Eskom

NEC3 Engineering and Construction

Short Contract (ECSC3)

A contract between **Eskom Holdings SOC Ltd (Reg No. 2002/015527/30)**

and

for

Contents: Compiled in accordance with CIDB Standard for Uniformity in Construction Procurement (May 2010 amendments) **Page No.**

Documentation prepared by: **Babalwa Nomatiti and Isak Meyer**

C1 Agreements & Contract Data

C1.1 Form of Offer and Acceptance

Offer

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

Guide Vanes Journal Refurbishment

The tenderer, identified in the signature block below, having examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, 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.

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

This Offer may be accepted by the Employer by signing the form of Acceptance overleaf 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: .....

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 1 Agreements and Contract Data, (which includes this Form of Offer and Acceptance)

Part 2 Pricing Data

Part 3 Scope of Work: Works Information

Part 4 Site Information

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

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender 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, which must be signed by the duly authorised representative(s) for both parties.

The tenderer shall within one week 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 copy of this document, including the Schedule of Deviations (if any) together with all the terms of the contract as listed above.

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 tender offers, further copies of this document may be used for that purpose, duly endorsed, 'Alternative Tender No. _____ '

Schedule of Deviations

Note:

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

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

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

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

	For the tenderer:	**For the Employer**
Signature	.....	.....
Name	.....	.....
Capacity	.....	.....
On behalf of	..... *(Insert name and address of organisation)*	..... *(Insert name and address of organisation)*
Name & signature of witness	.....	.....
Date	.....	.....

C1.2 Contract Data

Data provided by the *Employer*

[Instructions to the contract compiler: (delete these two notes in the final draft of a contract)

Completion of the data in full is essential to create a complete contract.

Clause	Statement	Data
	General	
10.1	The *Employer* is (Name):	**Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa**
	Address	**Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg**
10.1 & 14.4	The *Employer*'s representative to whom the *Employer* in terms of clause 14.4 delegates his actions[1] is (Name):	**Babalwa Nomatiti**
	Address	**Eskom Generation Peaking, 15 Pasita Street Rosen Park, Tygervalley, Bellville**
	Tel No.	**021) 941 5835**
	Fax No.	**[●]**
	E-mail address	**nomatibj@eskom.co.za**
11.2(11)	The *works* are	**[Refurbishment of Guide Vane Journal]**
11.2(13)	The Works Information is in	**the document called 'Works Information' in Part 3 of this contract.**
11.2(12)	The Site Information is in	**the document called 'Site Information' in Part 4 of this contract.**
11.2(12)	The *site* is	**Van Der Kloof Power Station**
30.1	The *starting date* is.	**24 April 2026**
11.2(2)	The *completion date* is.	**12 months after the award**
13.2	The *period for reply* is	**2 weeks**
40	The *defects date* is	**48 weeks after Completion**
41.3	The *defect correction period* is	**4 weeks**
50.1	The *assessment day* is the	**25th of each month.**
50.5	The *delay damages* are	**R1 500,00 per day up to a limit of 10% of the total contract value**
50.6	The retention is	**0%**

[1] Except those actions which can only be done by the *Employer* as a Party to the contract.

80.1	The *Contractor* is not liable to the *Employer* for loss of or damage to the *Employer*'s property in excess of	**the amount of the deductibles relevant to the event**
	Does the United Kingdom Housing Grants, Construction and Regeneration Act (1996) apply?	**No**
93.1	The *Adjudicator* is	**the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).**
93.2(2)	The *Adjudicator nominating body* is:	**the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body**
93.4	The *tribunal* is:	**arbitration.**
	The *arbitration procedure* is	**the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.**
	The place where arbitration is to be held is	**Within the boundaries of South Africa as mutually agreed**
	The person or organisation who will choose an arbitrator - if the Parties cannot agree a choice or - if the arbitration procedure does not state who selects an arbitrator, is	**the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.**

The *conditions of contract* are the NEC3 Engineering and Construction Short Contract (April 2013)[2] and the following additional conditions Z1 to Z11 which 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 Change of Broad Based Black Economic Empowerment (B-BBEE) status

Z2.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business

[2] If June 2005 Edition applies, delete April 2013 and insert June 2005
[3] State whether attached as a 'PDF' file in terms of Eskom's licence, or to be obtained from Engineering Contract Strategies Tel 011 803 3008, Fax 086 539 1902 or www.ecs.co.za.

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.

Z2.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Employer* within thirty days of the notification or as otherwise instructed by the *Employer*.

Z2.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the *starting date* the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor*'s obligation to Provide the Works.

Z2.4 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 those stated in Clause 91.1 and the amount due on termination includes amounts listed in Clause 92.1 less a deduction of the forecast additional cost to the *Employer* of completing the *works*.

Z3 Confidentiality

Z3.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to others except where required by this contract. 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 where required by this contract the *Contractor* ensures that the provisions of this clause are complied with by the recipient.

Z3.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Employer*.

Z3.3 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.

Z3.4 The taking of images (whether photographs, video footage or otherwise) of the *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Employer*. All rights in and to all such images vests exclusively in the *Employer*.

Z3.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z4 Waiver and estoppel: Add to clause 12.2:

Z4.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties or their delegates 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.

Z5 Health, safety and the environment

Z5.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *works*. Without limitation the *Contractor*:

- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and

provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Site;

- warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of *works*; and
- undertakes, in and about the execution of the *works*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z5.2 The *Contractor*, in and about the execution of the *works*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z6 Provision of a Tax Invoice and interest. Add to clause 50

Z6.1 The *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer*'s procedures stated in the Works Information, showing the correctly assessed amount due for payment.

Z6.2 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 clause 51.2 is then calculated from the delayed date by when payment is to be made.

Z6.3 The *Contractor* 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.

Z7 Notifying compensation events

Z7.1 Delete from the last sentence in clause 61.1, "unless the event arises from an instruction of the *Employer*."

Z8 *Employer's* limitation of liability; Add to clause 80.1

Z8.1 The *Employer* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand).

Z9 Termination: Add to clause 90.2, after the words "or its equivalent":

Z9.1 or had a business rescue order granted against it.

Z10 Addition to Clause 50.5

Z10.1 If the amount due for the *Contractor*'s payment of *delay damages* reaches the limits stated in this Contract Data (if any), the *Employer* may terminate the *Contractor*'s obligation to Provide the Works.

If the *Employer* terminates in terms of this clause, the procedures on termination are those stated in Clause 91.1 and the amount due on termination includes amounts listed in Clause 92.1 less a deduction of the forecast additional cost to the *Employer* of completing the *works*.

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 Subconsultants 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.

Z12 Insurance

Z _12.1 Replace core clause 82 with the following:

Insurance cover 82

82.1 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.

82.2 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	Cover provided until
Loss of or damage to the *works*	The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible as at contract date, where covered by the *Employer*'s insurance	The *Employer*'s certificate of Completion has been issued
Loss of or damage to Equipment, Plant and Materials	The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible as at contract date, where covered by the *Employer*'s insurance	The Defects Certificate has been issued
The *Contractor*'s liability for loss of or damage to property (except the *works*, Plant and Materials and Equipment) and for bodily injury to or death of a person (not an employee of the *Contractor*) arising from or in connection with the *Contractor*'s Providing the Works	**Loss of or damage to property** *Employer*'s property The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible as at contract date where covered by the *Employer*'s insurance Other property The replacement cost **Bodily injury to or death of a person** The amount required by the applicable law	
Liability for death of or bodily	The amount	

injury to employees of the *Contractor* arising out of and in the course of their employment in connection with this contract	required by the applicable law	

82.3 The *Employer* provides the insurances as stated in the Insurance Table B

INSURANCE TABLE B

Insurance against or name of policy	**Minimum amount of cover or minir 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

Data provided by the *Contractor* (the *Contractor*'s Offer)

The tendering contractor is advised to read both the NEC3 Engineering and Construction Short Contract (April 2013) and the relevant parts of its Guidance Notes (ECSC3-GN)[4] in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on page 31 of the ECSC3 April 2013 Guidance Notes.

Completion of the data in full is essential to create a complete contract.

10.1	The *Contractor* is (Name):	**[●]**
	Address	**[●]**
	Tel No.	**[●]**
	Fax No.	**[●]**
	E-mail address	**[●]**
63.2	The percentage for overheads and profit added to the Defined Cost for people is	**[●]%**
63.2	The percentage for overheads and profit added to other Defined Cost is	**[●]%**
11.2(9)	The Price List is in	**the document called 'Price List' in Part 2 of this contract.**
11.2(10)	The offered total of the Prices is [Enter the total of the Prices from the Price List]:	**R[●]** **excluding VAT** **[in words]** **[●]** **excluding VAT**

[4] Available from Engineering Contract Strategies Tel 011 803 3008, Fax 086 539 1902 or www.ecs.co.za.

C2 Pricing Data

C2.1 Pricing assumptions

Entries in the first four columns in the Price List 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 tenderer enters the amount in the Price column only; the Unit, Quantity and Rate columns being left blank.

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

All Prices are to be shown excluding VAT unless instructed otherwise by the *Employer* in Tender Data or in an instruction the *Employer* has given before the tenderer enters his Prices.

If there is insufficient space in the Price List which follows, state in which document the Price List is contained.

C2.2 Price List

The Price List is as follows _____ (delete the text which does not apply and this note)

Item no.	Description	Unit	Quantity	Rate	Price
1	Collecting of Guide Vanes set at PowerStation	Trip	2		
2	Cleaning of the Guide Vanes (Grit blasting surface to expose defects SAE2.5)	ea	40		
3	Machining of the Journals	ea	40		
4	Stainless steel Overlay Welding of the Journals	ea	40		
5	Machining of Journals to size	ea	40		
6	NDT of Weld repairs	ea	40		
7	Corrosion Protection painting of Guide Vanes with high-solids epoxy paint	ea	40		
8	Delivery of refurbished Guide Vanes set to Vanderkloof Hydro Power station	Trip	2		
9	Safety File for site Access	Ea	1		
10	NDT report of all weld repairs	Ea	1		
	The total of the Prices (excluding VAT):				

C3: Scope of Work

C3.1 Works Information

Refurbished set of Guide Vanes

3.1.1. Description of the *works*

The scope of work includes the following:

- Collection of the Guide Vanes from Vanderkloof Hydro Power Station
- Cleaning / grit blasting of the Guide Vanes
- Machining of the journals
- Overlay welding of the journals
- Machining of the journals to size
- Non-destructive testing of all weld repairs
- Corrosion protection of the Guide Vanes
- Delivery of the Guide Vanes to Vanderkloof Hydro Power Station

Item	Qty.	Item Description	Reference Drawing*
1	40	Guide Vane	0.39/724-1

Table 1: *Works* to be supplied

Refer to the latest revision of these drawings
Drawings available upon signing of non-disclosure agreement

3.1.1.2 Machining

The Guide Vanes are prepared for machining by cleaning all previously painted areas and removing corrosion by grit blasting the surfaces to SA 2.5 in order to expose all defects on the guide vanes prior to machining.

The journals are machined on a lathe. The proposed undercut is approximately 5mm (radial), see Figure 1, A, B and C.

3.1.1.3 Welding

The *Contractor* submits the following documents to the *Employer* for acceptance before commencing with the *works*:

- The *Contractor*'s valid ISO 3834-2 certificate
- The Welding Procedure Specification (WPS)
- The Welding Procedure Qualification Record (WPQR)
- The Welder Qualification Record
- The Quality Plan and Method Statement

The *Contractor* performs the refurbishment as follows:

- It is recommended to use MMA(111) or GTAW(141) welding, for which the WPS preferably is to be qualified according to BS EN ISO 15614 -7, alternatively qualification according to ASME is also acceptable but subject to the *Employer*'s acceptance. If the *Contractor* recommends a semi-automated welding procedure, it is subject to the *Employer*'s acceptance.

- The *Contractor* submits the WPS and WPQR for evaluation and acceptance to the *Employer* prior to contract award.
- The pre-heating, if required, of the Guide Vane is done according to the approved welding specification.
- A buttering layer of nickel rich, 309L stainless steel is deposited as the interface between the base metal, (JI-G5101 SC-45), and the primary layer. This base layer forms austenite which creates a stable layer and is not prone to hardening and cracking. The weld is at least 2 mm thick after cleaning up.

- Upon completion of the 309L depositing process, the welded areas are machined back to clean metal to expose any inclusions or porosity.

- NDT is performed which will comprise of 100% PT testing of the machined areas.

- Any visible inclusions or pinholes are ground, re-welded, machined and inspected. The grinding process is done in the welding area using grinding wheels for use on stainless steel in order to prevent contamination of the weld area. This process is repeated until no defects are visible. The procedure for repairing the defects is submitted by the *Contractor* to the *Employer* for acceptance prior to the commencement thereof.

- When there are no more visible defects, the following layer of 316L stainless steel is deposited. The 316L layer is at least 2mm thick after final machining.

- NDT is performed which will comprise of 100% PT testing of the machined areas until no defects are visible.

- All defects or damage to the top and bottom surfaces of the blade, D and E in Figure 1, are repaired using the GTAW(141) welding process with 316L stainless steel filler wire. In the event of damage up to the base metal, 309L is used as a buttering layer underneath the 316L.

All materials including welding filler material consumables, such as electrodes, rods and wires are supplied by the *Contractor*, where applicable, as per Section 3.2, shall be accompanied by a 3.1 Material Certificate for quality assurance and traceability purposes, in accordance with EN10204. Material verification, for supplied materials, shall be part of the QCP. The heat number, referenced by the material certificate, shall be visible on the material during witnessing by the *Employer.*

3.1.1.3.1General Welding Requirements

- The following requirements are applicable for all welding:
- The *Contractor* responsible for the welding shall be ISO 3834-2 certified (current) and approved, in terms of the relevant Product/Construction Standards, Welding Processes and required Parent Material Groups, by the *Employer* to perform Level 1 plant welding related work (maintenance, refurbishment and fabrication).

- All repairs shall be assessed to determine whether the *Employer*'s stipulated welding process, consisting either of GTAW or MMA, is appropriate.

- All repairs or welds shall be assessed in terms of application, dimensions, weld position, parent material and the requirement for heat treatment to determine the most appropriate repair procedure.

- The *Contractor* shall ensure that the correct cutting, profiling and brushing tools, in terms of material, are utilised for the various parent materials to prevent unwanted weld contamination and adverse effects.

- Proper cleaning and degreasing of the identified areas shall be implemented prior to welding.

- The necessary weld preparations and machining of the parent materials shall be implemented, including excavation of defects, removal of weld metal as well as heat affected zones (HAZ) of previous welds if necessary.

- All welding shall be done according to a qualified Welding Procedure Specification (WPS) and by a qualified welder, subject to the *Employer*'s acceptance.

- The *Contractor* shall perform specialised machining, profiling, blending and polishing of the weld repair to match the surrounding area to achieve a surface finish of 0.8µm Ra or better.
- The *Contractor* shall control and monitor for distortion during welding.
- The necessary heat treatment (pre-heat, interpass, PWHT and bake-outs), as and when required, according to the parent material and qualified welding procedure shall be thoroughly implemented. Tempilstiks (or other proven methods), where possible, to be utilized for quality control purposes.
- General cleaning, including removal of slag where necessary, upon completion of welding shall be implemented.
- The *Contractor* shall perform and document the necessary inspections, consisting of visual and dimensional inspections, throughout the welding process.
- The *Contractor* shall request the necessary Non-Destructive Testing (NDT) throughout the welding, repair and machining process, as and when required, from the *Employer*'s Outage Management department.
- The implementation of proper stainless-steel pickling and passivation, where necessary.

3.1.1.3.2 Codes & Standards and Specifications Requirements

Welding Procedure Qualification as well as Welder (or welding operator) Qualification shall be in accordance with the appropriate welding standard incorporated into the design and construction code. The relevant design and construction code for each item to be repair welded are indicated for each item as per Section 3.2.

The *Employer* prefers that Welding Procedure Qualification shall be performed in accordance with BS EN 15614-1 Level 2, and Welder Qualification shall be conducted in accordance with ISO 9606-1. Alternatively, ASME IX is also acceptable. Overlay Welding Procedure Qualification shall be according to BS EN 15614-7 and will be specific to corrosion resistant overlay welding, alternatively ASME IX is also acceptable.

Any possible exceptions to this must be motivated, by the *Contractor*, for approval by the *Employer* through a concession. Combining and mixing of different family code specifications on a single weld are not allowed.

The latest revision of all relevant codes, standards and specifications shall be implemented to ensure compliance.

3.1.1.3.3 Non-Destructive Testing (NDT) & Acceptance Criteria

All welding NDT is performed according to the requirements of the *Employer* as detailed in the Standard for Non-Destructive Testing (NDT) on Eskom Plant, 240-8353994. The *Employer's* NDT service provider is responsible for this function; therefore, the requirement of NDT services will not be part of this *works*.

The *Contractor,* for the *works* as per this welding technical specification, is responsible for the inspection of welding set-ups, welding preparations and NDT inspection requests, to the *Employer*'s Outage Department, for completed weldments.

The *Contractor* will only liaise with the *Employer*'s NDT service provider to ensure the correct areas are inspected and that the correct information is captured on the NDT reports. Furthermore, the *Contractor* must notify the *Employer*'s Outage Department 1 day in advance for NDT requests.

The *Contractor* is allowed to perform in-house NDT, however it shall be subject to the *Employer*'s approval, depending on the criticality and application, and the in-house NDT shall be clearly indicated on the QCP's. All critical and final NDT inspections shall be done by the *Employer*'s service provider.

The *Contractor* takes note of the following information:

- Third-Party NDT to be arranged by the *Employer*. Any NDT for which the *Contractor* will use for their internal QC will be for their own account and arrangements.
- The relevant design/construction code, application, weld type, material, process, position and geometry will determine the type of NDT that will be done. Weld Build-Ups and Corrosion Resistant Overlay Welding will consist of 100% Surface Inspection (PT).
- Non-destructive testing on all the welded surfaces is done by the following means: All inclusions or defects found are repaired by the *Contractor*
- Surface crack inspections consisting of 100% PT.
- After repairs the surface is tested again by the *Contractor.*
- NDT will still be indicated in the *Contractor'*s Quality Control Plan (QCP) as indicated in Section 3.2.4.
- NDT acceptance criteria will be as per the following: BS EN ISO 5817 Welding Quality Levels for Imperfections – Quality Level B, alternatively the acceptance criteria of the WPS qualification/construction code will also be acceptable.

3.1.1.3.4 Heat Treatment Requirements

Heat Treatment (HT) includes Pre-Heat, Interpass, and Post Welding Bake-Out, where applicable, shall be clearly indicated in the Quality Control Plan (QCP).

The *Contractor* shall implement HT in accordance with an applicable qualified WPS, subject to the *Employer's* review and acceptance, prior to commencement of the *works*.

The *Contractor* provides valid calibration certificates, subject to the *Employer'*s acceptance, for all relevant HT, especially PWHT, equipment and must be included in the final data book.

Pre-Heating requirements, to be adhered to by the Contractor, includes the following:

- Gas preheating is allowed provided there is a low risk for spot heating and resistance heating pad set ups are not practical, subject to the Employer's acceptance.

- Resistance heating is allowed and must be done in accordance with an approved HT procedure subject to the Employer's acceptance.

- Whatever method of preheating is used, care must be taken to ensure that the temperatures recorded are representatives of those at the inner surface before welding commences, especially for thick-walled components.

- Constant monitoring of the process is required to ensure that the correct temperatures as set out in the WPS are being achieved by means of using a calibrated contact thermometer (e.g. thermo-crayons such as Tempilstiks, digital thermometer) prior to welding.
- Interpass Temperature requirements, to be complied with by the Contractor, includes the following:

- Interpass temperature, as per the qualified WPS, is monitored between welding passes and is the temperature immediately before each weld pass is performed.

- Welding will only continue once the correct temperature is obtained.

3.1.1.3.5 Welding Filler Materials

Filler materials shall be supplied by the *Contractor* and selected based on the parent materials as well as the application and shall comply to the relevant standards as required per Section 7 of the *works*.

The *Contractor* shall ensure proper identifying, drying, storing and handling of electrodes and filler wires related to the manufacturer's recommendations as well as relevant standards.

The *Contractor* shall provide type 3.1 Material Certificates for quality assurance and traceability purposes, in accordance with EN 10204, for all filler materials (electrodes, wires & rods) that will be utilised during weld repairs as specified within each of the qualified welding procedures, subject to the *Employer's* review and acceptance prior to any welding.

3.1.1.4 Supply of Materials

All materials supplied by the *Contractor*, where applicable according to each refurbishment item, as per Section 3.2, shall be accompanied by a 3.1 Material Certificate for quality assurance and traceability purposes, in accordance with EN 10204. Material verification, for supplied materials, shall be part of the QCP. The heat number, referenced by the material certificate, shall be visible on the material during witnessing by the *Employer*.

3.1.1.5 Welders, Welding Operators and Labour

In addition to the personnel and qualification requirements, as per 240-106628253 Standard for Welding Requirements on Eskom Plant, the following skilled resources are required to perform welding related work to complete and fulfil the requirements of the *works*:

- Qualified Quality Controller – Level 2 SAIW Inspector Qualification

The *Employer* reserves the right to conduct periodic audits of the *Contractor* to ensure compliance with these requirements. The *Contractor* is required to provide proof of qualifications to the *Employer* for all the required personnel working on the *Employer's* plant.

3.1.1.6 Pickling and Passivation of Stainless Steel

The *Contractor* shall perform pickling and passivation of all stainless-steel surfaces that were exposed to heat due to welding, grinding or heat treatment. Typical formulations based on hydrofluoric (HF), and nitric (HNO_3) acids remove scale, contaminants as well as the underlying chromium depleted layer and restore the corrosion resistance. The formulation is to be accepted by the *Employer* that can typically range, but is not limited to, between 15-20% HNO_3 and 1-1.5% HF based on volume. It is recommended that the *Contractor* make use of either gel or pastes, and the necessary safety

precautions are followed during handling and application.

3.1.1.7 Equipment Requirements

Not applicable.

3.1.1.8 Welding Concessions

The *Contractor* shall motivate, by means of an official concession request, for any allowable exceptions or deviations to this technical specification document that might arise during the outage. Concessions due to poor planning or undeclared technical deviations, as per the Technical Evaluation Strategy (160A/11111-P3-C) will not be considered.

3.1.1.8 Final Machining to Size

The final machining to size, (journals, top and bottom of blade), is done on the lathe.

- Guide Vane total length: 3221 mm
- Guide Vane Blade width (leading edge to centre) 550 mm
- Guide Vane Blade width (trailing edge to centre) 470 mm
- Guide Vane mass: approximately 2400 kg
- The diameter of the Bottom Journal is 250 mm, the Middle Journal is 280 mm, and the Top Journal is 275 mm
- The size tolerance for the journals is g6
- The surface finish, (Ra) is 0.8 µm or better.
- Ovality and parallelism is under 50 µm.
- Machining on the top and bottom of the blade is performed on the lathe, and all defects and pitting is machined out. The surface finish is 0.8 µm (Ra) or better.
- The length of the blade is 1743.2 mm with a tolerance of ±0.05 mm
- Leading edge of Guide Vane is machined to include an oblique chamfer to aide sealing when closing, see Eskom drawing 0.39/724 section DD
- Tolerance of non-critical dimensions of the Guide Vane is ±0.1
-

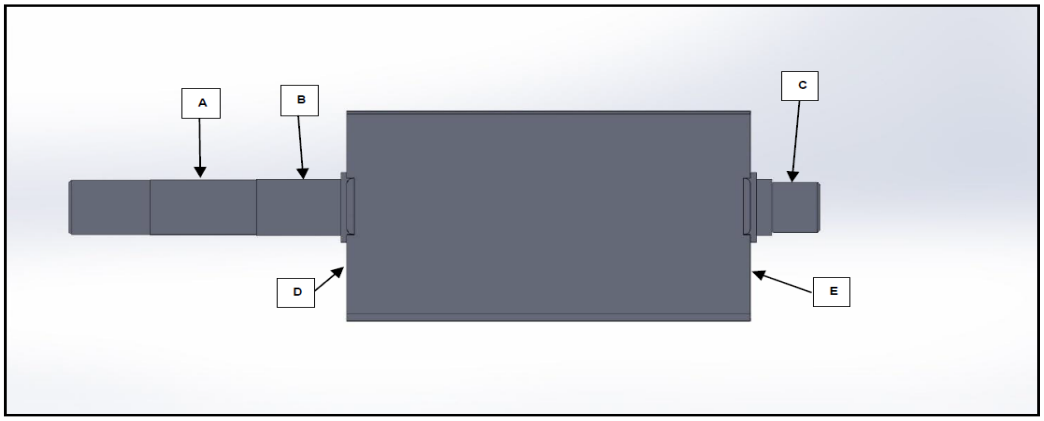

Figure 1: Guide Vane

Name	Basic Diameter (mm)	Upper Tolerance (mm)	Lower Tolerance (mm)
Top Journal	275	274.983	274.951
Middle Journal	280	279.983	279.951
Bottom Journal	250	249.985	249.956

Table 2: Dimensions of Guide Vane Journals

3.1.1.8 Quality Control

- The *Contractor* submits the welding and machining method statement and quality control plan indicating all hold and witness points to the *Employer* for acceptance prior to the commencement of the *works.*

- Results of the Non-destructive testing are included in the *Contractor*'s Quality Control Plan

3.1.1.9 Repair of Defects

The procedure for the repair of the defects is submitted to the *Employer* for acceptance before repairing defects.

3.1.1.10 Corrosion Protection

The *Contractor* submits the corrosion protection system, application and quality control documents to the *Employer* for acceptance before commencing.

A high solids primer and epoxy coating such as Sigmacoat 380 is used for the corrosion protection of guide vanes.

The *Contractor* submits the paint specification to the *Employer* for acceptance prior to the start of the *works*. The *Contractor* follows the recommended application instructions as per the paint *Contractor* application data sheet.

- Mask sealing surfaces on blade, see Figure 2 and Figure 3.
- Ensure that all surfaces to be corrosion protected are free from rust and degreased.
- Apply primer coating with airless spray to DFT of 50 µm.
- Apply 2 x topcoats with airless spray to WFT of at 560µm.
- Surfaces are 100% Wet Sponge Holiday Detection at 1000V/mm.
- All defects are repaired and re-tested.

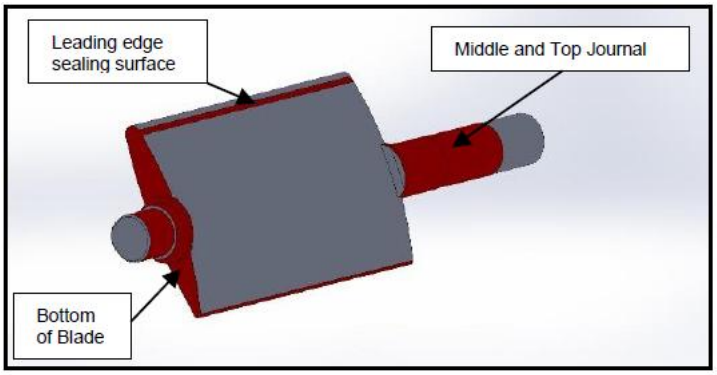

Figure 2: Areas to Mask prior to Corrosion Protection

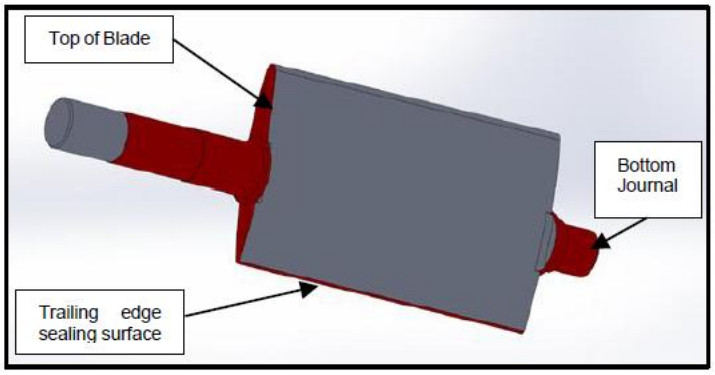

Figure 3: Areas to Mask prior to Corrosion Protection

All paint manufacturers' recommendations regarding humidity, temperature, over-coating times, etc. is followed by the *Contractor.*

3.1.1.11 Equipment Requirements

The *Contractor* supplies all equipment, tools and gear required to complete the *works* with the desired surface finishes, sizes and tolerances. The *Contractor'*s equipment must be in a reliable, maintained and calibrated condition to deliver the *works* and quality requirements, including, but not limited to, hot boxes, temperature measuring equipment, recording equipment, welding machines, power sources, power tools, PMI equipment, measuring equipment and machining equipment as well as safety equipment and protective clothing.

3.1.1.11 Delivery

The Guide Vanes are individually strapped to pallets to prevent damage during transportation. All areas that are not corrosion protected are coated with Tectyl 506 and the journals are wrapped and bound in minimum 5 mm thick rubber sheet.

3.1.1.12 Supplier's design

The *Supplier* designs and provides all equipment and jigs necessary to refurbish the items as per Table 1.

3.2 EMPLOYER'S PHILOSOPHY

3.2.1 Engineering philosophy

Fully operational capability of the Pump/Turbine unit, improved reliability and maintainability of the Turbine system at Vanderkloof Hydro Power Station.

3.2.2 Maintenance philosophy

The refurbished guide vanes will ensure that proper maintenance can be executed during the Turbine Refurbishment outages.

3.3. DRAWINGS

The following drawings are supplied to the *Supplier* for manufacturing purposes.

Drawing Number*	**Title:**
0.39/724-1	Guide Vane

**Refer to the latest revision of these drawings.*

Drawings available upon signing of non-disclosure agreement.

3.4.Specifications

The *Supplier* adheres to the following standards as per Table 7 in providing the *works*

Table 7: Standards

ISO 3834-1	Quality requirements for fusion welding of metallic materials – Criteria for the selection of the appropriate level of quality requirements	2021	✓
ISO 3834-2	Quality requirements for fusion welding of metallic materials – Comprehensive quality requirements	2021	✓
240-106628253	Standard for Welding Requirements on Eskom Plant.	2	*

BS EN 1011	Welding – Recommendations for welding of metallic materials. Part 1: General guidance for arc welding Part 2: Arc welding of ferritic steels Part 3: Arc welding of stainless steels	2009	✓
BS EN ISO 15609	Specification and qualification of welding procedures for metallic materials – Welding procedure specification	2019	✓
BS EN 15614-1	Specification and qualifications of welding procedure for metallic materials – Welding procedure test – Arc and gas welding of steels and arc welding of nickel and nickel alloys	2017	✓
BS EN 15614-7	Specification and qualifications of welding procedure for metallic materials – Welding procedure test – Overlay welding	2016	✓
ISO 9606-1	Qualification testing of welders — Fusion welding - Steels	2012	✓
BS EN 13480	Metallic industrial piping	2024	✓

ASME VIII Div 1	BPVC Section VIII – Rules for Construction of Pressure Vessels Division 1	2025	✓
ASME IX	BPVC Section IX – Welding, Brazing, and Fusing Qualifications	2025	✓

*Available on request as these standards or procedures are *Employer* specific documents.

✓ Standards and codes, and the latest revisions thereof, to be obtained by the *Contractor* from the relevant standard organisation.

4. Constraints on how the *Contractor* Provides the Works

State any constraints on the sequence and timing of work and on the methods and conduct of work including the requirements for any work by the *Employer*.
Also include any management related constraints, invoicing and payment procedures some of which have been inserted below as a minimum guide.

4.1 Meetings

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

Title and purpose	**Approximate time & interval**	**Location**	**Attendance by:**
Risk register and compensation events	As required	MS Teams/On-Site	*Project Manager*, *Contractor*, Project co-ordinator
Overall contract progress and feedback	As required	MS Teams/On-Site	*Project Manager*, the *Contractor*
Installation progress meetings	As required	MS Teams/On-Site	Project Co-ordinator, the *Contractor*

4.2 Use of standard forms

The *Contractor* submits the final documentation on a formal transmittal form to the *Project Manager*. All correspondence is sequentially numbered.

4.3 Invoicing and payment

The *Contractor* attaches the detail assessment of the amount due to each tax invoice showing the Price for Work Done to Date for each item in the Price List for work which he has completed.

The *Contractor* includes the following information on each tax invoice:

- Name and address of the *Contractor*
- The contract number and title;
- *Contractor*'s VAT registration number;
- The *Employer*'s VAT registration number 4740101508;
- The total Price for Work Done to Date which the *Contractor* has completed;
- Other amounts to be paid to the *Contractor*;
- Less amounts to be paid by or retained from the *Contractor*;
- The change in the amount due since the previous payment being the invoiced amount – excluding VAT, the VAT and including VAT.

The *Contractor* attaches the detail assessment of the amount due to each tax invoice showing the Price for Work Done to Date for each item in the Price List for work which he has completed.

4.4 Records of Defined Cost

In order to substantiate the Defined Cost of compensation events, the *Employer* may require the *Contractor* to keep records of amounts paid by him for people employed by the *Contractor*, Plant and Materials, work subcontracted by the *Contractor* and Equipment. [See clause 11.2(5) and 63.2]. State in what form these records are to be kept and how accessed by the *Employer*.

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

If the ASGI-SA requirements are to be included in this contract specify constraints which *Contractor* must comply with after contract award in regard to any ASGI-SA requirements. The ASGI-SA Compliance Schedule completed in the returnable tender schedules is reproduced here. If ASGI-SA does not apply, delete this paragraph.

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

.

[Insert the agreed ASGI-SA Compliance Schedule here]

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

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

4.6 BBBEE and preferencing scheme

Specify constraints which *Contractor* must comply with after contract award in regard to any Broad Based Black Economic Empowerment (B-BBEE) or preferencing scheme measures.

4.7 Facilities to be provided by the *Contractor*

None

4.8 Title to material from excavation and demolition

None

4.9 Design by the *Contractor*

None

4.10 Cataloguing requirements by the *Contractor*

None

5. Requirements for the programme

None

6. Services and other things provided by the *Employer*

The *Employer* has the right to perform various inspections, witness- and hold points during the manufacturing and quality checks of the *works* at the premises of the *Supplier*.

The *Employer* performs visual inspection on delivery of the *works* at the *Employer*'s site (Vanderkloof Hydro Power Station).

The *Employer* stores the refurbished guide vanes in a safe area on the *Employer*'s premises (Vanderkloof Hydro Power Sation) after delivery of *works* by the *Supplier*.

C4: Site Information

Vanderkloof Hydro Power Station is part of the Peaking group of power stations and is located in the Upper Karoo Region in the Northern Cape. The station is powered with two 120MW units at an installed capacity of 240MW and encapsulated in an underground cavern on the left bank of the Orange River. The two units at Vanderkloof were put into commercial service in January and March 1977 respectively. The hydroelectric power station at the Vanderkloof Dam was the first power-generation station in South Africa situated entirely underground.

The Station has two vertical 'Francis' generators with a capacity of 120MW each and can be on load within 3 minutes.

Up to 220 000 litres (220 ton) of water per second flow through the penstock, which have an internal diameter of 7m

C4.1 Information about the site at time of tender which may affect the work in the contract

1. Access Limitations

Access to the Power Station is restricted to authorized personnel only. All *Contractor's* staff will be required to be cleared by security. *Contractor* gives 24hrs notice to the *Employer* of his intention to enter security-controlled areas.

All *contractor* personnel will be tested for the use of alcohol. Any person/s found to be above the legal limit will not be allowed on site.

2. Ground conditions in areas affected by work in this contract

N/A

3. Hidden and other services within the *site*

N/A

C4.1: Information about the *site* at time of tender which may affect the work in this contract

1. Access limitations

Access to site are only allowed between 07H00-16H15 Monday to Thursday and 07H00-12H15 on Fridays

2. Ground conditions in areas affected by work in this contract

No Earthwork included

3. Hidden and other services within the *site*

NA

4. Details of existing buildings / facilities which *Contractor* is required to work on

NA