed and
- where a quantity is stated for an item in the Price List or Task Order, an amount calculated by multiplying the quantity which the *Contractor* has completed by the rate.

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

6. Records of Defined Cost to be kept by the *Contractor*

If Option C or E applies first read clause 52.2 and then state whether the *Contractor* is required to keep any other records. Include any other constraint which may be required in regard to format and filing of the records, and whether access for the *Service Manager* shall be provided in hard copy or electronically.

Could delete if Option A applies unless the *Employer* requires some form of control over the *Contractor's* record keeping for the purpose of compensation event management.

APPENDIX A

Scope of Work

Supporting clauses

1. Scope

Purpose

The purpose of this scope is to define MV induction motors refurbishment requirements for Duvha Power Station. It is imperative that each supplier aligns their organisation fully to the systems and requirements laid down in this document.

Applicability

This scope is applicable to all MV induction motors associated with Duvha Power Station.

Normative/Informative References

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

Normative

- *Occupational Health and Safety Act, 85 of 1993.*
- *ISO 9001:2008: Quality management systems*
- *SANS IEC 60034-1 to 30: Rotating electrical machines.*
- *SANS IEC 60085: Electrical insulation- Thermal classification.*
- *ISO 10816: Vibration severity standard.*
- *Eskom 240-89217674: Refurbishment and repair of power station electrical motors Work instruction.*
- *Eskom 240-56361435: Transport of Power Station Electric Motors Standard.*
- *Eskom 240-56360387: Storage of Power Station Electric Motors Standard.*
- *Eskom 240-50237155: New MV Motors Procurement Specification*
- *Eskom 240-95138097: Standard Electric Motor Test Certificate.*

Informative

ISO 1940-1:2003: Mechanical vibration- Balance quality requirements for rotors in a constant (rigid) state- part 1: Specification and verification of balance tolerance.

Definitions

Definitions	Explanations
Medium Voltage	Nominal voltage >1000V
Outage	A planned or unplanned shutdown project related to one or more of the Employer's Power generating units.

Induction Motor	Electric motor in which the electric current in the rotor needed to produce torque is obtained by electromagnetic induction from the magnetic field of the stator winding
Contractor	Service provider contracted for supply of specific service to Eskom Duvha power station
Employer	Eskom or Eskom Duvha power station representative appointed in writing.

Abbreviations

Abbreviations	Explanation
AC	Alternating Current
DC	Direct Current
DE	Drive End
IBI	Integrated Business Improvement Model
KPA	Key performance area
KPI	Key performance indicators
MM	Material Management
MV	Medium Voltage
NDE	Non- drive end
OEM	Original Equipment Manufacture
PPE	Personal protective equipment
QC	Quality control
SOS/SOW	Scope of service/ Scope of work

Roles and Responsibilities

-

Process for Monitoring

Technical KPIs

Item	KPI	Target
Phase I no. 1	Breakdown and/or emergency. Collect motor from Site and transport to contractor's workshop	Within 12 hours
Phase II	Delivery on emergency work(Overhaul)	3 Weeks
Phase III	Delivery on emergency work(Major Repairs)	6 Weeks

SHEQ KPIs

Item	KPI	Target
1	SHEQ Performance Report	>95%

Site Visit

1. Clarification meeting and site visit is compulsory for all contractors.
2. Procurement officer to form part of the site visit team.
3. Invited contractors to bring own PPE during site visits.
4. All official communication will be in the form of writing.
5. A register will be signed by all in attendance and kept as record.

2. Requirements

Appropriate specifications, procedures and work instructions are used. In the absence of the manufacture's specifications, or Eskom specifications, IEC 60034 shall be used, as appropriate for the class of the motor. Whether using Eskom specifications, national or international specifications, instructions for the testing to be done on each motor are required.

2.1 Deficiencies and modifications

No modifications shall be done on the motor without the approval of the employer.

2.2 Turnaround time

The maximum turnaround time per motor for assessment shall be three (3) working days. The repair work will depend on the scope of work, which shall be agreed beforehand between Eskom and the *Contractor*, and the scope must indicate timelines per task. The employer may request this information by telephone or email.

2.3 Painting

At least one primer coat and two finish coats of compatible outdoor paint shall be applied in accordance with the paint manufacturer's instructions. Two-part epoxy-type paint is required because of its toughness and durability. (Examples: DuPont's Variprime 615S and 616S). Unless otherwise specified on the Refurbishment form and check sheet, the finish colour shall be emerald grey (G29) on external metal. Coatings: coatings shall be applied in accordance with the manufacture's procedures. Details of coating requirements can be obtained from purchaser's technical contact, if there are not clearly defined on the check sheet.

2.4 Record keeping

The supplier will keep originals of the test results, quality and any other documents used on the motor for the period of the contract plus three (3) years.

The Employer shall be given the copy of the tests results.

2.5 Data pack

The motor shall be returned to site only if it is accompanied with a data pack comprising as a minimum on the following:

- Failure analysis report.
- Results of the tests specified on the scope of work.
- Warranty Certificate/ document.

2.6 Warranty

Any refurbished motor shall have a 1 year warranty granted by the supplier to the Employer. Warranty shall commence on the day the motor is delivered on site.

2.7 Transport

The supplier is responsible and accountable for transporting the motors from Duvha Power Station to their sites and from their sites to Duvha Power Station. All motors shall be transported as per Eskom 240-56361435: Transportation of power station electric motors standard.

2.8 Quality

The supplier provides a complete Quality Control Plan in accordance with the requirements of ISO 9001:2008 to the Employer for approval. This plan must ensure an integrated quality service as part of

the contract. All quality hold point and witness point must be done in the presence of an Eskom employee. Quality documents to be handed over to the Employer. The final motor test at the factory test bay must be done with the employer's representative present.

2.9 Adherence to General Eskom Policies

The supplier employees shall comply with Eskom's policies and site regulations, including but not limited to, use of cell phones in restricted areas, adherence to Eskom's lifesaving rules, smoking policy, zero tolerance on alcohol usage etc. These requirements will be detailed during the induction training process.

2.10 Quality control standards

Quality control plan shall be produced, maintained and implemented per task as agreed by the employer. The QCP must be discussed with the employer for approval. This QCP shall comply with ISO 9001:2008 standards. Any amendments to the QCP shall be discussed with the employer for approval.

2.11 Special tests and investigations

The supplier will perform special tests, investigations and recordings of all findings. The findings shall be shared with the Employer.

2.12 Insurance

All motors insurance shall be covered by the supplier as from the time they leave Employer's site until delivered back on the Employer's site.

2.13 Quotations

All quotations shall be given in South African Rands (ZAR).

2.14 Industrial Relation

Any industrial relations issues from the supplier should be discussed with the contract manager.

2.15 Program

A detailed program should be drafted in the form of bar chart or any software that will specify the plan and progress of repairs and be submitted to the contract manager together with the quotation. Contract manager and System Engineer must have opportunity to influence the bar chart for holding points. Employer can send any personnel to witness holding points and if it happens that the witness cannot be done, the supplier will only proceed after approval from the Employer.

2.16 Deviations

Non-compliance from the agreement will result in NCR being issued to the supplier and when the third NCR is issued, the supplier will be referred to the supplier reconciliation committee.

