



NEC3 Engineering and Construction

# Short Contract (ECSC3)

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

and

for **Repair, replacement and recommissioning of C&I components and equipment at the Tutuka Dirty Water Dam**

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Documentation prepared by:

# 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:

### **Repair, replacement and recommissioning of C&I components and equipment at the Tutuka Dirty Water Dam**

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*

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

Clause	Statement	Data
<b>General</b>		
10.1	The <i>Employer</i> is (Name):	<b>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</b>
	Address	<b>Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg</b>
10.1 & 14.4	The <i>Employer's</i> representative to whom the <i>Employer</i> in terms of clause 14.4 delegates his actions <sup>1</sup> is (Name):	<b>[•]</b>
	Address	<b>[•]</b>
	Tel No.	<b>[•]</b>
	Fax No.	<b>[•]</b>
	E-mail address	<b>[•]</b>
11.2(11)	The <i>works</i> are	<b>Repair, replacement and recommissioning of C&amp;I components and equipment on the Tutuka Dirty Water Dam</b>
11.2(13)	The Works Information is in	<b>the document called 'Works Information' in Part 3 of this contract.</b>
11.2(12)	The Site Information is in	<b>the document called 'Site Information' in Part 4 of this contract.</b>
11.2(12)	The <i>site</i> is	<b>Tutuka Power Station Dirty Water Dam Area</b>
30.1	The <i>starting date</i> is.	<b>TBA</b>
11.2(2)	The <i>completion date</i> is.	<b>TBA</b>
13.2	The <i>period for reply</i> is	<b>2 days</b>
40	The <i>defects date</i> is	<b>52 weeks after Completion</b>
41.3	The <i>defect correction period</i> is	<b>1 week</b>
50.1	The <i>assessment day</i> is the	<b>Completion of works</b>
50.5	The <i>delay damages</i> are	<b>Two Percent (2%) per day up to 10% of contract value.</b>
50.6	The retention is	<b>0%</b>

<sup>1</sup> Except those actions which can only be done by the *Employer* as a Party to the contract.

51.2	The interest rate on late payment is	<b>Not applicable</b>
80.1	The <i>Contractor</i> is not liable to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property in excess of	<b>the amount of the deductibles relevant to the event</b>
	Does the United Kingdom Housing Grants, Construction and Regeneration Act (1996) apply?	<b>No</b>
93.1	The <i>Adjudicator</i> is	<b>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 <a href="http://www.ice-sa.org.za">www.ice-sa.org.za</a>). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).</b>
	Address	<b>[•]</b>
	Tel No.	<b>[•]</b>
	Fax No.	<b>[•]</b>
	e-mail	<b>[•]</b>
93.2(2)	The <i>Adjudicator nominating body</i> is:	<b>the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See <a href="http://www.ice-sa.org.za">www.ice-sa.org.za</a> ) or its successor body</b>
93.4	The <i>tribunal</i> is:	<b>arbitration.</b>
	The <i>arbitration procedure</i> is	<b>the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.</b>
	The place where arbitration is to be held is	<b>South Africa</b>
	The person or organisation who will choose an arbitrator	
	- if the Parties cannot agree a choice or	<b>the Chairman for the time being or his nominee</b>
	- if the arbitration procedure does not state who selects an arbitrator, is	<b>of the Association of Arbitrators (Southern Africa) or its successor body.</b>
<b>The <i>conditions of contract</i> are the NEC3 Engineering and Construction Short Contract (April 2013)<sup>23</sup> and the following additional conditions Z1 to Z11 which always apply:</b>		

## **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*.

<sup>2</sup> If June 2005 Edition applies, delete April 2013 and insert June 2005

<sup>3</sup> 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](http://www.ecs.co.za).

- 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 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:

<b>Affected Party</b>	means, as the context requires, any party, irrespective of whether it is the <i>Contractor</i> or a third party, such party's employees, agents, or Subconsultants or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,
<b>Coercive Action</b>	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,
<b>Collusive Action</b>	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,
<b>Committing Party</b>	means, as the context requires, the <i>Contractor</i> , or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractors or the Subcontractor's employees,
<b>Corrupt Action</b>	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,
<b>Fraudulent Action</b>	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,
<b>Obstructive Action</b>	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
<b>Prohibited Action</b>	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	<p>The replacement cost where not covered by the <i>Employer's</i> insurance</p> <p>The <i>Employer's</i> policy deductible as at contract date, where covered by the <i>Employer's</i> insurance</p>	The <i>Employer's</i> certificate of Completion has been issued
Loss of or damage to Equipment, Plant and Materials	<p>The replacement cost where not covered by the <i>Employer's</i> insurance</p> <p>The <i>Employer's</i> policy deductible as at contract date, where covered by the <i>Employer's</i> insurance</p>	The Defects Certificate has been issued
The <i>Contractor's</i> 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 <i>Contractor</i> ) arising from or in connection with the <i>Contractor's</i> Providing the Works	<p><b><u>Loss of or damage to property</u></b></p> <p><b><u>Employer's property</u></b></p> <p>The replacement cost where not covered by the <i>Employer's</i> insurance</p> <p>The <i>Employer's</i> policy deductible as at contract date where covered by the <i>Employer's</i> insurance</p> <p><b><u>Other property</u></b></p> <p>The replacement</p>	

	cost	
	<b><u>Bodily injury to or death of a person</u></b>	
	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	

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

**INSURANCE TABLE B**

<b>Insurance against or name of policy</b>	<b>Minimum amount of cover or minimum of indemnity</b>
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 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:

<b>AAIA</b>	means approved asbestos inspection authority.
<b>ACM</b>	means asbestos containing materials.
<b>AL</b>	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.
<b>Ambient Air</b>	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.
<b>Compliance Monitoring</b>	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.
<b>OEL</b>	means occupational exposure limit.
<b>Parallel Measurements</b>	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
<b>Safe Levels</b>	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.
<b>Standard</b>	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.
<b>SANAS</b>	means the South African National Accreditation System.
<b>TWA</b>	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 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.

## 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)<sup>4</sup> 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 <i>Contractor</i> 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

<sup>4</sup> Available from Engineering Contract Strategies Tel 011 803 3008, Fax 086 539 1902 or [www.ecs.co.za](http://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:

Item no.	Description	Unit	Quantity	Rate	Price
1	Turbidity Analyser, probe & sample system: <ul style="list-style-type: none"> <li>Analyser – 220VAC. Liquiline CM442-AAM1A1F210A+AA</li> <li>Chamber for probe Flowfit CUA252-AAB311+PA (CUS52D)</li> <li>Probe CUS52D-AA1BA3+GE</li> <li>6 x metres s/steel sampling/tapping line</li> </ul>	EA	2		
2	Level transmitter: <ul style="list-style-type: none"> <li>Siemens Multiranger 200 7ML50332AB001A 220 VAC</li> <li>Probe mounting bracket STH-7ML1100-OBA30</li> </ul>	EA	6		
3	Float Level Switches (Includes one mounting bracket for the three switches)	EA	3		
4	C&I Field Cable (Instruments): 4 core Blue Stripe Low halogen, Flame retardant Polyvinyl Chloride (LH PVC) UV resistant (UV stabilised)	Metre	1200		
5	C&I Field Cable (Local Control Stations): <ul style="list-style-type: none"> <li>16 core Blue Stripe Low halogen, Flame retardant Polyvinyl Chloride (LH PVC) UV resistant (UV stabilised)</li> </ul>	Metre	500		
6	C&I Trunk Cable: <ul style="list-style-type: none"> <li>64 core Blue Stripe Low halogen, Flame retardant Polyvinyl Chloride (LH PVC) UV resistant (UV stabilised)</li> </ul>	Metres	1500		
7	<ul style="list-style-type: none"> <li>220VAC instrument power supply cable</li> </ul>	Metres	500		
8	Local Control Station: <ul style="list-style-type: none"> <li>1 x enclosure according to SOW spec</li> <li>16 x screw clamp terminals with two end blocks</li> <li>16cm terminal din rail</li> <li>1 x remote/local selection switch</li> <li>2 x start/stop push buttons</li> <li>3 x run/stop/fault lamps with lamp holders</li> <li>10 x metres panel wiring</li> <li>45cm wire trunking</li> <li>1x Enclosure AKZ Label</li> <li>1x enclosure description label</li> <li>6x switch and lamp description labels</li> <li>Includes enclosure mounting components</li> </ul>	EA	12		



9	Junction Box (submersible pump house): <ul style="list-style-type: none"> <li>1 x enclosure according to SOW spec</li> <li>70 x screw clamp terminals with two end blocks</li> <li>70cm terminal din rail</li> <li>1.5M trunking</li> <li>1x Enclosure AKZ Label</li> </ul> Includes enclosure mounting components	EA	1		
10	Galvanised steel cable rack with supports and roof covering (to clamp on flow meter)	Metre	30		
11	Circuit Breaker 5A (PLC cubicle)	EA	2		
12	Circuit Breaker 2A (PLC cubicle)	EA	2		
13	Screw clamp termination 2.5mm2 (PLC cubicle)	EA	100		
14	Panel wiring 0.5mm2 (PLC Cubicle)	Metre	200		
15	Panel wiring 1.5mm2 Red & Black (PLC Cubicle)	Metre	200		
16	Panel wiring 2.5mm2 Red & Black (PLC Cubicle)	Metre	100		
17	Siemens S7 - 300 CPU (317 or equivalent)	EA	1		
18	Siemens S7 – 300 Digital Input Module (32 channel 24VDC)	EA	6		
19	Siemens S7 – 300 Digital Output Module (16 channel 24VDC)	EA	6		
20	Siemens S7 – 300 Analog Input Module (8 channel)	EA	2		
21	Siemens S7 – 300 Interface Module	EA	3		
22	Fibre optic cable	Metre	30		
23	Termination lugs for standard wire cores	EA	3000		
24	Cable labels according to SOW spec	EA	100		
25	Cable glands (SANS 10142)	EA	100		
26	Instrument, JB & LCS tag labels according to SOW Spec	EA	34		
27	24VDC Operator desk mounted push button and lamp combination	EA	40		
28	24VDC Operator desk lamps	EA	100		
29	24VDC Operator desk mounted audio alarm	EA	2		
30	Instrument 220VAC supply recommissioning and cable Installation.	EA	9		
31	PLC & damaged cubicle components replacement and recommissioning	EA	1		
32	Field instruments Installation, configuring and commissioning	EA	12		
33	Switchgear buckets interface to PLC recommissioning	EA	19		

34	Drive Local Control Stations Installation and commissioning	EA	12		
35	Reused Drive Local Control Stations recommissioning	EA	4		
36	Installation and commissioning of Junction Box	EA	1		
37	Operator control desk recommissioning	EA	1		
38	Submersible pumps system automated control commissioning	EA	1		
39	Repair of fibre optic cable break	EA	1		
40	Clean Water Return Pumps system automated control commissioning	EA	1		
41	Sedimentation and Oil Separation Plant system automated control commissioning	EA	1		
42	Oil Recovery system automated control commissioning	EA	1		
43	Floor Sump Pump system automated control commissioning	EA	1		
44	Decommissioning, removal and disposal of replaced equipment including connected cables	EA	30		
	<b>The total of the Prices (excluding VAT):</b>				

## C3: Scope of Work

### C3.1 Works Information

Tutuka Dirty Water Dam C&I equipment are not operational due to flood damage and deterioration over the years resulting in the plant being run manually directly from the drive's switchgear buckets.

This document lays down the minimum recommended scope of work for the repair and recommissioning of the C&I equipment and to reinstate the original automation, protections, and interlocks of the DWD drives and subsystems.

#### 1. Description of the *works*

### Supporting Clauses

#### Scope

This document defines the minimum requirements for reinstating the DWD C&I system and automation

The scope includes the following:

- The replacement of all defective field instruments
- Repair and recommissioning of all interfaces to the PLC (field, switchgear and local control desk)
- Recommission and reinstate protections, interlocks and automation of the DWD C&I system.

#### Purpose

Reinstate the DWD C&I instrumentation, control, and automation system.

#### Applicability

This document shall apply to Tutuka Power Station C&I Maintenance.

#### Effective date

The effective date will be the same as the authorisation date

### Normative/Informative References

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

## Normative

- [1] ISO 9001 Quality Management Systems
- [2] 240-56356396 Earthing and Lightning Protection Standard
- [3] 240-71432150 Plant Labelling Standard
- [4] 240-56227443 Requirement for Control and Power Cables for Power Stations Standard
- [5] 240-56355754 Field Equipment Installation Standard
- [6] SANS 60529 Enclosure IP Rating
- [7] 240-54937450 (Fire Protection & Life Safety Design Standard)

## Informative

N/A

## Definitions

### Local Control Desk

Operating desk located at the DWD pump house that provided the operator interface for the entire DWD plant for manual or automated operation.

### Local Control Station

Operating panel for each drive located in close proximity of the pump or oil skimmer in the plant, providing the operator with local operation of the drive.

## Abbreviations

Abbreviation	Explanation
AKZ	Power Plant Coding System
C&I	Control and Instrumentation
CPU	Central Processing Unit
DC	Direct Current
DWD	Dirty Water Dam
HMI	Human Machine Interface
I/O	Inputs/Outputs
LCD	Local Control Desk
LCS	Local Control Station
PLC	Programmable Logic Controller
SOW	Scope of Work
TOL	Thermal Overload
VAC	Voltage Alternative Current

## Roles and Responsibilities

The *Contractor* shall be responsible for the implementation of the scope of work listed in this document.

## Process for Monitoring

The relevant C&I maintenance supervisor or *Employer's Representative* with the assistance of the relevant C&I Engineer shall assess and monitor the daily work progress.

## Related/Supporting Documents

N/A

## Dirty Water Dam C&I Repair & Recommissioning Scope of Work

### DWD Design Base

The DWD control system consists of a Siemens S7 300 series PLC with a Local Control Desk at the DWD to provide for operator interface.

The following are the subsystem field drives and instrumentation:

- Five submersible pumps at the dirty water fore-bay elevate the dirty water for gravity feed to the rest of the DWD system. The system includes a dirty water fore-bay Ultrasonic level transmitter for the automation of the pumps.
- Two sedimentation pumps, two flushing pumps and two oil skimmers for the processing of the dirty water for the removal of sedimentation and oil. Each two secondary sedimentation sump levels are monitored by an ultrasonic level transmitter. A turbidity analyser is installed for each of the two flushing lines.

Automation of the sedimentation and flushing pumps operation are regulated by predetermined time intervals. The oil skimmers are continuously in operation while any one submersible pump is in operation. The level and turbidity measurements provide the system interlocks.

- One oil recovery pump which includes an oil storage tank ultrasonic level transmitter.

Only local manual operation of the pump is possible. The level measurement provides the drive interlock.

- Six Clean Water Return pumps. The clean water fore-bay ultrasonic level transmitter provides for the automation of the pumps system.
- One floor sump pump. The floor sump ultrasonic level transmitter and three level switches provide for the automation of the pump system.

### DWD Control System deficiency

Most of the field equipment (C&I cables, transmitters, flow/level switches, Local Control Stations, and local control desk) are not operational due to flood damage and deterioration over the years. The damage also includes the DWD PLC cubicle power supply termination strip and circuit breakers.

## Minimum Recommended Work Scope to Reinstate DWD C&I

The repair and recommissioning SOW includes the following:

- Instrument 220VAC supply
- Replacement of all defective field instruments
- Loop check all interfaces to the PLC (field, switchgear and local control desk)
- Recommission and reinstate protections, interlocks and automation of the DWD C&I system.

### DC Power Distribution to the PLC Cubicle Repair and Recommissioning

Replace and recommission flood damaged circuit breakers, terminal strips, wiring and cables in the DWD PLC cubicle.

Test the 24VDC and 48VDC power supply cables from the chargers to the PLC cubicle and ensure the power distribution to the PLC CPU, I/O modules and interface relays are operational and implement any repairs or corrections where required.

When the PLC is powered up delete the program, restart the CPU and only reload the hardware configuration. Ensure that the CPU green RUN light indicates and that there are no other orange or red error indications.

Replace any PLC CPU module, IM, I/O module or bus connections identified to be faulty by the hardware diagnostic program.

Only load the PLC logic program once the PLC interfaces are loop checked.

### 220VAC supply to Field Repair and Recommissioning

The following nine instruments are supplied by 220VAC from the PLC Cubicle:

- 00UH35A001 Turbidity Line 1 Analyser
- 00UH35A002 Turbidity Line 2 Analyser
- 00UH35L001 Dirty Water Level Transmitter
- 00UH35L002 Secondary Sedimentation Tank 2 Level Transmitter
- 00UH35L003 Secondary Sedimentation Tank 2 Level Transmitter
- 00UH35L004 Floor Sump Level Transmitter
- 00UH35L005 Oil Storage Tank Level Transmitter
- 00UH35L006 Clean Water Forebay Level Transmitter
- 10VR10F001 Clean Water Return Flow Transmitter

Test the 220VAC supply cable and replace and commission the following components if identified as faulty during the loop checks:

- 220VAC supply field cable or any faulty wiring or wiring corrections
- PLC cubicle 220VAC circuit breaker
- PLC cubicle terminations and wiring
- Repair and restore the common AC supply to the PLC cubicle 220VAC circuit breakers if required.

## Field Instrument replacement

### The following eighteen instruments shall be replaced:

- 00UH35A001 Turbidity Line 1 Analyser
- 00UH35A002 Turbidity Line 2 Analyser
- 00UH35L001 Dirty Water Level Transmitter
- 00UH35L002 Secondary Sedimentation Tank 2 Level Transmitter
- 00UH35L003 Secondary Sedimentation Tank 2 Level Transmitter
- 00UH35L004 Floor Sump Level Transmitter
- 00UH35L005 Oil Storage Tank Level Transmitter
- 00UH35L006 Clean Water Forebay Level Transmitter
- 10VR10F001 Clean Water Return Flow Transmitter
- 00UH35L004-M01 Floor Sump Low Level Float Switch
- 00UH35L004-M02 Floor Sump High Level Float Switch
- 00UH35L004-M03 Floor Sump Flood Level Float Switch

### The work shall include following:

- Installation, configuring and commissioning of the instrument
- Replace instrument mounting rack and probe brackets for all transmitters that are not inline installations
- Replace turbidity analyser sampling chambers and sampling lines
- Implement any changes required to pipeline and/or fittings to accommodate flow switch in the pipeline

To standardise with existing installed instruments on the common plant and minimise the costs of onsite spares holding the replacement instrumentation shall be of the following make and model:

- Level transmitter –
  - Siemens Multiranger 200 7ML50332AB001A 220 VAC
- Turbidity analyser –
  - Analyser – 220VAC. Liquiline CM442-12E7/0
  - Chamber for probe Flowfit CUA252 (CUS52D)
  - Probe CUS52D
- Flow transmitter –
  - Stationary Ultrasonic Flowmeter – 220VAC. MODEL: BOP108205
  - 500 kHz Ultrasonic Transducers. MODEL: BOP108205.

## PLC Interfaces Loop Checks Repair and Recommissioning

The following are the PLC interfaces that will require testing of each loop and repair, or replacement of faulty components identified:

- Switchgear buckets for each drive
- Local Control Station for each drive
- The general Local Control Desk
- Field instruments
- Repair of fibre optic cable damage in field (commissioning of fibre optic interface is excluded in the works)

## Switchgear Buckets

The switchgear/PLC interfaces test and repair work shall include as a minimum the following:

- Simulate the relevant Outputs from the PLC logic and test that the relevant switchgear bucket relays or lamp activates.
- Activate the Switchgear bucket selection switches and contactors and test that the relevant Inputs to the PLC logic is received.
- Supply, replace and commission the following components if identified as faulty during the loop check:
  - Instrument cable or any faulty wiring or wiring corrections
  - C&I termination
  - PLC modules
  - PLC cubicle terminations, wiring and interface relays

The SG bucket for each drive shall be function tested with the 380VAC isolator off in order to test that the main contactor operates and the relevant feedback signals are received.

### The following are the nineteen switchgear bucket drives:

- 00UH35D009 Sedimentation Pump 1
- 00UH35D010 Oil Skimmer 1
- 00UH35D011 Flushing Pump 1
- 00UH35D012 Sedimentation Pump 2
- 00UH35D013 Oil Skimmer 2
- 00UH35D014 Flushing Pump 2
- 10VR10D015 Floor Sump Pump
- 00UH35D016 Oil Recovery Pump
- 00UH35D005 Submersible Pump 1
- 00UH35D006 Submersible Pump 2
- 00UH35D007 Submersible Pump 3
- 00UH35D008 Submersible Pump 4
- 00UH35D021 Submersible Pump 5
- 10VR10D001 Clean Water Return Pump 1
- 10VR10D002 Clean Water Return Pump 2
- 10VR10D003 Clean Water Return Pump 3
- 10VR10D004 Clean Water Return Pump 4
- 10VR10D005 Clean Water Return Pump 5
- 10VR10D006 Clean Water Return Pump 6



## Drive Local Control Stations

Signal loop recommissioning and repair and/or replacement of the Local Control station shall include the following work:

- supply, install and commission the Local Control Station at ground level. The work includes the supply and installation of the following:
  - LCS enclosures (which includes selection switch, display lamps, pushbuttons, and termination strip) for LCS requiring replacement.
  - LCS cable to the junction box (reuse cable for Local Control Stations not replaced)
  - LCS mounting rack
- Simulate the relevant Outputs from the PLC logic and test that the relevant lamps activate on the LCS.
- Activate the LCS selection switches and pushbuttons and test that the relevant Inputs to the PLC logic is received.
- Supply, replace and commission the following components if identified as faulty during the loop check:
  - Instrument cable or any faulty wiring or wiring corrections
  - LCS lamps, selection switches/pushbuttons and C&I termination
  - Trunk cable or any faulty wiring or wiring corrections
  - C&I termination
  - PLC modules
  - PLC cubicle terminations, wiring and interface relays

## Local Control Stations to be Replaced

Twelve of the sixteen LCSs and field cables shall be replaced due to flooding damage and deterioration for the following drives:

- Clean Water return pumps (one LCS per three drives)
- Flushing pumps
- Oil recovery pumps
- Floor sump pump
- Submersible pumps

## Local Control Stations to be Reused

The remaining four of the fifteen LCSs shall be reused and recommissioned namely the oil skimmer and sedimentation pump drives.

## General Local Control Desk

The Local Control Desk interfaces test, and repair work shall include as a minimum the following work:

- Simulate the relevant Outputs from the PLC logic and test that the relevant lamps or audible alarm activates on the desk.
- Activate the LCD selection pushbuttons and test that the relevant Inputs to the PLC logic is received.
- Reposition and rename desk components to reflect submersible pump configuration
- Install plant selection and indication desk components for each pump system duty selection
- Supply, replace and commission the following components if identified as faulty during the loop checks:
  - Instrument cable or any faulty wiring or wiring corrections
  - LCD lamps, selection pushbuttons and C&I termination
  - PLC modules
  - PLC cubicle terminations, wiring and interface relays
  - Audible alarm unit (one common to all systems)
  - Reposition and rename desk components to reflect submersible pump configuration

## Field Instrument PLC Interface

Test the instrument signal loops and replace and commission the following components if identified as faulty during the loop checks:

- Instrument/trunk cable or any faulty wiring or wiring corrections
- PLC modules
- PLC cubicle terminations, wiring and interface relays

The instrument cables to the junction box shall be replaced for the following instrumentation:

- 00UH35L004 Floor Sump Level Transmitter
- 00UH35L005 Oil Storage Tank Level Transmitter
- 10VR10F001 Clean Water Return Flow Transmitter
- 10VR10F002 Clean Water Return Pump 1 Low Flow Switch
- 10VR10F003 Clean Water Return Pump 2 Low Flow Switch
- 10VR10F004 Clean Water Return Pump 3 Low Flow Switch
- 10VR10F005 Clean Water Return Pump 4 Low Flow Switch
- 10VR10F006 Clean Water Return Pump 5 Low Flow Switch
- 10VR10F007 Clean Water Return Pump 6 Low Flow Switch
- 00UH35L004-M01 Floor Sump Low Level Float Switch
- 00UH35L004-M02 Floor Sump High Level Float Switch
- 00UH35L004-M03 Floor Sump Flood Level Float Switch

## Automation & Interlocks Recommissioning

Test and recommission the the automation and interlocks of the following DWD plant sections according to the control philosophy listed:

- Submersible pumps
- Clean water return pumps
- Sedimentation and oil separation plant
- Oil recovery
- Floor sump pump

## Submersible Pumps

### Auto Operation Sequence:

When the submersible pump system is selected for auto operation the duty selected 22kW pump (1st pmp) will automatically start when the dirty water fore-bay sump level raises above L (Low Level 0.8M 40%). The pump will continue to run until the level falls below LL (Low Low Level 0.4M 20%) and switch off automatically.

The next two 22kW pumps in the duty selection sequence (2nd & 3rd pumps) will simultaneously start automatically if the level increases above H (High Level 1.2M 60%). The two pumps including the duty pump will continue to run until the level falls below LL (Low Low Level 0.4M 20%) and then all three pumps will switch off automatically.

The 75kW pump will start automatically if the level increases above HH (High High Level 1.6M 80%). The 75kW pump including the three 75kW pumps will continue to run until the level falls below LL (LowLow Level 0.4M 20%) and then all four pumps will switch off automatically.

Pump	Start Level	Total Flow (Litres/sec)	Stop Level
1 <sup>st</sup> (22kW)	L (0.8M 40%)	66.7	LL (0.4M 20%)
2 <sup>nd</sup> (22kW)	H (1.2M 60%)	133.4	LL (0.4M 20%)
3 <sup>rd</sup> (22kW)	H (1.2M 60%)	200	LL (0.4M 20%)
4 <sup>th</sup> (75kW)	HH (1.6M 80%)	400	LL (0.4M 20%)

Drive interlocks, protections and fault conditions:

- Dirty water sump level LL (00UH35L001)
- Drive TOL (Thermal Overload)
- SG panel Local selected
- Contactor feedback discrepancy (ANS+)
- E-stop condition

## Clean Water Return Pumps

Auto Operation Sequence:

When the clean water pump system is selected for auto operation the duty selected pump (1st pmp) will automatically start when the clean water fore-bay sump level rises above L (Low Level). The pump will continue to run until the level falls below LL (Low-Low) Level and switch off automatically.

The 2nd pump in the duty selection sequence will start automatically if the level increases above M (Medium) Level. The 2nd pump including the duty pump (1st pump) will continue to run until the level falls below LL (Low-Low) Level when both pumps will switch off automatically.

The 3rd pump in the duty selection sequence will start automatically if the level increases above HH (High-High Level. All three pumps will continue to run until the level falls below LL (LowLow Level) when all three pumps will switch off automatically.

The system should never allow the running of 4 or more pumps at the same time.

Drive interlocks, protections and fault conditions:

- Clean water sump level LL (00UH35L008)
- Drive TOL (Thermal Overload)
- Drive selected on Test (no remote selection)
- Contactor feedback discrepancy (ANS+)
- LCS Local selection
- Discharge flow low trip – 10VR10F002/3/4/5/6 (flow low for more than 5sec when pumps is started and runs)
- Floor sump level HH (00UH35L004)

## Sedimentation and Oil Separation Plant

### Auto Operation Sequence:

The function of the flushing pumps is to agitate the sediment in the separation unit in order for the sedimentation pumps to transfer the slurry back to the primary sedimentation dams.

The oil skimmers remove the oil from the surface of the separation units and transfer the recovered oil to the oil storage tank.

The line consists of a flushing pump, sedimentation pump and oil skimmer. The line will commence with auto operation if the line is auto selected, and an auto start is initiated by the operator.

Once the line auto operation is active the flushing pump will immediately start and 60 seconds later the sedimentation pump will start. The flushing pump will run for a duration of 5 minutes and switch off while the sedimentation pump will run for a duration of 40 minutes and switch off. This cycle will repeat every 6 hours. Refer to example of two cycles below:

### **First cycle:**

- Flushing pumps start at 07:00
- Sedimentation pump Start at 07:01
- Flushing pump stops at 07:05
- Sedimentation pump stops at 07:41

### **Second cycle (after 6 hours):**

- Flushing pumps start at 13:00
- Sedimentation pump Start at 13:01
- Flushing pump stops at 13:05
- Sedimentation pump stops at 13:41

The cycle will not be disrupted if either the flushing pump or sedimentation pump is not available. The remaining drive will continue with the cycle operation.

The line oil skimmer will also immediately start once the line auto operation is active if any submersible pump is in operation at the dirty water sump. The Oil skimmer will stop or not start if no submersible pumps are running.

### **Drive interlocks, protections and fault conditions:**

#### **Flushing Pumps:**

- o Clean water sump level LL (00UH35L008)
- o Floor sump level HH (00UH35L004)
- o Drive TOL (Thermal Overload)
- o Drive selected on Test (no remote selection)
- o Contactor feedback discrepancy (ANS+)
- o LCS Local selection

### **Sedimentation Pumps:**

- o Separation unit level L (00UH35L002/3)
- o Drive TOL (Thermal Overload)
- o Drive selected on Test (no remote selection)
- o Contactor feedback discrepancy (ANS+)
- o LCS Local selection

### **Oil Skimmers:**

- o Oil storage tank level H (00UH35L005)
- o No submersible pump running
- o Drive TOL (Thermal Overload)
- o Drive selected on Test (no remote selection)
- o Contactor feedback discrepancy (ANS+)
- o LCS Local selection

## **Oil Recovery**

The oil recovery system consists of an oil storage tank and an oil recovery pump which is periodically started by the operator locally. The pump transfers water that has accumulated in the oil storage tank back to the separation units.

### **Drive interlocks, protections and fault conditions:**

- o Oil Storage Level L (00UH35L005)
- o Drive TOL (Thermal Overload)
- o Drive selected on Test (no remote selection)
- o Contactor feedback discrepancy (ANS+)

## **Floor Sump Pump**

### **Auto Operation Sequence:**

When the floor sump pump is selected for auto operation the pump automatically starts when the High level switch is activated. The pump will continue to run until the Low level switch is activated and automatically switch off again.

The HH level limit value of the level transmitter or the HH level switch will cause the PLC to trip all the pumps located in the floor sump pump house and also prevent them from starting. In addition, a HH level audible alarm and indication will be displayed on the local operating desk.

### **Drive interlocks, protections and fault conditions:**

- o Floor sump level L (00UH35L004)
- o Drive TOL (Thermal Overload)
- o Drive selected on Test (no remote selection)
- o Contactor feedback discrepancy (ANS+)
- o LCS Local selection

## Decommissioning and

the obsolete field equipment shall be decommissioned and removed. Removal only takes place once the new field installations are done.

All removed equipment is transported to an area to be specified by C&I maintenance. All such areas shall be located within the boundaries of Tutuka Power Station.

All equipment and material that is removed is deemed re-usable and remains the property of the *Employer*.

Where field equipment and/or cabling have been removed, the area needs to be “made good” in accordance with following requirements:

- The removal of all the equipment and components of the old C&I system. These include signal cabling, conduit, trunking, racking, supports and support frames, bolts, transducer racks, local control stations and junction boxes.
- Trunk cabling from the old junction boxes to the equipment room is left on the existing cable racks, but cable ends are pulled back capped and labelled as decommissioned.
- All areas where equipment was removed on the plant are made neat by means of closing of holes, grinding of old anchor points and welding, repainting and resurfacing.

## General requirements

### Cold Commissioning

Cold commissioning the control system shall be performed by conducting functional system test. This test includes the checking of all interlocks and protections, sequence controls and all components of the whole (from the primary instrument to the HMI and PLC programmer station) loop, which includes the input and output loops for the works to prove plant reliability and safe operation.

The following are additional checks as part of the cold commissioning:

#### Instrument checks:

Calibrate all measuring instruments

All the instrument calibration sheets shall be included in the quality documentation package for the works.

#### Loop checks:

Loop checks on the field devices are required to prove their connection integrity.

Each loop shall be checked to ensure that each input and output circuit functions correctly. This includes all existing field equipment as well as new equipment supplied and installed.

Binary and analogue signals shall be simulated by closing the switching loop or simulating analogue signals on the cable terminals respectively. Such simulated signals shall be checked on the other end of the loop by observing the outgoing signals to the Switchgear, automation unit and Local Control Desk devices, etc.

#### Electrical drive checks

During plant shutdown all electrical drives shall be remotely operated and checked for correct operation. These tests shall be conducted while the Switchgear isolator is off.

## Hot Commissioning

Control components shall be made available for control and monitoring the plant during its re-commissioning.

Cold commissioning would include most of the works namely, all the cable installations and terminations, field equipment installations and termination, commissioning of the PLC, Local Control Desk. These activities will be possible since the plant automation and monitoring is not available due to flood damage.

The flood damage has required the drives to run from the Switchgear local operation and not through the C&I control system and therefore hot commissioning will primarily be the final testing and commissioning of the Switchgear drives into the C&I control system

## Performance and Acceptance Testing

Performance and Acceptance tests shall be performed on all areas of the DWD Plant.

The tests include all analogue controls, interlocks, safety protections, control loops, binary control, sequence control and interfaces.

After satisfactory completion of installation and commissioning of the control and monitoring system it shall be demonstrated that the control and monitoring systems correctly performs in the following modes:

- Verification of related protections is a prerequisite before plant is released to run in a manual or automated mode.
- Plant operated manually from the Local Control Desk as well as Local Control Stations.
- Plant operated automatically (start-up, sequential control and shutdown) with all the remote monitoring / supervisory functions at the Local Control Desk.

The plant shall then run for an unbroken period of 164 hours without a hardware or software malfunction. During this period any and all control modes may be exercised.

### 1.1.1 Cables

UVG ACV cable types shall be supplied for the works with the following specification and termination standard:

- cable sheath specification shall be Blue Stripe Low halogen, flame retardant Polyvinyl Chloride (LH PVC) all cabling installed outside of building shall be UV resistant (UV stabilised).
- All process cables follow the cable core identification marking and termination sequence shall be as the existing colour coding standard.
- Sizes power cables in terms of the respective load these cables will be carrying.

### **1.1.2 Junction Boxes and LCS Enclosures**

The junction boxes shall be supplied complete with:

- Mounting plate
- Number of terminals shall be dependent on cable configuration. Terminals shall be on DIN rail with end stops and end plates. All terminals must be numbered top and bottom from left to right.
- Screen bar
- Separate removable gland plate on the bottom.
- Glands
- Cable trunking at the bottom and the top and at least one side.
- Hinges must be of stainless steel.
- Locking device must be of stainless steel.
- Any additional equipment to make a complete assembly.

The junction boxes shall be supplied and glanded to the following specifications:

- Powder coated 3CR12 stainless steel.
- IP65 degree of protection
- Door: Neoprene gasket, lockable with a square key, removable, hinged at the top and open-door position holding mechanism. An earth strap from the door to the junction box.
- All cables shall be glanded with compression glands to the back of the gland plate, without affecting the IP65 rating.



Terminals shall be supplied and installed to the following specifications:

- Material: 6.6 Polyamide
- Metal parts: Corrosion proof, high conductivity
- Locking type of conductor clamping to prevent self-loosening of screws due to vibrations.
- Current carrying capacity: = 34 Amps
- Insulation voltage: =750 Volts AC
- Connection: 6 mm<sup>2</sup> single strand or 4 mm<sup>2</sup> fine strand.
- Must clip onto rail
- It shall be possible to mark each terminal with at least three digits. All terminal strip markers, end covers fixed bridged bars and mounting rails shall be included in the supply.
- Mounting rails: Galvanised steel in accordance with DIN EN 50022 - 35 x 7.5 or DIN EN 50035 - G32, perforated.
- Cables shall be terminated using a screw clamp type technique.
- Termination lugs for standard wire cores for use with screw clamp terminals shall be of wire pin or blade type.
- Not more than one conductor shall be connected to any side of a terminal, except in the case of screen and power supply jumper wires in junction boxes where a maximum of two conductors may be connected to one side.
- The stripping of insulation shall be carried out so that no damage to the conductor occurs and no bare conductor is visible or touchable.
- 20% expansion capability equipped must be provided in all junction boxes, field panels, marshalling racks/panels and on cable racks.

### **Equipment Labelling**

Labelling of all equipment and documentation supplied shall be part of the works. The relevant AKZ code shall be included on the label according to the required format, together with plant description.

Cabling labels shall be made of aluminium and the lettering and numbers shall be black and engraved. The cable labels must be installed on both ends of the cable.

Field device labels shall be made of stainless steel. All text on labelling must be engraved. The position of the device also needs to be labelled on the stand or supporting structure with a brass plate.

### **New Instrument, Enclosure and Junction Box Stands**

All measurement transducers and junction boxes supplied shall be mounted on transducer racks or in equipment cabinets supplies as part of the works.

The transducer racks shall be configured out of galvanized carbon steel uni-struts. Standard mild steel components such shall not be accepted.

The racks shall be supplied complete with all necessary holding down bolts and equipment to make a complete assembly. The racks shall be of a sufficiently sturdy structure to accommodate equipment, which is to be mounted thereon.

Transducer racks shall be erected on concrete foundations or steelwork structures and includes the levelling, lining-up, bolting or welding together, bolting or welding down and earthing of the racks.

Transducer racks shall make provision for cable trunking or cable trays where required.

The transducer racks shall provide protection against the environmental conditions which the transducer racks are exposed to. The transducer racks shall be designed to ensure a lifetime of 20 years.

Swagelok fittings and valves (or equivalent) are to be utilised for the works for the installation of sampling line and measurement tapping point.

### **Cable Rack and Trays**

Cable trunking shall be used where cables are exposed to areas where damage can occur during normal plant operation. Cable tray roofing is to be provided for cable tray areas outside of buildings.

Galvanised conduit shall be used for all C&I cabling not running on cable trays or cable trunks.

C&I cable trays and power cable racks shall be spaced a minimum of 1000mm apart. Where C&I cable trays and power cable racks cross each other, the crossing shall be at 90° angle to avoid the possibility of electromagnetic induction.

To avoid damage to the sheath of C&I unarmoured cables, appropriate cleats, saddles and clamps shall be used to fix the cables to cable trays. Cables shall be fixed in such a way as to prevent strain on terminals and connectors. Enough slack shall be catered for when making off cables.

C&I cables shall not be stacked higher than the supporting edges of the cable tray or cable trunks.

The installation of all cables shall be installed in such a way that operational and maintenance activities will not cause accidental damage. Control and instrument cables shall be supported on the cable tray along the entire length of the cables.

### **PLC Program Structure**

PLC Logic program shall be structured to allow efficient and effortless troubleshooting with regard to identifying, accessing and to cross-reference relevant software variables including I/Os. Standard libraries and function routines shall be used. Every software variable and I/O must have an appropriate abbreviation and description.

Program categories or blocks with their relevant segments must have appropriate descriptions.

### **Fire Barriers**

Fire barriers are to be installed wherever cables pass through walls, floors and ceilings and comply with Generation standard 240-54937450 (Fire Protection & Life Safety Design Standard) and SANS10142-2

## 2. Drawings

Note: Some drawings may contain both Works Information and Site Information.

- All relevant Instrumentation drawings will be available in workshop or at the drawing office
- *Contractor* to update drawing as per *Employer's* requirements

## 3. Specifications

### Health and Safety requirements

Title	Date or revision	Tick if publicly available
<b><u>General Specifications:</u></b>	<b>Current</b>	
<b>Health and Safety requirements</b>	<b>Current</b>	
<b>Environmental requirements</b>	<b>Current</b>	
<b>Site regulations and access control</b>	<b>Current</b>	
<b><u>Technical specifications:</u></b>		
SANS 1200 A – General	Latest	x
SANS 1200 C – Site Clearance	Latest	x
SANS 1200 D – Earthworks	Latest	x
SANS 10142, edition 1.	Latest	x
SANS 1649, SANS 10378, SANS 1838	Latest	x
Safety, Health and Environmental specifications for Contractors	Latest	x
COLTO	1998	x

### Health and Safety requirements

The *Contractor* shall comply with the specific health and safety requirements for the contract issued by the Employer.

- All The *Employers* health and safety procedures and regulations to be adhered to by the *Contractor*
- A SHEQ file to be handed in at the SHEQ department for approval prior to work commencement and kept up to date for the duration of the contract

### SHEQ Policy

#### Eskom SHEQ Policy

The *Employer* has made a commitment to conduct business with respect and care for people, the environment and assets and that no operating condition or urgency of service justifies exposing anyone to negative risks arising from the *Employer's* business.

Compliance with the *Employer's* SHEQ Policy and applicable regulations is the responsibility of every employee and *Contractor*.

### **Contractor SHEQ Policy**

All *Contractors* shall have an OHS policy signed by the CEO of the *Contractor* and prominently displayed where employees normally report for duty.

Signed copy of the OHS policy shall form part of the SHEQ file.

### **SHE PLAN REQUIREMENTS:-**

- Principal *Contractors* shall develop a suitable and sufficiently documented site specific SHE plans, based on the scope of work and client SHE specification.
- The SHE plans must be pre-approved by the client for implementation. The principal *Contractor* / *Contractor* have a responsibility to send the SHE plans to the client for approval prior to commencement of work.
- The SHE plans must be applied from the commencement of and for the duration the construction work, which must be updated / reviewed as the work progresses / changes.

When a principal *Contractor* intends appointing *Contractor*, the principal *Contractor* shall ensure that the *Contractor* provides and demonstrate a suitable, sufficiently documented and coherent site-specific health and safety plan, based on the client's SHE specifications and scope of work

#### **3.1.1 Health and Safety Arrangements**

The *Contractor* ensures that all his personnel attend a Health and Safety Induction Course prior to contract starting date, and annual re- induction. The Induction Course is presented by the *Employer's* Safety Risk Department at Tutuka Power Station. Arrangements are made with Safety Risk Management, by the *Contractor*.

The *Employer's* Safety Risk Manager visits and inspects the *Contractor's* workplace or site yard and the working areas to ensure that tools; machinery and Equipment comply with the minimum safety requirements.

The *Service Manager* may instruct the *Contractor* to stop work, where the *Contractor's* personnel fail to conform to safety standards or contravene health and safety regulations. Such stop-work order is not a compensation event. The *Service Manager* may instruct the *Contractor* to discipline his employees and to submit a disciplinary action report to the *Service Manager*. The *Contractor* implements additional health and safety precautions where necessary.

### **Health and safety**

The *Contractor* complies with the Occupational Health and Safety Act 85 of 1993, as well as per the *Employer's* procedure as stipulated below:

- SHEQ Policy 32-727
- The *Employer's* Procurement and Supply Chain Management Procedure 32-1034
- SHE Requirements for the *Employer's* Commercial Process 32-726
- *Contractor* Health and Safety Requirements 32-136
- Integrated SHE Organization, Roles and Responsibilities and Statutory Appointments 32- 296
- Live-saving Rules 240-62196227
- Working at Heights 32-418
- The *Employer's* Vehicle Safety Specifications 32-345

### **Site Requirements and Procedures**

## Site Requirements

The latest revision of Tutuka Power Station Site Requirements form part of this contract.  
Copies of these procedures are available on request.  
(Any additional site requirements implemented will be applicable)

## Safety risk management

Project SHE Specification requirements to be met by *Contractors*.

## Vehicle and driver safety

All drivers, passengers and pedestrians must obey vehicle safety requirements in terms of the National Road Traffic Act, Act No 93 of 1996, as amended, including other relevant provincial or local requirements.

## Speed Limit

All vehicles must be driven with due consideration for personnel and property. All speed limits shall be adhered to on the premises at all times.

## Transportation of passengers: open LDV's:

With effect from 31 May 2006 no *Employer*, employee or *Contractor* would be allowed to transport passengers on the back of open light delivery vehicles (LDV's). It is a legal requirement to provide safe transportation of the *Employer* and *Contractor* employees – therefore the following will be enforced:

## The *Employer's* Life Saving Rules:

Five Life Saving Rules have been developed that will apply to all the *Employer's* employees, agents, Consultants and Contractors.

- Rule 1: Open, Isolate, Test, Earth, Bond, And / Or insulate before touch - that is any plant operating above 1 000 V.
- Rule 2: Hook up at heights - no person may work at height where there is a risk of falling.
- Rule 3: Buckle up – no person may drive any vehicle for the *Employer's* business and/or on the *Employer's* premises: unless the driver and all passengers are wearing seat belts.

The *Employer* takes a "ZERO TOLERANCE" attitude to drivers and passengers who do not wear safety belts when driving in a vehicle for the *Employer's* Business and / or on the *Employer's* premises. The violation of this very important safety rule as well as any safety rule while performing work for or on behalf of the *Employer* may result in the *Employer* terminating your obligation to perform work in terms of your contract with the *Employer*.

All occupants must wear their safety belts properly and must never put the shoulder belt under their arm or behind their backs. Drivers and all passengers must buckle-up at all times for the sake of themselves and their families.

- Rule 4: Be sober (no person is allowed to work under the influence of drugs and Alcohol.
- Rule 5: Use a permit to work – where an authorization limitation exists, no person shall work without the required permit to work.

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

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

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

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

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

Issue the *Contractor* with a workshop order or a compliance order should *Employer* become aware of any unsafe working procedures or conditions or any non-compliance with the Act, Regulations and Procedures by the *Contractor* or any of its employees, sub-Contractors or agents.

The *Contractors* Health and safety file is to be submitted for approval to the *Employers* Safety Officer before contract commencement.

All work stoppages called by the *Employer* to be adhered to

*Contractor* is Responsible to ensure that his Letter of Good standing is valid at all times as stipulated in the construction regulations point 7 (C) (iv) and she specifications 2.5.2 (iv) and 3.10 *Contractor* will not be allowed on site if his letter of good standing is not valid

### **3.1.2 First aid and fire fighting**

Adequate first aid and firefighting equipment to be provided by the *Employer*  
All *Contractor* personnel must have First aid and firefighting training  
Fire extinguishers to be provided by the *Contractor*

### **3.1.3 Fire Precautions**

Any tampering with the *Employer's* fire equipment is strictly forbidden.

All exit doors, fire escape routes, walkways, stairways, stair landings and access to electrical distribution boards is kept free of obstruction and are not used for work or storage at any time. Firefighting equipment must remain accessible at all times.

The *Contractor* takes the necessary action to safeguard the area to prevent injury and the spreading of the fire.

### **3.1.4 Security, fire protection and safety**

The *Contractor* shall be responsible for ensuring the security of the works, and of his plant, equipment and materials. To that end he shall make adequate provision for access control, lighting and watchman to the works where required.

### **3.1.5. Fire protection**

The provision of the *Employer's* standard NWS 1494 "Fire Prevention and Protection of *Contractor's* premises at New Works sites" shall be applicable.

### **3.1.6 Safety and incident prevention**

The *Contractor* shall implement and maintain an active Site Safety and Accident Prevention Programme in accordance with the Tutuka SHEQ Specifications. The overriding regulations will however be the Occupational Health and Safety Act.

- Incident Management, Corrective & Prevention Action Procedure to be adhered to – 14Risk IM PC-019

### **3.1.7 Reporting of accidents**

The *Employer* follows an accident prevention policy that includes the investigation of all accidents involving personnel and property. This is done with the intention of introducing control measures to prevent a recurrence of the same incidents. The *Contractor* is expected to fully co-operate to achieve this objective. The *Employer's Representative* must be informed immediately of any incidents. A written report to be submitted to the *Employer within 24 Hours* of incidents and any damage to property or equipment

**NOTE!** This report does not relieve the *Contractor* of his legal obligations to report certain incidents to the Department of Labour, or to keep records in terms of the Occupational Health and Safety Act, and Compensation for Occupational Injuries and Diseases Act.

### **3.1.8 Occupational Health and Safety Act 85 of 1993 – SECTION 37**

In accordance with Section 37 (2) of the Act, the *Contractor* is appointed by the *Employer* as mandatory to assume Health and Safety duties and responsibilities. The *Contractor* ensures compliance with all requirements of the Act and any instruction or notification that enhances those requirements.

The *Contractor* acknowledges that he is fully aware of all the requirements of the Occupational Health and Safety Act and undertakes to employ only staff who have been duly authorised in terms thereof and who receive sufficient safety training to ensure that they can comply therewith.

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

**3.1.9 The *Contractor* appoints a person who liaises with the *Employer's* Safety Officer, responsible for the premises relevant to the Contract. The person appointed shall on request:**

- Supply the *Employer's* Safety Officer with copies of minutes of all Health and Safety Committee meetings, whenever required.
- Supply the *Employer's* Safety Officer with copies of all appointments in respect of employees employed on this contract, in terms of the Act and Regulations and shall notify the *Employer's* Safety Officer of any changes thereto.

The *Employer* may, at any stage during the duration of this contract:

- perform safety audits at the *Contractor's* premises, its workplace and its employees.
- refuse any employee, *Subcontractor* or agent of the *Contractor* access to its premises if such person is found to commit any unsafe act or any unsafe working practice or is found not to be duly authorised nor qualified in terms of the Act.
- Issue the *Contractor* with an instruction to stop work should the *Employer* become aware of any unsafe working procedure or condition or any non - compliance with the Act, Regulations and Procedures referred to in the Occupational Health and Safety Act - 85 of 1993 and all Regulations made hereunder as well as all the *Employer's* Safety and Operating Procedures. Any such instruction is not a compensation event. Furthermore, no amendments to the act or the Regulations or reasonable amendment to the *Employer's* Safety and Operating Procedures will entitle the *Contractor* to claim any additional costs or time incurred in complying therewith, from the *Employer*

### **3.1.10 Safety Regulations of the *Employer***

The *Contractor* conforms to the *Employer's* Plant Safety Regulations

The *Employer* makes available to the *Contractor*, on request, a copy of the latest revision of the Plant Safety Regulations.

### **3.1.11 Barricading / Screens and Scaffolding:**

The *Contractor* shall provide and install fixed barricades and warning devices to ensure that equipment and people are not exposed to danger or to prevent access to dangerous areas.

The *Employer* will supply scaffolding if not stated differently in the Works Information. Arrangements of such must be made at least three days in advance by the *Contractor*. (Tampering of any approved scaffold is not allowed for any adjustments – The *Service Manager* should be notified of any adjustments.)

### Environmental requirements

The *Contractor* shall comply with the environmental criteria and constraints stated in the following: -

All waste from the project must be disposed in a sound environmental manner in accordance with Tutuka Power Station Waste Management Procedure 14 Risk ENV-013. Oil spillages must be contained and cleaned as per Oil Spill Management procedure 15 ENPRENV-001. The project must conform to the *Employer's* Environmental Legal and other Requirement's procedure 14 Risk ENV-012 and the project must conform to Tutuka Power Station ISO14001 Standard with reference to Tutuka Power Station's Environmental Management System Manual 14 Risk ENV-010. All environmental incidents must be dealt with as per the Station's Incident Management, Corrective and Preventative Procedure 14 Risk PC-001 and all environmental incidents must be reported to the Environmental Department on site with Telephone Number 017 749 5536 / 9231.

### Site regulations and access control

- Lifesaving rules and all the *Employer's* procedures to be adhered at all times
- Access is limited and controlled by Plant Safety Regulations requirements.
- No employee will be allowed to access the plant or to work without access permit issued.
- No employee will be allowed to access the plant or to work without valid medical certificate.
- All personnel who are to work on the plant must be registered on the Worker's Register by the Responsible Person.
- All personnel must attend induction before working on site and must obtain gate permits via the *Service Manager*.
- All personnel to have an Identification card at all times
- Unauthorized access to site is prohibited. The personnel are expected to be at their working site area at all times.
- No recruitment on site or at the main access gates or any of the *Employer's* Premises' is allowed.
- All activities to comply with the OSHACT and Regulations.
- All activities on plant must be preceded by a plant risk assessment – Risk assessment as per the *Employer's* standard, to be current at all times (Live Document)

### Access to Site

- The *Contractor* makes his own assessment of and allows in his rates for those access problems that may be encountered. No extra payment or claim of any kind is allowed on account of difficulties of access to the works, or for the requirement of working adjacent to or in the same area as the *Employer*.
- Access to the site is controlled and it is governed by the terms and conditions lay down by the Power Station security officials. The proposed site is shown to the *Contractor* during the site meeting or clarification meeting.
- The *Contractor* liaises with the Power Station security staff in order to obtain temporary permits for his staff and vehicles which will be working within the station.
- The *Contractor* submits his application for vehicle permit to the *Employer's Representative*. The personnel and vehicles entering and leaving the site are subjected to routine searches and alcohol tests. The *Contractor* ensures that all its employees carry their access cards at all times.
- The *Contractor* obtains "Gate Permit" from the *Employer's Representative* before materials and equipment can be removed from site. "Gate permit" gives itemised list of materials and equipment to be removed from site.



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

### 4.1 Meetings

Title and purpose	Approximate time & interval	Location	Attendance by:
Construction Kick-Off Meeting	Prior to the commencement of any construction activities or manufacturing activities	TBC	<i>Project Team Members, Contractor and Others</i>
Milestones progress feedback	Weekly on <b>as and when required</b>	TBC	<i>Project Team Members, Contractor and Others</i>
Contractor's Safety Meeting	Monthly	TBC	<i>Project Leader and the Contractor's safety representatives</i>

- Attendance of meetings as required by *Service Manager* Such as
  - Tutuka Power Station *Contractors* Safety Meeting (monthly)
  - Departmental Safety Meetings (monthly)
  - Section daily meetings
  - Any meeting requested by the *Employer* or *Contractor*

### 4.2 Use of standard forms

Standard forms to be used by the *Contractor* in the administration of the contract are:

- Access certificate
- Completion certificate
- Defects Certificate
- Delegation of the Employer's Duties
- *Employer's* assessment
- *Employer's* instruction
- Event Register
- Notification of a defect
- Termination certificate

### 4.3 Invoicing and payment

In terms of core clause 50 the *Contractor* assesses the amount due and applies to the *Employer* for payment. The *Contractor* applies for payment with a tax invoice addressed to the *Employer* as follows:

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.
- (add other as required)

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

- Proof of payment in the form of invoices and cash slips
- Payslips in case of personnel

#### 4.5 Procurement Requirements:

#### PPPFA STRATEGY

Indicate the percentage (%) that is allocated to:

Price  
BBBEE Status  
Designated commodity (Yes / No)

80%
20%
No

#### 4.6 BBBEE and preferencing scheme

- As per clause Z2 within contract data

#### 4.7 Facilities to be provided by the *Contractor*

The *Contractor* shall provide temporary office accommodation on the site for his own use and for the use of *his* agent and foreman in charge, in a position suitable for the proper execution of the work to the satisfaction of *the Employer*. The *Contractor* can use his cellular phone, but he may not use it in the control room, plc room and switchgear room.

Please note that a medical aid kit must also be in the office including a fire extinguisher. Two fire extinguishers must be on the plant and one in the temporary office. These fire extinguishers must be supplied with test certificates.

The *Contractor* shall at his own cost, provide and maintain adequate and suitable storage accommodation for the proper housing and storage of all materials on site to be approved by *the Employer* before any deliveries are made to site. *The Employer* shall always have free access to the storage sheds. The *Contractor* must accommodate his workers at his own expense for the duration of this contract.

#### 4.8 Title to material from excavation and demolition

- The *Contractor* shall supply all spares and materials needed for the works.
- All plant spares and materials to be inspected by the *Contractor* (Quality checked) before installing at the plant.
- Hold points must be attended and witness all intervention points as per approved QCP as per activity.
- Work and QC to be done according to the regulations and procedures of the *Employer*.
- The *Contractor* will be responsible for the safeguarding, care and security of all items whilst in the *Contractors* custody and control, until Completion of the whole of the works.
- *Contractor* must be "able, trained and be prepared" with the necessary PPE, equipment, tools, skills and authorised to handle any equipment, spares, tools and materials related to the scope

- All spares removed and returned to Tutuka premises must be declared at the main entrance where the removal permit for the spares must be shown to the Protective Services personnel

#### 4.9 Design by the *Contractor*

- Not Applicable

#### 4.10 Cataloguing requirements by the *Contractor*

- Not Applicable

### 5. Requirements for the programme

The *Contractor* must supply the *Employer* with a detailed program 7 days after the contract award date. The contractor must state the lead times of the required spares and instrumentation and any other key dates. He/she must state when he/she will require the scaffolding three days in advance. Hold points are to be shown on his/her program for the *Employer* to sign off .

Note: A high level program should be submitted at the tender stage.

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

Item	Date by which it will be provided
Potable water available on site	Contract start date
Medical assistance during normal working hours.	Contract start date
220-Volt power supply available	Contract start date

## C4: Site Information

Site Information is information about the *site* at the time of tender which the tendering contractor needs to allow for in his rates and Prices. The information does not change after contract award, nor does it describe or specify anything which the Parties do during the contract. It is only referred to during administration of the contract if the *Contractor* encounters conditions which are different to those described here. The *Contractor* will then make a comparison between actual conditions encountered and those described here in his assessment of any additional cost or time he may need to be compensated for in order to complete the works. Disputes about the difference between the effects of conditions encountered and those which the *Contractor* allowed for in his Prices will be minimised if the information given here is complete and relevant. If no information is given the tendering contractor will need to guess what he may encounter thus tendering higher Prices to allow for conditions that may not even exist.

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

#### **1. Access limitations**

Any changes to the current access arrangements it will be communicated to the *Contractor*

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

- Not Applicable

#### **3. Hidden and other services within the *site***

- Not Applicable

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

- DWD Pumphouse Building and surrounding areas.