



NEC3 Term Service Contract (TSC3)

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

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

for the supply, calibration, and delivery of Pyrometers

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

Enquiry No.

PART C1: AGREEMENTS & CONTRACT DATA

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

C1.1 Form of Offer & Acceptance

Offer

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

Title of the Contract

The supply ,delivery and calibration of Pyrometers at Majuba Power Station for a period for 60 months

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

Options A	The offered total of the Prices exclusive of VAT is	R
	Value Added Tax @ 15% is	R
	The offered total of the amount due inclusive of VAT is ¹	R
	(in words) Seven million five hundred ten thousand nine hundred eighty-eight and eighty-six hundredths	

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

Signature(s)

Name(s)

Capacity

**For the
tenderer:**

(Insert name and address of organisation)

Name &
signature of
witness

Date

Tenderer's CIDB registration number:

¹ This total is required by the *Employer* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.

Acceptance

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the Employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
Part C2	Pricing Data
Part C3	Scope of Work: Service Information

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

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed and signed original copy of this document, including the Schedule of Deviations (if any).

Signature(s)

Name(s)

Capacity

**for the
Employer**

(Insert name and address of organisation)

Name &
signature of
witness

Date

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

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

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)Name &
signature
of witness

Date

C1.2 TSC3 Contract Data

Part one - Data provided by the *Employer*

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option:	
		A: Priced contract with price list
	dispute resolution Option	W1: Dispute resolution procedure
		E: Cost reimbursable contract
	and secondary Options	
		X1: Price adjustment for inflation
		X2: Changes in the law
		X17: Low service damages
		X18: Limitation of liability
		X19: Task Order
		Z: Additional conditions of contract
	of the NEC3 Term Service Contract April 2013 ² (TSC3)	
10.1	The <i>Employer</i> is (name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
10.1	The <i>Service Manager</i> is (name):	Hlobisile Hlewane
	Address	Eskom Holdings SOC Ltd, Majuba Power Station, Private Bag 9001, Volksrust, 2470
	Tel	017 799 3487
	e-mail	khumalho@eskom.co.za
11.2(2)	The Affected Property is	Majuba Power Station

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

11.2(13)	The <i>service</i> is	The supply, calibration, and delivery of Pyrometers with peripheral spares at Majuba Power Station for a period for 60 months
11.2(14)	The following matters will be included in the Risk Register	<p>NCR A Risk Register is to be maintained throughout the contract period.</p> <p>All Risk will be identified prior and addressed and registered during the Risk Register meeting that will take place as agreed between the parties.</p>
11.2(15)	The Service Information is in	Part 3: Scope of Work and all documents and drawings to which it refers.
12.2	The <i>law of the contract</i> is the law of	the Republic of South Africa
13.1	The <i>language of this contract</i> is	English
13.3	The <i>period for reply</i> is	2 weeks
2	The Contractor's main responsibilities	Data required by this section of the core clauses is also provided by the Contractor in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data
21.1	The <i>Contractor</i> submits a first plan for acceptance within	[•] 4 weeks of the Contract Date
3	Time	
30.1	The <i>starting date</i> is.	01 November 2024
30.1	The <i>service period</i> is	60 months extending to 30 October 2029
4	Testing and defects	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data
5	Payment	
50.1	The <i>assessment interval</i> is	between the 25th day of each successive month.
51.1	The <i>currency of this contract</i> is the	South African Rand
51.2	The period within which payments are made is	4 weeks if contract is less than R50 million and 8 weeks if the contract is more than R50 million
51.4	The <i>interest rate</i> is	<p>the publicly quoted prime rate of interest (calculated on a 365 day year) charged by from time to time by the Standard Bank of South Africa Limited (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands and</p> <p>(ii) the LIBOR rate applicable at the time for amounts due in other currencies. LIBOR is the</p>

		6 month London Interbank Offered Rate quoted under the caption “Money Rates” in The Wall Street Journal for the applicable currency or if no rate is quoted for the currency in question then the rate for United States Dollars, and if no such rate appears in The Wall Street Journal then the rate as quoted by the Reuters Monitor Money Rates Service (or such service as may replace the Reuters Monitor Money Rates Service) on the due date for the payment in question, adjusted <i>mutatis mutandis</i> every 6 months thereafter (and as certified, in the event of any dispute, by any manager employed in the foreign exchange department of The Standard Bank of South Africa Limited, whose appointment it shall not be necessary to prove.
6	Compensation events	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data
7	Use of Equipment Plant and Materials	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data
8	Risks and insurance	
80.1	These are additional <i>Employer's</i> risks	1. Strike from locals, leading to delays on scope. 2. Low performance after service 3. Moved Outages
83.1	The <i>Employer</i> provides these insurances from the Insurance Table	as stated for “Format TSC3” available on http://www.eskom.co.za/Tenders/InsurancePolicies/Procedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx (See Annexure A for basic guidance).
83.1	The <i>Employer</i> provides these additional insurances	as stated for “Format TSC3” available on http://www.eskom.co.za/Tenders/InsurancePolicies/Procedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx (See Annexure A for basic guidance)
83.1	The <i>Contractor</i> provides these additional insurances:	As the Contractor deems fit.
83.1	The minimum amount of cover for insurance against loss and damage caused by the <i>Contractor</i> to the <i>Employer's</i> property is	the amount of the deductibles relevant to the event described in the “Format TSC3” insurance policy available on http://www.eskom.co.za/Tenders/InsurancePolicies/Procedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx
83.1	The insurance against loss of or damage to the <i>works</i> , Plant and Materials is to include cover for Plant and Materials provided by the <i>Employer</i> for an amount of	As the Contractor deems fit

83.1	The minimum amount of cover for insurance in respect of loss of or damage to property (except the <i>Employer's</i> property, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the <i>Contractor</i>) arising from or in connection with the <i>Contractor's</i> Providing the Service for any one event is:	whatever the <i>Contractor</i> deems necessary in addition to that provided by the <i>Employer</i> .
83.1	The minimum limit of indemnity for insurance in respect of 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 for any one event is:	As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 and the <i>Contractor's</i> common law liability for people falling outside the scope of the Act with a limit of Indemnity of not less than R500 000 (Five hundred thousand Rands)..
9	Termination	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
10	Data for main Option clause	
A	Priced contract with price list	
20.5	The <i>Contractor</i> prepares forecasts of the final total of the Prices for the whole of the service at intervals no longer than	Four [4] weeks.
11	Data for Option W1	
W1.1	The <i>Adjudicator</i>	the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).
W1.2(3)	The <i>Adjudicator nominating body</i> is:	the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the Institution of Civil Engineers (London) (see www.ice-sa.org.za) or its successor body.
W1.4(2)	The <i>tribunal</i> is:	arbitration
W1.4(5)	The <i>arbitration procedure</i> is	the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	South Africa
	The person or organisation who will choose an arbitrator	
	- if the Parties cannot agree a choice or	the Chairman for the time being or his nominee
	- if the arbitration procedure does not state who selects an arbitrator, is	of the Association of Arbitrators (Southern Africa) or its successor body.
12	Data for secondary Option	

clauses																				
X1	Price adjustment for inflation																			
X1.1	The <i>base date</i> for indices is The proportions used to calculate the annual Price Adjustment Factor are:	<table><tr><th colspan="3">The Tendered price</th></tr><tr><th>proportion</th><th>linked to index for</th><th>Index prepared by</th></tr><tr><td rowspan="2">0.70</td><td>Labour - Seifsa Table C3(A) Actual labour cost (field force) where substance allowance is paid</td><td>'SEIFSA</td></tr><tr><td>Transport - Seifsa Table L1 - Road freight costs</td><td>'SEIFSA</td></tr><tr><td>0.10</td><td>Non-adjustable (minimum)</td><td>'SEIFSA</td></tr><tr><td colspan="3">1.00</td></tr></table>		The Tendered price			proportion	linked to index for	Index prepared by	0.70	Labour - Seifsa Table C3(A) Actual labour cost (field force) where substance allowance is paid	'SEIFSA	Transport - Seifsa Table L1 - Road freight costs	'SEIFSA	0.10	Non-adjustable (minimum)	'SEIFSA	1.00		
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	Transport - Seifsa Table L1 - Road freight costs	'SEIFSA																		
0.10	Non-adjustable (minimum)	'SEIFSA																		
1.00																				
X2	Changes in the law	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.																		
X17	Low service damages																			
X17.1	The <i>service level table</i> is in	C3.1 Scope of work																		
X18	Limitation of liability																			
X18.1	The <i>Contractor's</i> liability to the <i>Employer</i> for indirect or consequential loss is limited to	R0.0 (zero Rand)																		
X18.2	For any one event, the <i>Contractor's</i> liability to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property is limited to	the amount of the deductibles relevant to the event described in the "Format TSC3" insurance policy available on http://www.eskom.co.za/Tenders/InsurancePolicies/Procedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx																		
X18.3	The <i>Contractor's</i> liability for Defects due to his design of an item of Equipment is limited to	<p>The greater of</p> <ul style="list-style-type: none">the total of the Prices at the Contract Date andthe amounts excluded and unrecoverable from the <i>Employer's</i> insurance (other than the resulting physical damage to the <i>Employer's</i> property which is not excluded) plus the applicable deductibles in the <i>Employer's</i> assets and works / maintenance policies available on http://www.eskom.co.za/Tenders/InsurancePolicies																		

		ciesProcedures/Pages/EIMS_Policies_ From_1_April_2014_To_31_March_2015.aspx
X18.4	The <i>Contractor's</i> total liability to the <i>Employer</i> , for all matters arising under or in connection with this contract, other than the excluded matters, is limited to	<p>the total of the Prices other than for the additional excluded matters.</p> <p>The <i>Contractor's</i> total liability for the additional excluded matters is not limited.</p> <p>The additional excluded matters are amounts for which the <i>Contractor</i> is liable under this contract for</p> <ul style="list-style-type: none"> • Defects due to his design, plan and specification, • Defects due to manufacture and fabrication outside the Affected Property, • loss of or damage to property (other than the <i>Employer's</i> property, Plant and Materials), • death of or injury to a person and • infringement of an intellectual property right.
X18.5	The end of liability date is	12 months after the end of the <i>service period</i>
X19	Task Order	
X19.5	The <i>Contractor</i> submits a Task Order programme to the <i>Service Manager</i> within	14 days of receiving the Task Order
Z	The additional conditions of contract are	Z1 to Z11 always apply.

Z1 Cession delegation and assignment

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

Z2 Joint ventures

- Z2.1 If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Employer* for the performance of this contract.
- Z2.2 Unless already notified to the *Employer*, the persons or organisations notify the *Service Manager* within two weeks of the Contract Date of the key person who has the authority to bind the *Contractor* on their behalf.
- Z2.3 The *Contractor* does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the *Employer* having been given to the *Contractor* in writing.

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

- Z3.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor's* B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.
- Z3.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Service Manager* within thirty days of the notification or as otherwise instructed by the *Service Manager*.
- Z3.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor's* obligation to Provide the Service.
- Z3.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are P1, P2 and P4 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.

Z4 Confidentiality

- Z4.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.
- Z4.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Service Manager*.
- Z4.3 In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.
- Z4.4 The taking of images (whether photographs, video footage or otherwise) of the Affected Property or any portion thereof, in the course of Providing the Service and after the end of the *service period*, requires the prior written consent of the *Service Manager*. All rights in and to all such images vests exclusively in the *Employer*.
- Z4.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z5 Waiver and estoppel: Add to core clause 12.3:

- Z5.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Service Manager* or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z6 Health, safety and the environment: Add to core clause 27.4

- Z6.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *service*. Without limitation the *Contractor*.

- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Affected Property;
- warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of the *service*; and
- undertakes, in and about the execution of the *service*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z6.2 The *Contractor*, in and about the execution of the *service*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z7 Provision of a Tax Invoice and interest. Add to core clause 51

- Z7.1 Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer's* procedures stated in the Service Information, showing the amount due for payment equal to that stated in the payment certificate.
- Z7.2 If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms of core clause 51.2 is then calculated from the delayed date by when payment is to be made.
- Z7.3 The *Contractor* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer's* VAT number 4740101508 on each invoice he submits for payment.

Z8 Notifying compensation events

- Z8.1 Delete the last paragraph of core clause 61.3 and replace with:

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

Z9 Employer's limitation of liability

- Z9.1 The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand)
- Z9.2 The *Contractor's* entitlement under the indemnity in 82.1 is provided for in 60.1(12) and the *Employer's* liability under the indemnity is limited to compensation as provided for in core clause 63 and X19.11 if Option X19 Task Order applies to this contract.

Z10 Termination: Add to core clause 91.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":

- Z10.1 or had a business rescue order granted against it.

Z11 Ethics

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

Affected Party	means, as the context requires, any party, irrespective of whether it is the <i>Contractor</i> or a third party, such party's employees, agents, or Subcontractors or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,
Coercive Action	means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,
Collusive Action	means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,
Committing Party	means, as the context requires, the <i>Contractor</i> , or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractors or the Subcontractor's employees,
Corrupt Action	means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,
Fraudulent Action	means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
Obstructive Action	means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action and
Prohibited Action	means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

- Z 11.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.
- Z 11.2 The *Employer* may terminate the *Contractor's* obligation to Provide the Service 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 Service for this reason.
- Z 11.3 If the *Employer* terminates the *Contractor's* obligation to Provide the Service for this reason, the procedures and amounts due on termination are respectively P1, P2, P3 and P4, and A1 and A3.
- Z 11.4 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 83 with the following:****Insurance cover 83**

- 83.1 When requested by a Party, the other Party provides certificates from his insurer

or broker stating that the insurances required by this contract are in force.

- 83.2 The *Contractor* provides the insurances stated in the Insurance Table A from the *starting date* until the earlier of Completion and the date of the termination certificate.

INSURANCE TABLE A

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

Z 12.2 Replace core clause 86 with the following:

Insurance 86
by the
Employer

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

INSURANCE TABLE B

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

Z13 Nuclear Liability

- Z13.1 The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.
- Z13.2 The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or resulting from nuclear damage, as defined in Act 44 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 44 of 1999, or any replacement section dealing with the same subject matter.
- Z13.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

Z14 Asbestos

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

AAIA means approved asbestos inspection authority.

ACM	means asbestos containing materials.
AL	means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
Ambient Air	means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means occupational exposure limit.
Parallel Measurements	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
Safe Levels	means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
Standard	means the <i>Employer's</i> Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles.
SANAS	means the South African National Accreditation System.
TWA	means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4 hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA.

- Z14.1 The *Employer* ensures that the Ambient Air in the area where the *Contractor* will Provide the Services conforms to the acceptable prescribed South African standard for asbestos, as per the regulations published in GNR 155 of 10 February 2002, under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) ("Asbestos Regulations"). The OEL for asbestos is 0.2 regulated 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.

Annexure A: Insurance provided by the Employer

These notes are provided as guidance to tendering contractors and the Contractor about the insurance provided by the Employer. The Contractor must obtain its own advice. Details of the insurance itself are available from the internet web link given below.

1. Services provided in a TSC3 contract could include some element of construction or refurbishment as well as a continuous maintenance or operational service activity. If an event occurs which causes loss or damage, a claim could be made either against the *Employer's* "works" type policy which may be in place for the *Employer's* portion of the Affected Property concerned or against the *Employer's* assets policy which may be in place for the *Employer's* portion of the Affected Property concerned, or both.
2. The cover provided and the deductibles under the works policy are different to those under the assets policy. Each policy has a range of applicable deductibles depending on the location of the Affected Property and the nature of the insurable event.
3. The *Contractor* is required in terms of Contract Data for clause 83 to provide cover for the deductibles in the insurance provided by the *Employer*. This can be provided from his own resources on a 'self insured' basis or obtained by him from his own insurers. In order to assess the extent of this cover, tendering contractors and their brokers should consult the internet web link given below and scroll to '**Format TSC3**' to establish both the cover and the deductibles in relation to the *service* provided in terms of this contract.
4. Tendering contractors should note that cover provided by the *Employer* is only per the policies available on the internet web link listed below and may not be the cover required by the tendering contractor or as intended by each of the listed insurances in the left hand column of the Insurance Table in clause 83.2. In terms of clause 83.1 "the *Contractor* provides the insurances stated in the Insurance Table except any insurance which the *Employer* is to provide". Hence the *Contractor* provides insurance which the *Employer* does not provide and in cases where the *Employer* does provide insurance the *Contractor* insures for the difference between what the Insurance Table requires and what the *Employer* provides.
5. If Marine Insurance is required the *Contractor* needs to obtain a copy of the latest edition of Eskom's Marine Policies Procedures found at internet website given below.
6. Further information and full details of all Eskom provided policies and procedures may be obtained from:

[http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_
From_1_April_2014_To_31_March_2015.aspx](http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx)

C1.2 Contract Data

Part two - Data provided by the *Contractor*

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

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

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

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

PART 2: PRICING DATA

TSC3 Option A

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

C2.1 Pricing assumptions: Option A

How work is priced and assessed for payment

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

Identified and defined terms	11	
	11.2	(12) The Price List is the <i>price list</i> unless later changed in accordance with this contract.
		(17) The Price for Services Provided to Date is the total of <ul style="list-style-type: none"> the Price for each lump sum item in the Price List which the <i>Contractor</i> has completed and where a quantity is stated for an item in the Price List, an amount calculated by multiplying the quantity which the <i>Contractor</i> has completed by the rate.
		(19) The Prices are the amounts stated in the Price column of the Price List. Where a quantity is stated for an item in the Price List, the Price is calculated by multiplying the quantity by the rate.

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

Function of the Price List

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

Link to the *Contractor's* plan

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

Preparing the *price list*

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

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

- Has taken account of the guidance given in the TSC3 Guidance Notes relevant to Option A;
- Understands the function of the Price List and how work is priced and paid for;
- Is aware of the need to link operations shown in his plan to items shown in the Price List;
- Has listed and priced items in the *price list* which are inclusive of everything necessary and incidental to Providing the Service in accordance with the Service Information, as it was at the time of tender, as well as correct any Defects not caused by an *Employer's* risk;
- Has priced work he decides not to show as a separate item within the Prices or rates of other listed items in order to fulfil the obligation to complete the *service* for the tendered total of the Prices.
- Understands there is no adjustment to items priced as lump sums if the amount, or quantity, of work within that item later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the (lump sum) Prices is as a result of a compensation event.

Format of the *price list*

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

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

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

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

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

C2.2 the *price list*

ITEM	ITEM DESCRIPTION	QUANTITY	Rate	Total
7MC3030-1AE20 Stock Number:502322	SPECTRAL PYROMETER MPA20AF4 ARDOMETER, MEASURING RANGE 250-2000CEL, DISTANCE RATION 40:1 (90%) , FOCUS RANGE 0.2M INFINITE, SPECTRAL RANGE 1.1 - 1.7 1E-6M VERSION WITH TRANSPARENT VISOR	26		
VK02/I (472016) 5M CABLE	VK02/I (472016) 5M CABLE FOR 7MC3030 PYROMETER	26		
258586	258586 / WIDE ANGLE LENS PZ20.05 -KPW:5138 PC WIDE-A	12		
EDR-120-12	MEAN WELL POWER SUPPLY	12		
INSTALL	PYROMETER INSTALLATION	24		
Tube Leak Detector Stock Number:229595	RATING: 24 V DC; SUPPL P/N: HA3; FFT-HA3	126		
FLUKE9142C	SANAS CALIBRATION	72		

PART 3: SCOPE OF WORK

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

C3.1: EMPLOYER'S SERVICE INFORMATION

Contents

Part 3: Scope of Work	Error! Bookmark not defined.
C3.1: Employer's works Information	Error! Bookmark not defined.
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1 Description of the *works*

1.1 Executive overview

The contract is to secure a fixed Supply Contract for the procurement of new pyrometers, and peripheral spares for the pyrometers at Majuba Power Station. This will be based on request to replenish spares as and when required. The scope also includes the calibration of pyrometers during MGO and GO scopes with SANAS certificate attached. The pyrometers analogue output is used as inputs in the Boiler protection matrix – to determine loss of flame in the boiler.

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

The objectives of the *works* are as follows:

- (1) Supply and deliver Majuba Power Station with pyrometers.
- (2) The pyrometers will be supported by the OEM for the 15 years, as a minimum.
- (3) Supply and deliver Pyros (Min 20 per year) MPZ – 7MC3030-1AE30. The interface cable will be included with each pyrometer delivered.
- (4) Supply and deliver Pyro Lenses - PZ20.05 (12 per year)
- (5) Supply and deliver Power supply (12 per year)
- (6) Provide SANAS calibration of Pyrometers – collect from site / calibrate/ deliver to site and test [SAT] (24 per year)
- (7) Supply and deliver Mean Well Power Supplies MDR20-24
- (8) Ensure that the pyrometers on Majuba Power Units 1-6 are standardised in terms of instrument models, configuration, Software version, Body types and installation.

The purpose of the *works* is as follows:

- (1) Ensure that the reliability and availability of the new pyrometers are not affected by the combustion issues [External factors e.g. Heat] which causes the over-heating and failure of the current through-the-lens type pyrometers.
- (2) The Contractor will be able to supply pyrometers and peripheral spares on a direct order basis.
- (3) Calibrate pyrometers during the Major General Outages or on the maintenance request and provide approved certification i.e. SANAS calibration certificates

1.3 Interpretation and terminology

1.3.1 Definitions

The following terms are used in this Works Information:

Term	Definition
Client	Majuba Power Station
EXIDA	A certification and knowledge company specialising in automation system safety, alarm management, cybersecurity, and availability
Fibre-optic type	A pyrometer type where the pyrometer lens and electronics are enclosed in separate housings which are connected via a fibre optic cable. The lens focuses the infrared radiation into the fibre-optic cable which channels the radiation to the sensor housed with the electronics.
Pyrometer	A non-contact temperature measurement device that relies on the principle of infrared radiation measurement.
Through-the-lens type	A pyrometer type where the lens and all associated electronics are enclosed within a single housing. The lens focuses the infrared radiation directly onto the sensor.
TUV	An internationally accredited certification body

1.3.2 Abbreviations

The following abbreviations and acronyms are used in this Works Information:

Abbreviation/Acronym	Definition
C&I	Control & Instrumentation
CM	Configuration Management
CoE	Centre of Excellence
DCS	Distributed Control System
EAF	Energy Availability Factor
EC&I	Electrical, Control and Instrumentation
ECM	Engineering Change Management
ECP	Engineering Change Proposal
EMAP	Engineering Management Plan
FAT	Factory Acceptance Test
FFFR	Fossil -Fuel Firing Regulation
FMEA	Failure Mode and Effects Analysis
FMECA	Failure Mode, Effects, and Criticality Analysis
Gx	Generation
HMI	Human-machine Interface
ISO	International Standards Organisation
KKS	Kraftwerks Kennzeichen System
LDE	Lead Discipline Engineer

Abbreviation/Acronym	Definition
LPS	Low Pressure Services
OEM	Original Equipment Manufacturer
OHS	Occupational Health and Safety
PCLF	Planned Capability Loss Factor
PEI	Production, Engineering, Integration
PF	Pulverised Fuel
RACI	Responsible, Accountable, Consulted, Informed
RAM	Reliability, Availability & Maintainability
SHEQ	Safety, Health, Environment and Quality
SIL	Safety Integrity Level
SRD	Stakeholder Requirements Definition
UCLF	Unplanned Capability Loss Factor
USB	Universal Serial Bus

1.4 Codes and standards

The following codes and standards apply throughout the *works*:

- (1) 240-56355754 Field Equipment Installation Standard
- (2) 240-56355815 Control & Instrumentation Field Enclosures and Cable Termination Standard
- (3) 240-56355535 Process Calibration Equipment Standard
- (4) 240-56227443 Requirements for Control and Power Cables for Power Stations Standard
- (5) 240-56355888 Temperature Measurement Systems Installation Standard
- (6) 240-105453648 Fossil Fuel Firing Regulation
- (7) 240-56241288 Fossil Fired Boiler Protection Functions Standard
- (8) 240-109253238 C&I Protection Systems Redundancy and Voting Guideline
- (9) 240-56227443 Requirements for Control and Power Cables for Power Stations Standard
- (10) 32- 245 Eskom Waste Management Standard
- (11) 240-93576498 KKS Coding Standard
- (12) 240-71432150 Plant Labelling Standard
- (13) 240-105249370 Operating and Maintenance Requirements for Coal Fired Boiler Flame Failure Protection Devices Standard
- (14) 240-53114248 Thyristor and switch mode charger converter power supply standard
- (15) BS EN 13611-2015 Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - General requirements

2 Engineering and the *Contractor's* design

2.1 *Employer's* design

2.1.1 Plant Description

Majuba Power Station has twelve through-the-lens type pyrometers (as defined in clause 1.3.1 of the Works Information), per Unit, installed in the furnace side walls; six in the Left Hand wall and six in the Right Hand wall. Furthermore, the twelve pyrometers are arranged such that six pyrometers are installed at the 31.65 m level and six at the 53.76 m meter level.

The pyrometers belong to the Steam Generator Combustion Chamber, Furnace, Gas Pass system with system code (KKS) *HBK* and are used to measure the flame temperature during normal operation and protect the boiler from flame failure. They are used as inputs to the Boiler Protection

System (BPS) which will trip the related mills if a drop of flame temperature is detected (Furnace Flame Failure Protection).

The Furnace Flame Failure Protection is enabled when at least one quick close damper is open, supplying pulverised fuel (PF) to the burners and the flame temperature exceeds 900 °C. Should two out of three pyrometers of any group detect that the flame temperature has fallen below 800 °C, a low-level alarm is triggered. If the temperatures continue to fall to below 600 °C, the Flame Failure protection is triggered and the BPS initiates a master fuel trip. This occurs under the following conditions:

- When two out of three pyrometers, as dictated by the trip logic, detect that ignition has been lost or is in danger of being lost,
- When two out of three pyrometers go over-range (currently not implemented in BPS),
- When flame failure has occurred in either half of the furnace.

The pyrometers measure flame temperature by focusing furnace heat radiation, through a lens, onto a thermopile (or photodiode) contained within the body of the instrument. The radiation heats the thermopile junctions, thereby generating a thermoelectric potential (millivolts) that is proportional to the junction temperature. This potential is converted from a millivolt signal to a milliamp signal by a lineariser and signal conditioning card. The milliamp signal is then used as an analogue input to the DCS, where it is processed and used in the BPS and for indication purposes.

The current pyrometers installed at Majuba are designed in such a way that should the electronics overheat; the output is driven to 20.5 mA. Should the temperature of the electronics recover instead of increasing any further, the output will return to the normal range of 0-20 mA. However, if the temperature of the electronics continues to increase beyond the point where the electronics begin to fail, the instrument may fail in which case the output will reduce to 0 mA. This design allows the instrument to provide failsafe operation as well as a method of detecting that the instrument has overheated.

In its current state, the BPS at Majuba PS is not configured to trip the Boiler should the pyrometers go over-range or output an "overheat" value (20.5 mA), but will instead raise an alarm that requires Operator intervention. However, as required by the FFFR, the BPS will trip the Boiler in the event that any group of pyrometers detect that the furnace flame temperature has fallen below 600 °C or in the event of instrument failure.

The pyrometers interface to the Boiler Furnace via sight tubes that are installed in the furnace wall at the relevant elevations.

On Units 1-3, each pyrometer head is terminated directly to its own junction box with 220V_{AC} supplied from the Essential Supply (via a common UPS distribution board). The signal conditioning and power converter card (from 220V_{AC} to 24 V_{DC}) are also housed in this same junction box.

On Units 4-6, each pyrometer head contains the associated signal conditioning electronics which is terminated to a junction box with 220V_{AC} supplied from the Essential Supply (via a common UPS distribution board). Each junction box contains a 220V_{AC} to 24 V_{DC} power converter module (Mean Well MDR 20-24).

The pyrometers, via the junction boxes, interface to the DCS using a 0-20 mA analogue signal. The calibration range on the DCS is 400 °C to 1500 °C [0 to 20mA- output]. The calibration range will be soft adjustable.

Furthermore, the pyrometers have a cooling air supplied from the Unit Control Air System. The pyrometers draw purge air which is used for cooling medium as well as lens cleaning.

2.1.2 Plant Information

- (1) The *Employer* provides the documentation and information, as per Annexure C – C&I Documentation Requirements from Vendors, to the *Contractor*.
- (2) After receiving the documentation provided by the *Employer*, the *Contractor* is responsible for updating and maintaining the documentation.
- (3) Should the *Contractor* require any additional information from the Employer for his design, the *Contractor* submits a formal request through correspondence with the *Project Manager*.

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

2.1.3 Extent of the *works*

The *Contractor* provides for:

- (1) The period for the Contract will be 5 years – the Contract will cater for the supply of new pyrometers as and when required. The supplier to provide SANAS Calibration for New and already installed pyrometers [Calibration Verification] and supply PZ20.05 lenses for pyrometers. The new pyrometers will be supplied with the interface cable.
- (2) The Contractor will supply pyrometers to Majuba as and when required. If the version changes from the installed base during the 5-year Contract – the Contractor

will be required to notify the Project Manager of this change. The change will be evaluated and a strategy will be developed to address the change and the impact to the installed base and the way forward.

- (3) The Contractor provides SANAS Calibration certification for installed pyrometers, as and when required. A tentative quantity of 20 pyrometers will be proposed per year.
- (4) The Contractor to provide calibration services for the installed base of pyrometers. A tentative quantity of 24 per year has been forecasted. This will depend on the approved outage schedule. The Contractor is to make calibration services available to the Employer – as and when the Outage schedule permits. A period 30 days notification to the Contractor will be recommended. The Contractor will be notified timeously. Calibrated pyrometers will be accompanied with a SANAS Calibration certificate.
- (5) The Contractor to keep copies of the certificates forth entire duration of the Contract.
- (6) The Contractor to supply a tentative quantity of 20 pyrometer lenses – PZ20.05 per year – as and when required.
- (7) The whole of the *works*, as defined in clause (3) of the Works Information, except where explicitly stated otherwise.

2.1.4 General

- (1) The *Contractor's* design and the *works* comply with the codes and standards listed in clause 1.4 of the Works Information.
- (2) The *Contractor* provides for national or international standards, required to complete the *works*, as part of the *works*.
- (3) The *Contractor's* design and engineering is carried out at site, Majuba Power Station.
- (4) The *Contractor* provides the Equipment and services necessary to fulfil the requirements defined in this Works Information.
- (5) The *works* complies with professional engineering practice and standards for fossil fuel power plants and is designed for the environmental conditions prevailing at Majuba Power Station Site.

2.1.5 Control and instrumentation design

2.1.5.1 General

- (1) The *Contractor* provides pyrometers that have life-cycle support, from the OEM, for a minimum of 15 years from the date that the last pyrometer installation is handed over to the *Employer*.

- (2) The pyrometers are tested under normal operating conditions which include vibrations. The pyrometers provided adhere to BS EN 13611-2015 Section 7.7.2.2 Vibration Test.
- (3) The pyrometers must be compliant to operate in UHF frequencies and not be affected by EMF.

2.1.5.2 Instrument Schedule

- (1) The *Contractor* provides for instrumentation as per Annexure A - Control & Instrumentation Instrument Schedule.
- (2) The Instrument Schedule lists the instrumentation that is provided as part of the *works*. Key information regarding this instrumentation is provided by the *Employer*, however, any missing fields are populated by the *Contractor* prior to commissioning.
- (3) The *Contractor* amends the Instrument Schedule as necessary, or where an error or omission is made by the *Employer*, to fulfil the requirements of the *works*. Amendments will be compiled into a report and handed to the Employer for evaluation and discussion and thereafter implementation – once approval has been granted by the Employer.
- (4) Where an error or omission is made by the *Employer*, the *Contractor* submits amendments to the Instrument Schedule to the *Project Manager* for approval prior to design work commencing.

2.1.5.3 C&I Documentation Requirements from Vendors

- (1) The *Contractor* provides and submits documentation as per – C&I Documentation Requirements from Vendors
- (2) The *Contractor* provides and maintains a Master Register of Documents
- (3) The *Contractor* submits the Master Register of Documents to the *Project Manager* fortnightly, or after each revision.
- (4) The *Contractor* may add documentation not shown

2.1.5.4 Design criteria

The pyrometers supplied by the *Contractor*, will adhere to the following requirements which are mandatory:

- (1) The pyrometers are able to be programmed to the defined scale used on site. The programming software to be given to Employer for future use. No license fees required. A comprehensive range of 0-2000DegC will be adhered to. The range must be user configurable.
- (2) Analogue output of both 0-20 mA and 4-20 mA, which is user selectable/configurable.

- (3) Utilise USB 2.0 and/or RS232, preferably both, as the programming/fault finding interface to the pyrometers.
- (4) The Pyrometer will be able to withstand continuous operating temperatures of between 0 and 250 °C without measurement errors or failure.
- (5) Are IP65 rated or better.
- (6) Comply to a response time of no more than 2 ms for measured temperatures greater than or equal to 2000 °C.
- (7) Have a measurement range of at least 350 °C to 2000 °C with the span user programmable, in the field, to any values within the devices' measurement range.
- (8) Are SIL 2 compliant or are suitable for use in safety applications.
- (9) The pyrometers provided are failsafe devices that fail low as they are used as part of the BPS.
- (10) The outputs of the pyrometers provided are driven to 20.5 mA when the electronics overheat. A user selectable response (high or low output) to overheating is preferable. Preferred option is to fail low (0mA)
- (11) All new instruments and devices provided are immune to electromagnetic interference.
- (12) The pyrometers provided support an input voltage of 24 VDC.
- (13) Have an average availability of 99.999% or greater, measured annually, throughout the life of the instrument.
- (14) Calibration certificates to be provided for all instruments supplied. Calibration to be carried out at SANAS approved/accredited suppliers.
- (15) Supply Mean Well power supplies (Model MDR - 20-24) Input 220VAC and input current rating 0.55A
- (16) The pyrometer housing to comply with the installed openings [aperture] on the boiler. The boiler entry for measurement will not be modified, in any way.
- (17) Modifications of any nature will be communicated with the Project Manager for approval, before any changes are made to the equipment or plant.
- (18) The Contractor will notify the Employer if firm ware upgrades are required. The updates will be a zero cost [Freeware].

The Contractor supplies casing to house the lens. The housing to fit into the existing Boiler inspection attachments on the Boiler. [The Contractor can do a site visit to ensure adherence to the scope of work required. The Contractor will be held liable for all non-adherence to the intended scope at no extra charge to the Employer]

2.1.5.5 Control system

- (1) The Contractor makes no changes to the existing DCS without the approval of the Employer. Hardware changes made will be discussed with the Employer prior to implementation/approval.
- (2) The Contractor makes no changes to the interface between the pyrometers and the DCS.
- (3) The Contractor makes changes to the existing cabling between from the pyrometer to the first junction box. The remainder of the cabling to the interface junction box including the DCS will remain as – built. Any misunderstanding and confirmations required by the Contractor will be submitted in writing to the Project Manager. The Project manager will evaluate the request and address internally. The decision and response to all communication will be done in writing.
- (4) The existing operating, control and protection philosophies remain unchanged by the works.

2.1.5.6 Field, cabling and associated infrastructure

- (1) The existing boiler flame failure protection system employs a previous generation of pyrometers M250A range which provide a millivolt output. The millivolt signal is fed to a Lineariser card which contains a millivolt input (0-33mV) to milliamp output (0-20mA) converter, the output of which is sent to the control system. The lineariser card has a requirement of 220VAC supply. This supply is met from the station Essential Supply. The analogue output signal is routed to the control system. The alarm and trip temperatures (900°C and 600°C, respectively) are addressed in the DCS.
- (2) The scope of instrument cabling is defined as being all cabling or groupings of field cables between the instrument and junction boxes and between junction boxes and local control panels.
- (3) The Contractor provides for all cabling required to complete the works as part of the works.
- (4) Interface cabling from the pyrometer will be supplied by the Contractor as part of the works.
- (5) The cables provided are steel-clad and are of a standard, customer selectable length that can be purchased off-the-shelf from the OEM. The Contractor supplies a cable that is wired from the electronic housing to the junction box in the plant.
- (6) The cables are routed from the heads to the pyrometers in the junction boxes using suitable cable racks. The Pyrometers Holders are standardised across the units. These holders will be replaced as and when required

- (7) The Contractor standardises pyrometer installation position, arrangement on all Units in conjunction with the Eskom standards and requirements. The hardware and software versions will be the same across all units.

2.1.5.7 Junction Boxes

The Employer ensures that the junction boxes are securely fixed in place and protected from vibrations.

2.1.6 Electrical design

2.1.6.1 General

2.1.6.2 Power requirements

- (1) The existing pyrometer power supplies are fed from the Unit 380V Distribution Board (*BFP).
- (2) Each of the existing pyrometer junction boxes has a dedicated 220V_{AC} feeder. This remains unchanged for the new pyrometers and installation.
- (3) The *Contractor* provides power converter modules Mean Well MDR 20-24 currently used at Majuba.[Din Mounted]
- (4) The power converter modules provided comply with 240-53114248.
- (5) The power converter modules convert the existing 220 V_{AC} supply to a DC supply suitable for the provided pyrometers.
- (6) The *Contractor* terminates the power converter modules within the existing pyrometer junction boxes. The power converter module must comply to DIN standards/installations.
- (7) The power converter modules are suitably rated such that the pyrometers do not exceed the maximum continuous current rating of the converter.

2.1.6.3 Earthing and lightning protection

- (1) The *Contractor* guides the Employer on earthing, where required, on all Plant and Materials for reliable and safe operation and maintenance of the pyrometers and power converter modules.
- (2) The *Contractor* ensures that the new pyrometer are immune from electromagnetic interference which may arise from such devices as portable radio transmitters, cell phones and/or any other equipment used on site.

2.1.7 Mechanical design

- (1) The existing pyrometer sighting tubes remain as is and are re-used for the pyrometer installation. The new pyrometer lenses fit securely onto the existing sighting tubes. The current air gap between sight tube and pyrometer will remain as

is to create a draught for lens cleaning and limiting the accumulation of PF in the sighting tubes as per the current design.

- (2) The *Contractor's* flame scanners will be tested under plant conditions which include vibrations. The Contractors flame scanners must adhere to BS EN 13611-2015 Section 7.7.2.2 Vibration Test.
- (3) The supplier should provide the detailed installation plan, lens specification and drawings for acceptance before the pyrometers are installed on the units.

2.1.8 Low pressure services design

- (1) The existing purge air supplied to the pyrometers (from the Control Air compressors) for lens cleaning and cooling will be retained.
- (2) The Contractor will supply and install needle valves and braided shield tubing for each pyrometer – 36 off.

2.1.9 Plant coding and labelling

- (1) The *Contractor* provides KKS labels for all new Plant and existing plant.
- (2) The *Contractor* replaces existing KKS labels if modifications to the Plant, caused by the execution of the works, require a change in KKS coding.
- (3) Where the *Contractor* removed KKS labels, these KKS labels will be replaced.
- (4) All KKS labels are installed in a similar location for each similar item of Plant across all 6 Units at Majuba Power Station. The Majuba KKS standard will be used as a guide for adherence purposes.
- (5) The *Employer* provides KKS coding as per the codes and standards in clause 1.4.

2.1.10 Testing and commissioning

2.1.10.1 General

- (1) The *Contractor* provides a [FAT] testing procedure for acceptance by the *Employer*,
- (2) The *Contractor's* test procedure contains testing criteria as defined in Section 2.1.3 as a minimum. The test will be conducted at the Contractors premises – prior to delivery to Site. Tests that are required to be performed on a test bench are done so on a test bench provided by the *Contractor*
- (3) Testing is done in compliance with 240-105249370 Operating and Maintenance Requirements for Coal Fired Boiler Flame Failure Protection Devices Standard.
- (4) The *Contractor* is available for testing after normal working hours.
- (5) The *Employer* reserves the right to waive any test/s without consulting the *Contractor*.

2.1.10.2 Pilot installation

- (1) Prior to procuring and installing the pyrometers on unit 1 to 3 (3) Units at Majuba Power Station, the *Contractor* tests the proposed pyrometer according to the test procedure outlined in section.
- (2) The *Contractor* compiles a test report containing the test results from the FAT and submits this report to the *Project Manager* for acceptance.
- (3) The *Contractor* uses the pilot installation to verify the accuracy, performance and capability of the proposed pyrometer in relation to the pyrometers currently installed at Majuba Power Station

2.1.10.3 Certification

- (1) The *Contractor* provides certification, through a third party certification authority such as TUV or EXIDA, for all pyrometers provided.
- (2) The certification process requires, as a minimum, that the pyrometers undergo FMEA/FMECA studies to certify that the pyrometers provided are suitable for use in flame failure safety applications.

2.1.10.4 Factory Acceptance Testing (FAT)

- (1) The *Contractor* performs factory acceptance testing to verify the suitability and performance capability of the pyrometers provided before they are released for shipment to site.
- (2) The FAT may be performed as part of the certification process with both the *Employer* and the third party certification authority witnessing such tests.
- (3) The *Employer* witnesses the *Contractor's* acceptance testing.
- (4) The *Contractor's* factory acceptance testing is performed at its premises, or the third party certification authority's premises, in South Africa.
- (5) The *Contractor* compiles a factory acceptance test procedure and submits it to the *Project Manager* for acceptance 28 days prior to the FAT commencing.
- (6) The *Contractor* submits all documentation required for the FAT to the *Project Manager*, for acceptance, 28 days prior to the FAT commencing.
- (7) Upon completion of factory acceptance testing, the *Contractor* submits a FAT report detailing all tests performed, the outcome of the tests and defects identified during testing.
- (8) The FAT report is submitted to the *Project Manager* for acceptance

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

2.2.1.4 Shipment

Shipment involves functions surrounding preparation of items of plant and materials for Installation on site. These functions include but are not limited to:

- Packaging of materials and items of plant for transportation to site
- Transport and delivery of materials and items of plant for Installation to site
- Storage of materials and items of plant on site

2.3 -Year Outage Plan

The 5-year outage plan is documented in the table below. Due to rescheduling performed on a continuous basis, the plan might change from time-to-time. The latest updates can be obtained from the Service Manager when required.

WEEK 22
5 Year Outage Listing
FromDate 2024/05/28
ToDate 2029/05/27
Export 2024/05/28
Date 17:01

OutageID	Outage Code	Station	Unit	Planned/Actual Start Time	Planned/Revised End Time	Outage Description
19096	MJ04UIR-15-11-2024	Majuba	4	2024/11/15 00:00:00	2024/12/12 23:59:00	Interim Repairs
19095	MJ05UIR-06-01-2025	Majuba	5	2025/01/06 00:00:00	2025/02/02 23:59:00	IR
19097	MJ03UGO-14-02-2025	Majuba	3	2025/02/14 00:00:00	2025/05/07 23:59:00	GO
21925	MJ01UGO-05-01-2026	Majuba	1	2026/01/05 00:00:00	2026/06/03 23:59:00	GO and C&I Upgrade
21924	MJ06UIR-01-08-2026	Majuba	6	2026/08/01 00:00:00	2026/08/28 23:59:00	IR
19098	MJ06UIR-18-12-2026	Majuba	6	2026/12/18 00:00:00	2027/01/07 23:59:00	IR
21921	MJ02UGO-04-01-2027	Majuba	2	2027/01/04 00:00:00	2027/05/03 23:59:00	GO
21920	MJ05UIR-01-03-2027	Majuba	5	2027/03/01 00:00:00	2027/03/28 23:59:00	IR
21930	MJ02UIR-05-09-2025	Majuba	2	2025/09/05 00:00:00	2025/10/02 23:59:00	IR
21927	MJ03UIR-05-11-2026	Majuba	3	2026/11/05 00:00:00	2026/12/02 23:59:00	IR
21928	MJ04UGO-24-10-2027	Majuba	4	2027/10/24 00:00:00	2028/02/20 23:59:00	GO and C&I Upgrade
21931	MJ01UIR-02-01-2028	Majuba	1	2028/01/02 00:00:00	2028/01/29 23:59:00	IR
21929	MJ06UIR-09-03-2028	Majuba	6	2028/03/09 00:00:00	2028/04/05 23:59:00	IR
21939	MJ04UIR-01-05-2028	Majuba	4	2028/05/01 00:00:00	2028/06/04 23:59:00	IR & Hydro
21932	MJ05UGO-16-08-2028	Majuba	5	2028/08/16 00:00:00	2028/12/13 23:59:00	GO and C&I Upgrade
21933	MJ03UIR-17-10-2028	Majuba	3	2028/10/17 00:00:00	2028/11/13 23:59:00	IR
21936	MJ01UIR-18-01-2029	Majuba	1	2029/01/18 00:00:00	2029/02/14 23:59:00	IR
21935	MJ06UGO-21-02-2029	Majuba	6	2029/02/21 00:00:00	2029/06/20 23:59:00	GO

2.4 Management meetings

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

- 1.

Table 1

Title and purpose	Approximate time & interval	Location	Attendance by:
Scope clarification meetings	From 18 months before start-date of an outage	Majuba Power Station, Specific conference room TBA	Site Manager, System Engineer, Outage coordinator and Quality Inspectors
Outage Kick-off meeting	Just before start-date of an outage	Majuba Power Station, Specific conference room TBA	Site Manager, Outage Co-ordinator
Overall Outage contract progress and feedback	Daily at 08:30	Majuba Power Station, Specific conference room TBA	Employer, Contractor and <i>Supervisors</i>
Daily outage meeting	Daily at 09:30 or 10:00	Majuba Power Station, Production boardroom (U4 16m level)	Site Manager, System Engineer, Outage coordinator and Quality Inspectors
Risk register and compensation events	Weekly on Thursday at 10h00	Majuba Power Station, Specific conference room TBA	Employer, <i>Contractor</i>
Safety meeting	Weekly on Wednesday at 14h00	Majuba Power Station, Production boardroom (U4 16m level)	Safety Officer
Assessment meetings	After completion of each task order	Majuba Power Station, Specific conference room TBA	Site Manager, Supervisor, System Engineer, Outage coordinator

Title and purpose	Approximate time & interval	Location	Attendance by:
Post mortem meeting	After outage completion	Majuba Power Station, Specific conference room TBA	Site Manager, Supervisor, System Engineer, Outage coordinator and Quality Inspectors
Maintenance Opportunity planning meetings	Just before start-date of an opportunity	Majuba Power Station, Specific conference room TBA	Site Manager, Maintenance Supervisor

2. Meetings of a specialist nature may be convened at times and locations to suit the Parties.
 3. Records of these meetings shall be submitted to the *Service Manager* by the person convening the meeting within five days of the meeting.
 4. All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting.
 5. Such minutes or register shall not be used for confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.
- 2.

2.5 Contractor's management, supervision and key people

2.5.1 The key persons

Table 2

Key persons of <i>Contractor</i>				
Designation				
Name				
Experience				
Tel				

1. The *Contractor's* Site Manager ensures that only competent persons be allowed to work on plant. The Employer's Service Manager is entitled to verify the qualifications of the *Contractor*.
2. The *Contractor's* supervisors must be knowledgeable about the conditions and scope of work contained in this contract and capable of executing the scope of work.
3. The Employer may, having stated reasons, instruct the *Contractor* to remove a key person. The *Contractor* then arranges that, after one day, the key person have no further connection with the work included in this contract.
4. The *Contractor* may not replace any of the key persons, without prior written request and approval thereof from the Employer.

2.6 Police clearance

1. All *Contractor* personnel to undertake Police clearance
2. Certificates to be provided to the Service Manager at least 2 weeks before commencement of work
3. The Service Manager reserves the right to refuse entry to all persons whose criminal records indicate that their presence on site might create an unsafe and insecure environment to Majuba Power Station.
4. The following website can be used to guide the process.
http://www.saps.gov.za/services/applying_clearance_certificate.php

2.7 Supplier Development and Localisation Requirements

2.7.1 Small, Micro, Medium Enterprises

The *Contractor* supports local Small, Micro and Medium Enterprises by purchasing your material locally where such material is available

2.7.2 Supplier Development and Localisation Plan

“Local to site “means all areas that fall within the Dr Pixley Ka Seme Municipal area.

The *Contractor* is required

1. To provide a high level Supplier Development & Localisation implementation plan which stretches for the duration of the contract within one month after contract award.
2. To provide an explanation and action plan for deviation from the proposed plan
3. The *Contractor* is also required to submit its Human Resource Plans indicating the number of new jobs that would be created or retained due to this project.
4. The *Contractor* is required to procure general labour from Dr Pixley Ka Seme. Only skilled and professionals would be procured from outside of Dr Pixley Ka Seme Municipality Area.
5. The Candidates for Skills Development would be sourced from Dr Pixley Ka Seme first, then Mpumalanga, before the rest of RSA.
6. The candidates may be developed directly by the supplier, through the suppliers’ own supply network or through the SETA accredited training providers.
7. Candidates are to be currently unemployed graduates from FET (Further Education and Training) colleges, universities or matriculates. These candidates shall also be representative of the population demographics of Mpumalanga province

2.8 Management of work done by Task Order

1. Task Orders are issued per outage one month prior to the start of an outage The Task Order includes the scope of work for the specific outage.
2. A Task Order is the instruction to commence work.
3. No work shall commence until a Task Order is issued and has been finalised, accepted and signed by both the *Employer* and *Contractor*.
4. All work will be issued on a Task Order system. The Work Order, Purchase Requisition and Purchase Order will be created via the SAP PM system.
5. Task orders will be raised for all additional items. Assessments will be done after completion of the work for a specific outage or Maintenance opportunity. If the Outage duration exceeds 30 days, progressive assessments for actual hours worked and actual cost incurred will be performed

2.9 Contract change management

1. The *Service Manager* issues a Task order to the *Contractor* to authorise the execution of work.
2. In the event where it is identified that there is additional work to be done outside the scope of work on the Task Order, the *Contractor* will give the *Service Manger* an early warning with a written quotation.
3. If agreed, the *Service Manager* issues a revised Task Order or additional Task Order.
4. The *Contractor* starts the work on the starting date of the task order.
5. The Task Order is signed by both the *Service Manager* and the *Contractor* before work commences.

2.10 Low Service Damages

1. The low service damages will be applicable if the performance of the plant, where repair work was inadequately done, causes partial or full load losses. The following process and damages will apply:
 3.
 - a. The defect(s) will be reported to the *Contractor* as soon as the Employer becomes aware of the defect(s).
 - b. An opportunity will be arranged by the Employer for the repair and the *Contractor* will be notified at least 24 hours in advance of the opportunity to repair the defect(s).
 - c. The *Contractor* is to be notified immediately of the Unit trip. An opportunity will be arranged by the Employer for the repair and the *Contractor* will be notified at least 12 hours in advance of the opportunity to repair the defect(s).
 - d. If the inspection confirms that, the defect(s) is/are because of poor quality from the *Contractor's* work performed during an outage, a 0.5% damage of the total value of task orders raised for that outage per day will apply, until the defect(s) is/are resolved. The damages are capped at a maximum of 10% of the total of the task orders raised for that outage/maintenance breakdown.
 - e. If the inspection confirms that, the defect(s) is/are because of poor quality from the *Contractor's* work performed during a maintenance opportunity, a 2% damage of the total value of task orders raised for that opportunity in which the defect occurred, per day will apply, until the defect(s) is/are resolved. The damages are capped at a maximum of 15% of the total of the task orders raised for that opportunity.

Table 3

Low Service Damage Description	Value of Low Service Damages	Limit of Low Service Damage
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Low Service Damage Description	Value of Low Service Damages	Limit of Low Service Damage
1. Service delaying the Outage Critical Path agreed schedule or Delaying other <i>Contractor(s)</i> from starting/completing their work or delaying the RTS of the unit	2% per total value of the Task orders for the Outage / maintenance opportunity per day	Limited to 15% of the total value of the Task Order(s) for the outage
2. Service delays not finishing as per agreed upon project plan submitted and approved by the <i>Service Manager</i>	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the outage
3. Failure to submit documents as per agreed upon Contract Document Submittal Schedule in this service agreement	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
4. Failure to comply to hold and witness points on QCP's	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
5. Failure to update Daily Progress Report/program	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of Task Order Value
6. Failure to respond to an NCR within 3 days	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
7. Failure to resolve an NCR within 30 days	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity
8. Failure to Handover completed data books per outage within 14 days from outage completion.	0.5% per total value of the Task Order(s) for the outage per day	Limited to 10% of the total value of the Task Order(s) for the outage
9. Using Personnel which are not Qualified as per this service agreement	0.5% per total value of the Task Order(s) for the Outage / maintenance opportunity per day	Limited to 10% of the total value of the Task Order(s) for the Outage / maintenance opportunity

Low Service Damage Description	Value of Low Service Damages	Limit of Low Service Damage
10. Defect(s) is/are because of poor quality from the <i>Contractor's</i> work performed as per paragraph 3.13 during outages	0.5% per total value of the Task Order(s) for the outage per day	Limited to 10% of the total value of the Task Order(s) for the outage
11. Defect(s) is/are because of poor quality from the <i>Contractor's</i> work performed as per paragraph 3.13 during the maintenance opportunity	2% per total value of the Task Order(s) for the maintenance opportunity per day	Limited to 15% of the total value of the Task Order(s) for the outage

2.11 Documentation control

1. Safety files to be submitted and approved before maintenance and outage work commence as per client requirements, two weeks in advance for outages.
2. The *Contractors* Outage safety file will be handed over to the *Service Manager* after each outage
3. The *Contractor's* Maintenance Safety File will be kept up to date and audited on a monthly basis to cater for maintenance opportunities. It is the *Contractor's* responsibility to arrange the appointments with the Majuba Safety officers.
4. All NEC standard forms should be used eg. Task orders, Early Warnings, Defect certificates and Assessments.
5. The *Contractor* is responsible to plan the supply of the documentation during the various project stages and to provide the documentation in accordance with the *Contractor* Document Submission Schedule (CDSS). A document is thus any written or pictorial information describing, defining, specifying or certifying activities, requirements, procedures or results.
6. The *Contractor* submits all documentation on a formal transmittal form to the *Service Manager*.
7. All manuals, documents, drawings and engineering documentation shall be presented in British English in both software and hardware.
8. All Communications will be filed and kept on site as it is crucial to have the correct communication structures. These communication documents are to adhere to the NEC 3 Term Service Contract communication requirements.
9. Planned Outage Scope of work to be issued to *Contractor* from the client five months in advance
10. Budget quotation for outage work to be submitted one week after SOW submission/SOW clarification
11. Compensation for Occupational Injuries and Diseases (COID) Certificate and letter of good standing must be valid at all times and submitted to the *Service Manager* at each anniversary of the contract. These documents are to be submitted to the Eskom vendor database by the Contractor, before they expire.
12. Two hard copies of the completed data packs submitted to the Service Manager. An Electronic copy of all reports to be provided on CD/ DVD

2.11.1 Contractor Document Submission Schedule (CDSS)

Table 4

Document Name/Description	Date/Time documents to be submitted
Supplier Localisation plan	Two weeks after contract award
Supplier Localisation report	Quarterly at the 2 nd of each 4 th month after the contract start date
A programme in Primavera or MS Project format as referred to document number (240-85065548)	One week after receipt of Task Order for Outages, 8 hours after receipt of a Task Order for Maintenance opportunities
Baseline risk assessment	One week after receipt of Task Order for Outages, 8 hours after receipt of a Task Order for Maintenance opportunities
QCP's	One week after receipt of Task Order for Outages, 8 hours after receipt of a Task Order for Maintenance opportunities
Contractor's Safety file	Two weeks before start of work in case of outages Two weeks after contract award for maintenance work and to be Audited every 30 days
Safety file Audit	<ul style="list-style-type: none"> Outages: Every 30 days after approval of initial file until work for specific outage is complete. Maintenance: Every 30 days after approval of initial file till end of the contract for maintenance opportunities
Inspection report	24 hours after inspection activity
Progress report	After Every Shift during Outages, every 6 hours or less as per the Maintenance Supervisor agreement
Time clocking reports	Two weeks together with a forecast for future invoicing for outages. After completion of the work for maintenance opportunities
Technical report and data pack	Within 14 days of completion of the services (per outage) Within 3 days of completion of the services per maintenance opportunity
Updated monthly safety job statistics	1 st day of each month, using the reporting template that is provided by the Service Manager
Compensation for Occupational Injuries and Diseases (COID) Certificate and letter of good standing	At each anniversary of the contract or before current expiry dates on the documents.

2.12 Invoicing and payment

Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Service Manager's* payment certificate.

The *Contractor* shall address the tax invoice to
Accounts Payable Services
Eskom Holdings SOC Limited
Majuba Power Station
Private Bag 9001
Volkstrust
2470

and include on each invoice the following information:

1. Name and address of the *Contractor* and the *Service Manager*;
2. The contract number and title;
3. *Contractor's* VAT registration number;
4. The *Employer's* VAT registration number 4740101508;
5. Description of service provided for each item invoiced based on the Price List;
6. Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;

3 Health and safety, environment and quality assurance

3.1 Health and Safety Risk Management

1. The *Contractor* complies with the health and safety requirements contained in the General Works Information.
2. Eskom is a national key point and therefore strikes are not permitted. Strikes are to be managed by the *Contractor* at his/her own cost.
3. The *Contractor* to have a dedicated Safety Officer on site at all times when work is performed. The Safety Officer to preferably have a National Diploma, but at least have a SAMTRAC or equivalent qualification.

3.1.1 Statutory Safety

- 3.1.1.1 Site and or Workshop establishments involved in the execution of welding projects shall meet
the mandatory statutory health requirements as contained in the OSH Act and regulations 85 of 1993.

3.1.2 Health and Safety Arrangements

1. The *Contractor* must ensure that all his personnel attend a Health and Safety Induction Course prior to starting with the works. A one- (1) hour course will be provided by the Employer and will be valid for the duration of one- (1) year.

2. The *Contractor* shall comply with the guidelines set out in the Majuba Standard BIA/RM/STD/01 titled "Safety, Health and Environmental specifications to be met by Contractors"
3. Safety Risk Management has the right and authority to visit and inspect the Contractor's workplace or site establishment to ensure that tools, machinery and equipment comply with the minimum safety requirements.
4. The Employer's Representative shall be entitled to instruct the *Contractor* to stop work, without penalty to the Employer, where the Contractor's personnel fail to conform to safety standards or contravene health and safety regulations. The Employer's Representative is entitled to instruct the *Contractor* to discipline his employees and to enforce disciplinary action, and submit a report to the Employer's Representative. The *Contractor* shall implement additional health and safety precautions where necessary.
5. The following Health & Safety requirements should be complied with:
 - a. The *Contractor* must supply a Certificate of Competency of his/her employees to work under the following conditions:
 - i. Confined Spaces
 - ii. Heights
 - iii. Heat stresses
 - iv. Cold stresses
 - b. The *Contractor* to provide the Employer with proof of free issue of adequate Personal Protective Equipment (PPE) to be used by his/her employees (preferably SABS approved). All PPE to comply with the Eskom PPE specification 240-44175132
 - c. Noisy equipment and tools - no equipment or tools > 105db (A) may be supplied/utilised by the Contractor.
 - d. Sub-contractors - the principal *Contractor* must state if a sub-*Contractor* is going to be used and who the sub-contractor/s are. Proof must be given to Eskom that the sub-contractor/s has/ve the necessary competence and resources to carry out the work safely and to ensure that due care of the environment will be exercised.
 - e. Medical examination processes must be complied with.

3.1.3 Vehicle and driver safety

1. 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.
2. Transportation of passengers: open LDV's:

With effect from 31 May 2006, no Eskom 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 Eskom and *Contractor* employees – therefore the following will be enforced:

 - a. Ensure that no employee, including *Contractor* employees or any other person, when on an Eskom site and/or performing work for Eskom, is allowed to be transported in the back of open vehicles.
 - b. There will be cases where this may not be reasonable or practicable, namely where vehicles are used during line inspections on sites or on private roads, or similar cases, and in these cases such vehicles must be driven at less than 30km per hour or at a

speed suitable to the prevalent conditions. In such cases, the carrying of passengers in the back of such open vehicles could be explicitly allowed, after:

- i. a risk assessment has been carried out, indicating a very low risk;
- ii. mitigating factors have been identified to control any risk identified;
- iii. proper seating and handrails have been provided on the back of the open vehicle;
- iv. These measures have been discussed at the relevant Health and Safety Committee Meeting and approved by the *Employer*.
- v. is defined and contained in a formal written division's or BU's policy, including the appropriate mitigating factors;
- vi. Such a policy has been communicated to all employees and contractors.

The above risk assessment findings/outcomes must be available at all times for audit purposes.

- c. Tools and equipment must be properly secured.
 - d. Only authorised drivers may transport passengers.
 - e. Proof must be submitted on request in terms of valid roadworthiness of the vehicle/s.
 - f. The above must apply to on site and off site transportation of passengers.
 - g. No person may be transported in the back of vehicles closed by means of canopies, unless provided with factory-fitted or manufactured-approved, proper seating and safety belts, i.e. Crew cabs.
 - h. The driver must ensure that no employees are transported in the back of open vehicles unless it is allowed in terms of a divisional or BU-specific policy as referred to in paragraph b above. This also applies to *Contractor* and *Contractor* employees when performing work for Eskom.
 - i. The driver must ensure that all canopies are being properly fitted and secured and that all loose tools and objects in vehicles are properly secured.
 - j. The driver must ensure that their passengers are seated and wear seatbelts at all times.
- 4.

3.1.4 Vehicle Standard minimum specifications

1. *Contractor* vehicles are to comply with the requirements specified in the Eskom Vehicle Safety Specification 32-345.
2. The standard minimum specifications are applicable to all Eskom-owned vehicles and vehicles used when performing work for Eskom Holdings SOC Limited and its subsidiaries, including contractors (subsidised transport, contractors, consultants, and any person insured directly or indirectly by Eskom, driving a vehicle within or beyond the borders of South Africa). This includes vehicles owned, hired or leased by Eskom or its subsidiaries or any vehicle an employee makes available for Eskom-related business purposes.
3. All vehicles used for Eskom business shall meet the following requirements:
 - a. Factory-fitted antilock braking system (ABS) for all vehicles.
 - b. Factory-fitted driver and passenger air bags.
 - c. Alarm/immobiliser, factory-fitted, and if not available by the manufacturer, it shall be fitted at approved fitment centres.
 - d. Factory-fitted power steering.
 - e. Tyres as per the manufacturer's specifications for the intended purpose.

- f. Two emergency warning triangles.
- g. Factory-fitted air conditioner.
- h. Reverse beeper shall be standard on all heavy commercial vehicles, buses and construction equipment or vehicles being used on construction sites.
- i. Refer to the standard for specific requires for Light Delivery Vehicles (LDVs), Heavy Commercial Vehicles, Minibuses, Midi-buses and buses, Trailers and caravans, Construction vehicles and Other requirements.

3.1.5 Hot Work

The *Contractor* to comply with Eskom's Hot Work procedure.

1. The Hot Work Monitor must be in possession of the following qualifications and training:
 - a. Basic fire extinguisher training
 - b. Hot work monitor training
 - c. Broad knowledge of welding, cutting, brazing, grinding, soldering and other hot work activities
 - d. Must be able to read and write English
2. Hot work approval

Before hot work operations begin in a non-designated location, a hot work approval is required. Before the hot work approval is issued, the following conditions are to be verified by the Hot Work Monitor:

 - a. Hot work equipment to be used shall be in satisfactory operating condition and in good repair.
 - b. Where combustible materials, such as paper clippings, wood shavings, or textile fibres are on the floor, the floor shall be swept clean for a radius of 11m. Combustible floors (except wood on concrete) shall be kept wet, be covered with damp sand, or be protected by non-combustible or fire retardant shields.
 - c. Where floors have been wet down, personnel operating arc-welding equipment shall be protected from possible shock.
 - d. All combustibles shall be relocated at least 11m horizontally from the work site. If relocation is impractical, combustibles shall be protected with fire retardant covers or otherwise shielded with metal or fire retardant guards or curtains. Edges of covers at the floor shall be tight to prevent sparks from going under them, including where several covers overlap when protecting a large pile.
 - e. Openings or cracks in walls, floors, or ducts within 11m of the site shall be tightly covered with fire retardant or non-combustible material to prevent the passage of sparks to adjacent areas.
 - f. Conveyor systems that might carry sparks to distant combustibles shall be shielded.
 - g. If hot work is done near walls, partitions, ceilings, or roofs of combustible construction, fire retardant shields or guards shall be provided to prevent ignition.
 - h. If hot work is to be done on a wall, partition, ceiling, or roof, precautions shall be taken to prevent ignition of combustibles on the other side by relocating combustibles. If it is impractical to relocate combustibles, a fire watch on the opposite side from the work shall be provided.
 - i. Hot work shall not be attempted on a partition, wall, ceiling, or roof that has a combustible covering or insulation, or on walls or partitions of combustible sandwich type panel construction.

- j. Hot work that is performed on pipes or other metal that is in contact with combustible walls, partitions, ceilings, or other combustibles shall not be undertaken if the work is close enough to cause ignition by conduction.
 - k. Fully charged and operable fire extinguishers that are appropriate for the type of possible fire shall be available immediately at the work area. If existing hose reels are located within the hot work area defined by the permit, they shall be ready for service, but shall not be required to be unrolled or charged. (Loan extinguishers are available from the Fire Department)
 - l. If hot work is done in close proximity to a sprinkler head, a wet rag shall be laid over the head and then removed at the conclusion of the welding or cutting operation. During hot work, special precautions shall be taken to avoid accidental operation of automatic fire detection or suppression systems (for example, special extinguishing systems or sprinklers)
 - m. Nearby personnel shall be protected against heat, sparks, slag, and so on
 - n. All welding machines and cutting torch trolleys are to be equipped with at least a 2,5kg dry powder fire extinguisher.
 - o. If hot work has to be done in high-risk areas where fire systems cannot be impaired, a welding tent should be built around the object to be worked on i.e. Bulk Fuel Oil Plant.
3. Appointment of Hot Work Monitors
- a. Eskom and each *Contractor* Company that is required to perform hot work shall appoint in writing at least one (1) hot work monitor for normal day-to-day maintenance related hot work/ outage related hot work. Additional hot work monitors may be appointed if the workload requires such appointments.
4. Hot Work Approval
- a. The hot work monitor must complete a hot work approval form (Form Part 1). as per 32-681 Plant Safety Regulations
- Refer to the procedure for further information.

3.1.6 Confined Spaces

Such As Vessels, Mills, Culverts, Flues, Furnaces, Ducts, Pits, Sewers, Tunnels and Underground Chambers (Refer General Safety Regulation 5 of the OHS Act)

1. At least one door or manhole giving access to each confined space must be provided with a means to lock such door or manhole in the open position. A confined space warning sign must also be attached next to such entrance of a confined space when entry into this area will be required.
2. The door or manhole concerned must be locked in the open position and a confined space warning sign attached before any person is allowed to enter such confined space. The locking, or other preventative measure, must constitute an integral part of the isolation required before the permit to work is issued. Where such a door or manhole cover must be removed by a maintenance person, provisos similar to those stipulated under (section 17.2 c and 7.11.2 b) must apply.
3. Before any door giving access to a confined space is closed, the person closing such door must ensure that there are no persons inside the confined space, and that all tools, equipment and debris have been removed.

4. Where a confined space can be isolated and adequately ventilated, this must be done before the space is environmentally tested and certified clear of all dangerous gases. Thereafter a gas test certificate and an environmental certificate must be issued before any person is allowed to enter. In addition:
 - a. Adequate ventilation, gas monitoring and thermal stress monitoring (heat stress – WBGT index - cold stress) must be maintained while persons remain in the space.
 - b. Only approved lighting and portable electrical tools shall be allowed, (Refer Electrical Machinery Regulation 10 of the Act).
 - c. A permit to work must be issued.
5. Where there is a possibility of dangerous substances being present in a confined space which cannot be effectively isolated and adequately ventilated, the following measures must be taken before any person is allowed to enter that space:
 - a. All practical steps must be taken to prevent the ingress of dangerous substances.
 - b. Every person who enters the confined space must wear approved self-contained breathing apparatus and must have competency for the equipment.
 - c. Every person who enters the confined space must wear a safety harness to which a rescue line is attached.
 - d. A rescuer must remain on duty outside the confined space and this person must maintain communication with those inside the confined space. The rescuer must control the rescue line(s) attached to the safety harness (es) and must assist in the removal of any person from the confined space in the case of an emergency. An additional set of breathing apparatus must be available for the use of the rescuer.
 - e. Adequate steps must be taken to ensure that all persons wearing breathing apparatus are withdrawn from the confined space before the end of the specified working duration of the breathing apparatus.
 - f. A permit to work must be issued.
6. Where it is not possible to reduce the WBGT index to be below 30 for manual work, access shall only be allowed, if relevant training has been done and a local procedure is in place that explains in detail the access control and health and safety precautions as described in the environmental regulations. (Refer Environmental Regulations for Workplaces 2(4) of the Act).
7. If the original scope of work changes, a new permit to work must be issued, or if hazardous substances are used, the risk assessment, pre-work checklist, the environmental certificate, gas test certificate shall be re-evaluated and re-issued as required.

5.

3.1.7 Working on Heights

General

1. Wherever reasonably practicable, preference is given to the performance of work at ground level as opposed to in an elevated position.
2. Where work in an elevated position is necessary, preference is given to fall prevention measures such as, but not limited to, effective barricading and the use of work platforms.
3. Persons may only work from a fall risk position if a site-specific fall protection plan is in place and correctly implemented and consists of the following:
 - a. All appointments for the fall protection plan developer and implementer are in place.

- b. One risk assessment, which is specific and incorporates the working at height risk assessment, as well as the site-specific risk assessment, has been completed for the work to be conducted.
- c. Safe working procedure/task analysis and work instructions, approved by a competent person, are in place.
- d. A fall rescue plan, along with necessary equipment and trained rescuers, is in place.
- e. Appropriate training, as determined by the risk assessment, has been provided.
- f. Appropriate height safety equipment and personal protective equipment have been issued to the individual.
- g. There are equipment inspection procedures and up-to-date inspection records.
- h. Individuals are medically fit to work at height, and records of this are kept.
- i. A site-specific risk assessment is performed.
- 4. While work is in progress, adequate warning signs and/or barricades shall be used in all areas where there is a risk of persons being injured by materials or equipment falling from the work area. Barricades should be continuous and easily visible.
- 5. A drop zone shall be established with appropriate warning signs and barrier tape or barricading, warning personnel below of workers above and potential falling objects.
- 6.

3.1.8 Risk Assessment

- 1. A risk assessment allows for careful examination of what could cause harm to people because of a work activity, and it allows one to take the necessary precautions to prevent the harm from occurring.
- 2. The following hierarchy of controls has to be observed.
 - a. When considering work at height, a risk assessment must be conducted, form part of the health and safety plan to be applied on site and must include;
 - i. the identification of the risks and hazards to which persons may be exposed to;
 - ii. an analysis and evaluation of the risks and hazards identified based on a documented method;
 - iii. a documented plan and applicable safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
 - iv. a monitoring plan; and
 - v. a review plan
 - b. Working at height risk assessments shall take into account factors such as:
 - i. the necessity for the work to be done in an elevated position as opposed to on the ground;
 - ii. barricading and other fall prevention measures;
 - iii. requirements of the safe work procedure;
 - iv. restrictions in fall distances and clearances;
 - v. mobility required for the task, for example, degree of vertical or horizontal movement;
 - vi. height being worked at;

- vii. possible injuries;
 - viii. duration of exposure;
 - ix. frequency of performing these activities;
 - x. type of work and ergonomic considerations;
 - xi. work site/area congestion;
 - xii. potential/likelihood/causes of a fall occurring;
 - xiii. endurance of workers;
 - xiv. risk control measures;
 - xv. electrical hazards and safe clearances from overhead power lines;
 - xvi. structure (ease of access, secure footing, and compatibility with fall prevention and/or fall arrest equipment);
 - xvii. terrain;
 - xviii. restrictions with reference to working alone (a rescue must always be executable);
 - xix. falling objects; and
 - xx. suitable anchor points.
- c. Develop approved written safe work procedures/task analysis and work instructions for all elevated work and make them available to all persons carrying out the work. Standard procedures may be suitable for most work; however, unusual conditions or architectural features may require additional site-specific procedures. The person supervising the work must ensure that safe work procedures/task analysis and work instructions are followed at all times.
 - d. In the design phase, consider fall risks with regard to minimising risk, ease of access, anchor points, and avoidance as far as reasonably practicable.
 - e. The risk assessment will determine the selection of suitable work at height equipment and systems for the work to be performed safely.
 - f. Be aware of hazards resulting from adverse weather conditions, and where necessary, modify the work method accordingly.
 - g. Determine the content and intervals of planned job observations during the risk assessment.
 - h. The risk assessment must include the rescue plan.
 - i. Persons working alone should have a practical way of performing a rescue in the event of an incident.
 - j. Risk assessments must be performed and documented by competent persons. The mitigation process from the risk assessments must influence the content of the fall protection plan.
 - k. In the case of live work, work has to be conducted according to standards and procedures while maintaining minimum safe working clearance.

- I. Take into account the risks associated with objects falling from heights. Tools and equipment must be safely secured and attached to the body or structure.

3.1.9 Fall Protection Plan

1. A task-/job-specific fall protection plan shall be developed and approved by a competent person for any activity where there is a risk of a fall.
2. A competent fall protection plan developer must be appointed according to 10(1)(a) of the Construction Regulations.
3. The fall protection plan shall include a task-/job-specific risk assessment and requirements relating to the following:
 - a. Training programme for employees working from a fall risk position
 - b. Appointments and authorisations
 - c. The procedure addressing the inspection, testing, and maintenance of all fall protection equipment
 - d. A risk assessment that is site-specific with regard to fall risks for work to be performed
 - e. The processes for evaluation of the employees' medical fitness necessary to work in a fall risk position and the records of this (medical surveillance programme)
 - f. Equipment use and specification
 - g. Fall prevention, fall arrest, and fall rescue
 - h. Method statements or safe work procedures/task analysis/work instructions.
4. The fall protection plan and its requirements shall be integrated into the health and safety plan.
5. Adherence to the fall protection plan is mandatory. An induction on the fall protection plan must be carried out for all relevant employees.
6. The fall protection plan must be suitably amended in accordance with the risk assessment, equipment technology, standards, and legislation.
7. The fall protection plan must be monitored and reviewed as required by the work performed and changes in hazards.

FAS Training (Fall Arrest System)

1. All users of height safety equipment for working at height must be trained, assessed and declared competent for the specific height safety equipment and associated structures.
2. Only service providers accredited by Eskom to present the basic Fall Arrest System and Rescue Course as per the working at heights procedure will be accepted and recognised as competent to provide competency for working at heights training. A list of the Eskom Accredited Service providers can be obtained from the Service Manager.
3. Validity of FAS and rescue training
 - a. There shall be no expiry date on official training, but at least one job observation on each user per annum, for example by a peer.
 - b. There shall be no expiry date on the certificate, but only the date of training.
 - c. Evaluation to be conducted every three years by an accredited trainer.
4. The need for refresher training is determined by the employer, taking into account factors such as period of inactivity and changing circumstances as determined by risk assessments and job observations.

5. Refresher training/workshops for rescue need to be run on a regular basis, at least six-monthly.
6. At least two persons per team have to be able to perform rescues if work at height is involved.
7. All personnel trained to perform rescues will be trained to first aid Level 2.
8. Documented training records for all work at height training must be maintained.

Procurement

3.2 Health and safety facilities on the Affected Property

3.2.1 Waste Disposal:

Refer to the General Works Information

3.2.2 Medical Facilities:

Refer to the General Works Information

3.3 Site Services and Facilities

3.3.1 Provided by the *Employer*

1. Toilets at the four corners of the power station

3.3.2 Provided by the *Contractor*

1. Accommodation
2. Transport
3. Meals. The *Contractor* or any of his employees or subcontractors may buy take away meals from the fast food outlet on site, if available.
4. Telecommunications
5. Everything else necessary for providing the Service

4 List of drawings

4.1 Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

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

Drawing number	Revision	Title

Figure 1 – Boiler layout

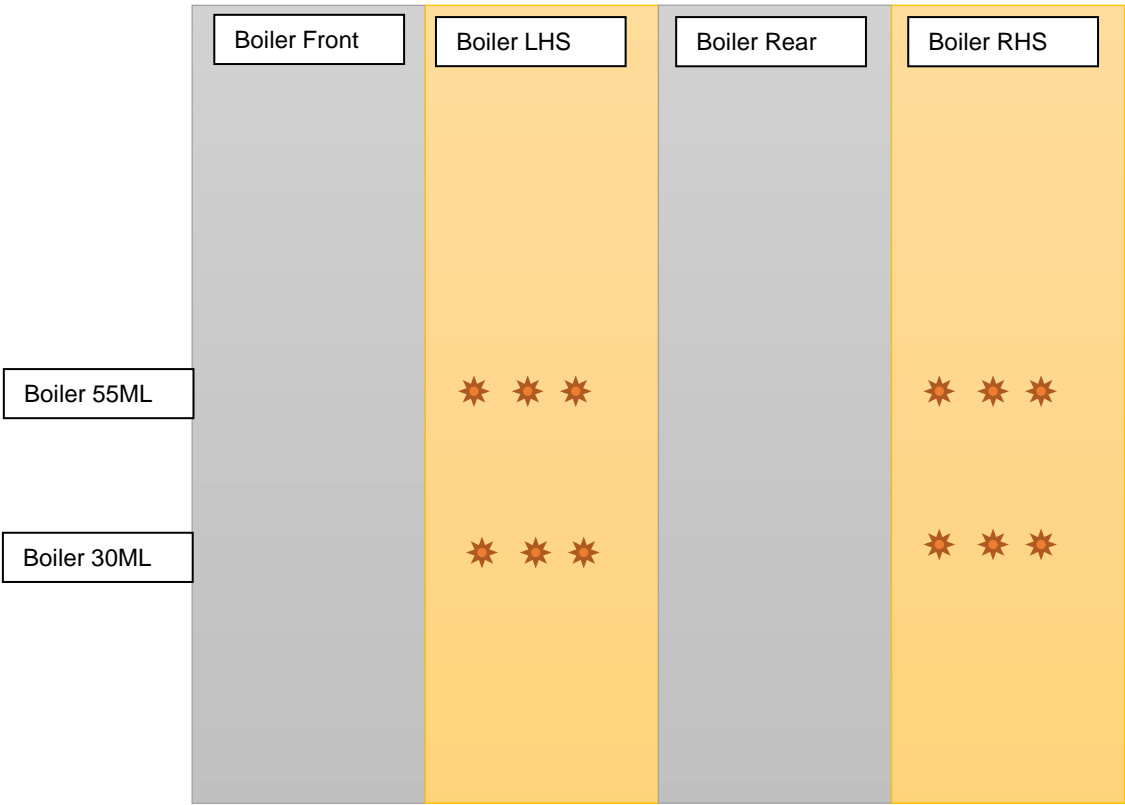
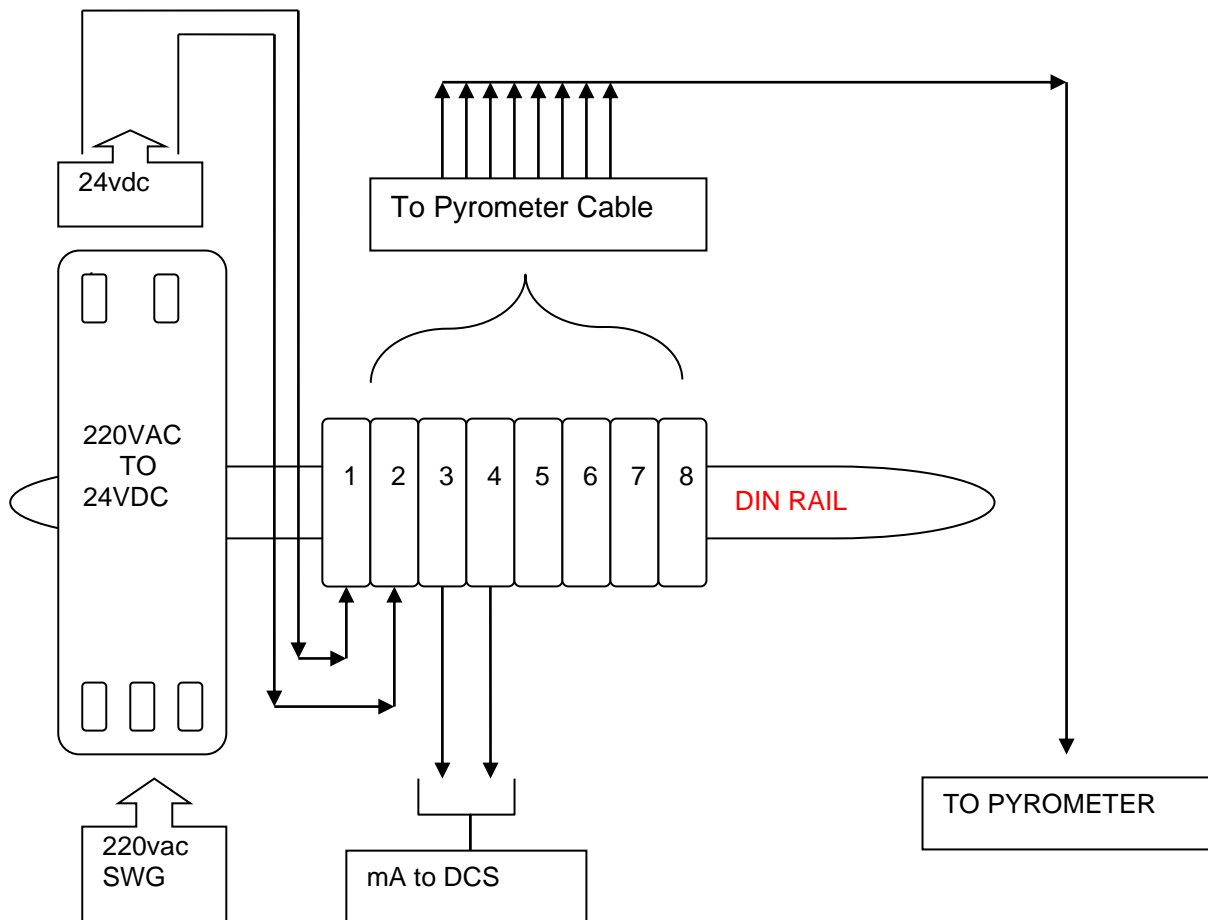


Figure 2 – Possible wiring

Terminals Wiring:

- | | |
|-----------|-----------------------|
| 1. Red | - Positive Supply |
| 2. Black | - Negative Supply |
| 3. Blue | - Negative mA[Blue-S] |
| 4. Yellow | - Positive mA[Red-S] |
| 5. Pink | - Comms Cable-RS232 |
| 6. Violet | - Comms Cable-RS232 |
| 7. White | - Comms Cable-RS232 |
| 8. Grey | - Screen |



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SIEMENS PZ20.05
ARDOMETER LENS m.

