



NEC3 Engineering and Construction

Short Contract (ECSC3)

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

and

for **The Refurbishment of the Palmiet Headrace Hydraulic System**

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C1 Agreements & Contract Data

C1.1 Form of Offer and Acceptance

Offer

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

THE REFURBISHMENT OF THE PALMIET HEADRACE HYDRAULIC SYSTEM

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

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

The offered total of the Prices exclusive of VAT is	R
Value Added Tax @ 14% is	R
The offered total of the Prices inclusive of VAT is	R
(in words)	

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

Signature(s)

Name(s)

Capacity

**For the
tenderer:**

(Insert name and address of organisation)

Name &
signature of
witness

Date

Tenderer's CIDB registration number:

Acceptance

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

The terms of the Contract, are contained in:

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

Part 2 Pricing Data

Part 3 Scope of Work: Works Information

Part 4 Site Information

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

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of Offer and Acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be signed by the duly authorised representative(s) for both parties.

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

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the tenderer receives one fully completed and signed copy of this document, including the Schedule of Deviations (if any) together with all the terms of the contract as listed above.

Signature(s)

Name(s)

Capacity

for the
Employer

(Insert name and address of organisation)

Name &
signature of
witness

Date

Note: If a tenderer wishes to submit alternative tender offers, further copies of this document may be used for that purpose, duly endorsed, 'Alternative Tender No. _____'.

Schedule of Deviations

Note:

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

No.	Subject	Details
1		
2		
3		
4		
5		
6		
7		

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

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

For the tenderer:

For the Employer

Signature

Name

Capacity

On behalf
of

(Insert name and address of organisation)

(Insert name and address of organisation)

Name &
signature
of witness

Date

C1.2 Contract Data

Data provided by the *Employer*

Clause	Statement	Data
General		
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 & 14.4	The <i>Employer's</i> representative to whom the <i>Employer</i> in terms of clause 14.4 delegates his actions ¹ is (Name):	Alkino van Wyk
	Address	Palmiet Pumped Storage Scheme, Off N2 East, Grabouw, 7160
	Tel No.	021 859 9278
	Fax No.	N/A
	E-mail address	vwykal@eskom.co.za
11.2(11)	The <i>works</i> are	The Refurbishment of the Palmiet Headrace Hydraulic System
11.2(13)	The Works Information is in	the document called 'Works Information' in Part 3 of this contract.
11.2(12)	The Site Information is in	the document called 'Site Information' in Part 4 of this contract.
11.2(12)	The <i>site</i> is	Palmiet Power Station
30.1	The <i>starting date</i> is.	31 January 2023
11.2(2)	The <i>completion date</i> is.	31 April 2023
13.2	The <i>period for reply</i> is	<ul style="list-style-type: none"> • 1 working day for offsite work • 24 hours during on-site work • 24 hours after installation
40	The <i>defects date</i> is	52 weeks after Completion of the whole of the works.
41.3	The <i>defect correction period</i> is	3 days
50.1	The <i>assessment day</i> is the	After completion of each activity.
50.5	The <i>delay damages</i> are	R5000 per day

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

50.6	The retention is	10% (5% will be refunded after contract completion and 5% after defects correction period)
51.2	The interest rate on late payment is	0.5%
80.1	The <i>Contractor</i> is not liable to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property in excess of	the amount of the deductibles relevant to the event described in the applicable "Format ECSC3" policy available on http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx
82.1	The <i>Employer</i> provides this insurance	as stated for "Format ECSC3" available on http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx (See Annexure A for basic guidance)
82.1	The minimum amount of cover for the third insurance stated in the Insurance Table is:	whatever the <i>Contractor</i> deems necessary in addition to that provided by the <i>Employer</i> .
82.1	The minimum amount of cover for the fourth insurance stated in the Insurance Table 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)
	Does the United Kingdom Housing Grants, Construction and Regeneration Act (1996) apply?	No
93.1	The <i>Adjudicator</i> is	Either state the name of the person selected & complete the contact details below, or include the following statement as an alternative: the person selected from the Eskom Panel of Adjudicators listed in Annexure B to this Contract Data by the Party intending to refer a dispute to him. Address [•] Tel No. [•] Fax No. [•] e-mail [•]
93.2(2)	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 London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body

93.4	The <i>tribunal</i> is:	arbitration.
	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.

The conditions of contract are the NEC3 Engineering and Construction Short Contract (April 2013)²³ and the following additional conditions Z1 to Z11 which always apply:

Z1 Cession delegation and assignment

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

Z2 Change of Broad Based Black Economic Empowerment (B-BBEE) status

- Z2.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor's* B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.
- Z2.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Employer* within thirty days of the notification or as otherwise instructed by the *Employer*.
- Z2.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the *starting date* the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor's* obligation to Provide the Works.
- Z2.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are those stated in Clause 91.1 and the amount due on termination includes amounts listed in Clause 92.1 less a deduction of the forecast additional cost to the *Employer* of completing the *works*.

Z3 Ethics

- Z3.1 Any offer, payment, consideration, or benefit of any kind made by the *Contractor*, which constitutes or could be construed either directly or indirectly as an illegal or corrupt practice, as an inducement or reward for the award or in execution of this contract constitutes grounds for

² If June 2005 Edition applies, delete April 2013 and insert June 2005

³ State whether attached as a 'PDF' file in terms of Eskom's licence, or to be obtained from Engineering Contract Strategies Tel 011 803 3008, Fax 086 539 1902 or www.ecs.co.za.

terminating the *Contractor's* obligation to Provide the Works or taking any other action as appropriate against the *Contractor* (including civil or criminal action).

- Z3.2 The *Employer* may terminate the *Contractor's* obligation to Provide the Works if the *Contractor* is found guilty by a competent court, administrative or regulatory body of participating in illegal or corrupt practices.

Such practices include making of offers, payments, considerations, or benefits of any kind or otherwise, whether in connection with any procurement process or contract with the *Employer* or other people or organisations and including in circumstances where the *Contractor* or any such member is removed from the an approved vendor data base of the *Employer* as a consequence of such practice.

- Z3.3 If the *Employer* terminates in terms of this clause, the procedures on termination are those stated in Clause 91.1 and the amount due on termination includes amounts listed in Clause 92.1 less a deduction of the forecast additional cost to the *Employer* of completing the *works*.

Z4 Confidentiality

- Z4.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to others except where required by this contract. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to others where required by this contract the *Contractor* ensures that the provisions of this clause are complied with by the recipient.
- 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 *Employer*.
- 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 *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Employer*. All rights in and to all such images vests exclusively in the *Employer*.
- Z4.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z5 Waiver and estoppel: Add to clause 12.2:

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

Z6 Health, safety and the environment

- 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 *works*. Without limitation the *Contractor*:
- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Site;
 - warrants that the total of the Prices as at the Contract Date includes a sufficient amount for

proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of *works*; and

- undertakes, in and about the execution of the *works*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

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

Z7 Provision of a Tax Invoice and interest. Add to clause 50

Z7.1 The *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer's* procedures stated in the Works Information, showing the correctly assessed amount due for payment.

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

Z7.3 The *Contractor* is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer's* VAT number 4740101508 on each invoice he submits for payment.

Z8 Notifying compensation events

Z8.1 Delete from the last sentence in clause 61.1, "unless the event arises from an instruction of the *Employer*."

Z9 *Employer's* limitation of liability; Add to clause 80.1

Z9.1 The *Employer* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand).

Z10 Termination: Add to clause 90.2, after the words "or its equivalent":

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

Z11 Addition to Clause 50.5

Z11.1 If the amount due for the *Contractor's* payment of *delay damages* reaches the limits stated in this Contract Data (if any), the *Employer* may terminate the *Contractor's* obligation to Provide the Works.

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

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. For the purpose of works contracts likely to be let under this contract (low value straight forward work), insurance provided by Eskom (the *Employer*) has been arranged on the basis of "Format ECSC3" as described on the web link given at the foot of this page.
2. Tendering contractors should note that cover provided by the *Employer* is only per the policies available on the internet web link listed below under the Format ECSC3 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 82.1. In terms of clause 82.1 "The *Contractor* provides the insurances stated in the Insurance Table. The *Contractor* does not provide an insurance which the *Employer* is to provide as stated in the Contract Data". 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.
3. When 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.
4. 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

Annexure B: The *Employer's* Panel of Adjudicators

The following persons listed in alphabetical order of their surname have indicated their willingness to be included in the Eskom Panel of Adjudicators. Their CV's may be obtained by using the contact details provided.

Name	Location	Contact details (phone & e mail)
Nigel ANDREWS	Gauteng	+27 11 836-6760 nigela@quoin.net
Andrew BAIRD	Gauteng	+27 11 803 3008 andrewbaird@ecsconsult.co.za
Christopher BINNINGTON	Gauteng	+27 11 888-6141 cdb@bca.co.za
Bruce LEECH	Gauteng	+27 11 290 4000 leech@counsel.co.za
Nigel NILEN	Gauteng	+27 11 465 3601; nilences@global.co.za
Peter THURLOW	Gauteng	+27 11 787 6226 info@thurlowassoc.com

Information about the Panel and appointment of the selected *Adjudicator* is available from Supply Chain Operations management, by contacting Leighton Itholeng on 011 800 4031 or [Leighton.Itholeng@eskom.co.za]

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

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

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

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

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

C2 Pricing Data

C2.1 Pricing assumptions

Entries in the first four columns in the Price List are made either by the *Employer* or the tendering contractor

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

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

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

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

C2.2 Price List

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

Item no.	Description	Unit	Quantity	Rate	Price
1.	Labour Cost (per skill / tradesman involved with the works)				
2.	Spares, materials and equipment				
3.	Transportation Costs				
The total of the Prices (excluding VAT):					

C3: Scope of Work

C3.1 Works Information

Executive Overview

This specification details the requirements for refurbishment of the hydraulic cylinder manifold, piping and powerpack of the Headrace Emergency Gate at Palmiet Pumped Storage Scheme. The purpose of the works is to ensure the emergency gate functions as per original design.

The works makes provision for refurbishment, functional testing, and recommissioning of: (1) Hydraulic power pack.

(2) Pipework. (3) Valves.

(4) Manifold.

The Palmiet Pumped Storage Scheme comprises of two dams, the lower Kogelberg dam on the Palmiet River south of Grabouw and the upper Rockview dam on the watershed between the Palmiet and Steenbras rivers. The scheme was commissioned in May 1988. It has 2 Single-stage reversible Francis turbines. The power station is situated about 2 km upstream of the Kogelberg Dam wall. Each Unit produces 200MW.

The Hydraulic Emergency Gate is provided to plug and stop flow from the reservoir into the waterway in an emergency. It is also used during normal outages to close the waterway (gate lowered) before lowering the stop logs into position. The control equipment (Power pack) of the Emergency Gate is provided to operate a hydraulic cylinder which is 350/210mm diameter with an 8000mm stroke. The hydraulic power pack is installed in a control room, next to the hydraulic cylinder. A manifold block is fitted on the end of the piston rod. The hydraulic cylinder is vertically orientated with the piston rod facing up and fixed on a support; the cylinder barrel moves up and down and oil flow through the hollow piston rod. Two duty hoisting pumps (each approx. 15 l/min, 17,0MPa) are provided and two leakage oil pumps each approx. 5 l/min and 17,0MPa.

The lowering of the emergency gate and extension of the cylinder is achieved by the weight of gate alone with a speed of approx. 11 m/min. This is achieved using an adjustable flow control valve on the manifold block. Oil flows from the cylinder annular side through the manifold block to the piston side, replacement oil is supplied from the reservoir. This system has been in operation since 1988 and has not been refurbished yet.

Trending of the emergency gate leakage pump starts indicated a fluctuating frequency over time of the starting of the hydraulic pump which is indicative of an internal leak or passing of oil within the power pack resulting in the lowering of the emergency gate. This may be due to dirty oil or a seal in one of the valves passing. No external oil leak is visible on the cylinder, piping or in the power pack. The activation of a position limit switch fitted to the cylinder rod causes the hydraulic pump to start which automatically raises the gate to the top position. It is recommended to refurbish the power pack, manifold block and piping of the emergency gate during the next 18 monthly water way inspection in Palmiet Pumped Storage Scheme.

1. DESCRIPTION OF THE WORKS

The works is the refurbishment of the powerpack components, the cylinder manifold block and the corrosion treatment of corroded piping and the replacement of a section of piping with a flexible hose, see section 4.2.

The refurbishment of the powerpack valves and Cylinder Manifold Valve include cleaning, the replacement of seals and O-rings, the replacement of solenoids and the functional and pressure testing of the valves. Electric motors are function tested, and bearings are replaced. Gear pumps are serviced, and pressure tested. Components are reworked until pressure and functional tests are passed. All filters are replaced. The *Contractor* assembles the hydraulic system and performs a functional test of the system as part of the commissioning procedure

The refurbishment of the hydraulic cylinder does not form part of the scope of the works.

1.1. Technical specifications

4.1.1 Pipework in Power Pack

Tube	:	Seamless Precision Steel Tube
Tube Specification	:	According to DIN391/C
Size	:	15 X 2 and 22 X 2
Design Pressure	:	37.6 MPa
Size	:	22 X 2
Design Pressure	:	37.6 MPa

4.1.2 Hydraulic Cylinder Supply Pipe

Plant Design Standard	:	ASME B31.1
Pipe Specification	:	ASTM A106 Grade B
Size	:	80NB
Design Pressure	:	10.3 MPa
Test Pressure	:	

4.1.3 Flange : Raise-face

Material	:	BS 1501 -151 Grade 23A
Design Standard	:	BS 4504
Rating	:	Table 16/3
Size	:	80NB
Working Pressure	:	10.3 MPa
Bolts	:	8
Size	:	M16/65 (galvanized)

4.1.4 Flexible Hoses in power pack: 4 Spiral

Design Standard	:	SAE 100 R9
Size	:	1/2"
Working Pressure	:	28.0 MPa
Test Pressure	:	56.0 MPa
Size	:	3/4"
Working Pressure	:	21 MPa
Test Pressure	:	41 MPa
Mounting	:	Flange
Enclosure	:	IP 55
Insulation Class	:	F
Anti-condensation Heater	:	220v / 50Hz
Starting-current	:	1.7A
Efficiency	:	86.5% F.L
Power Factor	:	0.84 F.L

4.1.5 Pipe Surface Preparation

Internal and External	:	Abrasive clean and passivate
Coating		
Internal:	None	
External:	Primer Coat. Apply one coat Epoxy Red Oxide/Zinc Chromate by brush or spray.	
Thickness:	3 micrometers.	
Undercoat:	Apply one coat Polymide cured Epoxy undercoat by brush or spar. Thickness: 25 micrometers.	
Final coat	:	Apply one coat twin pack Polyurethane Enamel by brush or spray.
Thickness:	25 micrometers.	
Colour:	BS4800 06-C-39 Saddle Brown	

4.1.6 88 QHA & 88 QHB Electric Motors

Qty:	4 off
Manufacturer :	Siemens
Type:	IEC 34-1
Power Rating:	7.5kW
Frame Size:	D 132 M
Speed:	1450 rpm
Voltage / Frequency:	380V / 50Hz
Mounting:	Flange
Enclosure:	IP 55
Insulation Class:	F
Anti-condensation Heater:	220v / 50Hz
Starting-current:	1.7A
Efficiency:	86.5% F.L
Power Factor:	0.84 F.L

4.1.7 Fixed Displacement Gear Pump

Qty	2 off
Manufacturer:	Bosch
Type:	External Toothing Gear Pump
Specification To:	VDI 3276
Displacement:	14 cm ³ / rev
Ambient Temp. Range:	-15 c to 60 °C
Max. Continuous Pressure:	25.0 MPa
Max. Peak Pressure:	30. 0 MPa
Hydraulic Fluid Temp. Range:	-15 to 80 °C

4.1.8 Hand Pump

Qty	1 off
Manufacturer:	American Bosch
Displacement:	20 x 10-3 / rev

4.1.9 Direction control valve

Qty	1 off
Design:	Seated Ball Valve
Mounting:	Subplate
Operating Pressure:	35.0 MPa
Rated Flow:	12 l/min at 0.5 MPa
Solenoid Voltage / Frequency:	48V DC

4.1.10 Fixed Displacement Gear Pump

Qty	2 off
Specifications to:	VDI 3267
Construction:	Spool Valve
Mounting:	Subplate
Operating Pressure:	35.0 MPa
Viscosity Range:	10 to 500 mm ² /s
Fluid Temp. Range:	-25 to 80 °C
Rated Flow:	20 L/min at 0.1 MPa
Duty Cycle:	100%
Enclosure:	IP 55 to IEC and DIN 40050
Voltage / Frequency:	48V DC
Power Supply:	Plug Connector to DIN 43650 with Indicating Lamp
Power Rating:	(a) Pick Up 30 kW (b) Holding 30 W

Solenoid Insulating Group: C VDE 110 x 5

4.1.11 Fixed Displacement Gear Pump Filter

Qty	2 off
Type:	Duplex in line filter
Operating Pressure:	2.5 MPa
Nominal Pressure:	90 L/min
Filter:	Glass Fiber
Degree of Filtration:	50 Micron Absolute
Beta 10 Rating:	105
By-Pass Relief Pressure:	0.2 MPa

EPE Filter Elements are manufacture in accordance with the following standards.

ISO 2941	Collapse/ Burst Resistance
ISO 2942	Fabrication Integrity
ISO 2943	Material Compatibility
ISO 3723	End Load Test
ISO 3724	Flow Fatigue
ISO-DIS 3968.2	Pressure Drop/flow Tests
ISO-Dis 4572	Filtration Efficiency

Monitoring Indicator	
Max. working Pressure:	40.0 MPa
Permissible Temp:	-30 to 80 °C
Protection:	IP 65
Construction:	Change Over Switch Optical/Electrical
Switch Voltage:	0 – 60 V DC
Switch Current Max:	0.25A
Load Max:	3W
Switch Pressure:	0.2 MPa

4.1.12 Cartridge Type Relief Valve

Qty	2 off
Specification:	VDI 3276
Pressure Range:	UP to 35.0 MPa
Manufacture:	Bosch

4.1.13 Combined flow/direction control valve

Qty	2 off
Type:	Bosch 2-way Cartridge valve to DIN 24342
Nominal Size:	NG 40
Area Ratio:	1:1.6 with fine control Land
Flow Adjustment :	Universal Knob with lock
Operating Pressure:	Max. 31 MPa
Rated Flow:	1000 L/min at 0.1 MPa Pressure Difference (fully open)

4.1.14 Cartridge Type Restrictor Valve

Qty	2 off
Operating Pressure:	Max. 30.0 MPa
Flow:	20L/min at 0.1 MPa

4.1.15 Oil Reservoir

Size:	400L
Oil Specification:	Mineral oil to ISO-VG32 (CALTEX RM'DO ED 32 OIL)

1.2. Hydraulic Cylinder Supply

The current hydraulic supply pipe is corroded at the elbow fitting where the supply pipe penetrates the ceiling. This section of supply pipe needs to be removed and replaced. The *Contractor* replaces the section of hydraulic supply pipe between Flange 1 and Flange 2 see Figure 1 and Figure 2 with a flexible hose of diameter 80 mm and a working pressure rating of at least 37.6 MPa. The total length of flexible hose is approximately 3 meters, please note that minimum bend radius may not be exceeded and that angled flange fittings are required to interface with the powerpack, to prevent stress in the flexible pipe. A screw on flange is fitted on either side of the pipe to mate with Flange 1 and Flange 2.

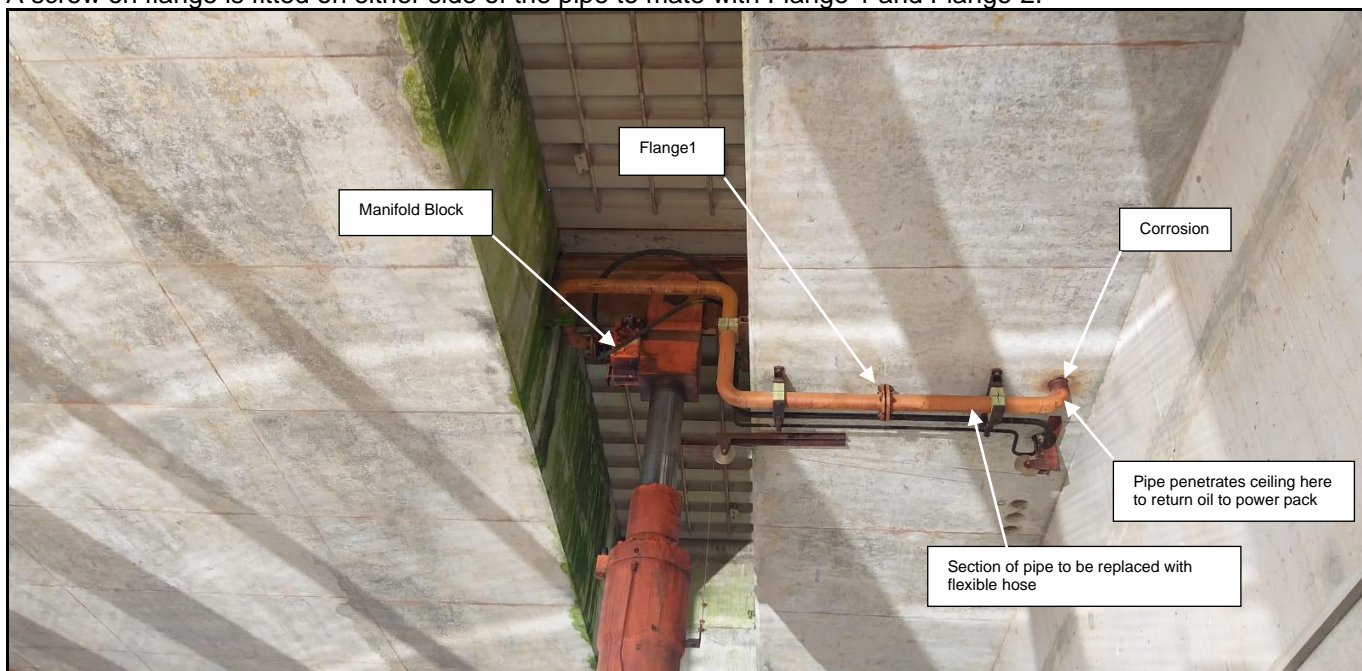


Figure 1: Emergency Gate Hydraulic Cylinder

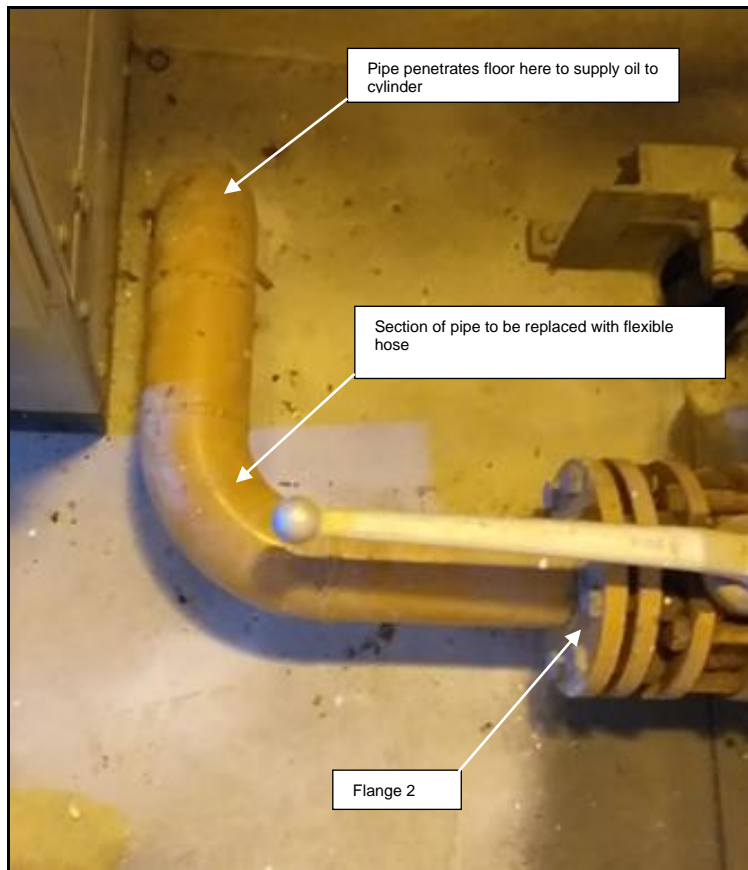


Figure 2: Hydraulic Supply Pipe from Power Pack Side

2. DRAWINGS

Drawing number	Revision	Title
18.48/24904-1	Latest	Intake Emergency Gate Hydraulic Power Unit Assembly
18.48/24904	Latest	Intake Emergency Gate Hydraulic Cylinder
18.48/24904-2	Latest	Intake Emergency Gate Hydraulic Cylinder Control Manifold Block
18.48/24904-3	Latest	Intake Emergency Gate Control Distribution Block 44
18.48/24904-4	Latest	Intake Emergency Gate Pump Distribution Block
0.48/24534-1	Latest	Intake Emergency Gate Hydraulic Control Normal Operation Rise
0.48/24534-2	Latest	Intake Emergency Gate Hydraulic Control Normal Operation Lower
0.48/24534-3	Latest	Intake Emergency Gate Hydraulic Control Maintenance Lower
0.48/20247	Latest	Headworks Access Bridge General Arrangement
0.48/20248	Latest	Headworks Access Bridge Details

3. SPECIFICATIONS

Title	Date or revision	Tick if publicly available
<u>General Specifications:</u>		
OHASA (1993) – Occupational Health and Safety Act of South Africa, Act 85 of 1993		√
32-846 – Eskom Operating Regulations for High Voltage Systems		√
36-681 – Eskom Plant Safety Regulations		√
QM-58 – Supplier Contract Quality Requirements Specification		√
167A/197 – Quality Requirements for Projects in Peaking		√
240-72273656 - Power generation asset critical classification standard		√
240-106628253 - Standard for Welding Requirements on Eskom Plant		√
240-83539994 - Standard for Non-Destructive Testing (NDT) on Eskom Plant		√

4. CONSTRAINTS ON HOW THE *CONTRACTOR* PROVIDES THE WORKS

4.1. General Requirements

- Skills, experience and proof of qualification of the *Contractor's* personnel for the *Works* must be provided for evaluation of competency.
- A history record of previous hydraulic installations or overhauls of similar size or bigger shall be supplied for evaluation.

4.2. Design Requirements

- The installation, testing and commissioning of the hydraulic system shall be in accordance with relevant codes as listed under Heading 3 – SPECIFICATIONS.
- The *Contractor* is fully responsible for the removal, installation, testing and commissioning of the hydraulic pack.
- The *Contractor* is responsible for ensuring that all dimensions are co-ordinated with site requirements.
- Pipe work shall be hydrostatically tested to a test pressure of 1.5 x Design Pressure for duration of 30 minutes.
- All pipework supports shall be in accordance with the relevant codes and shall be pacified galvanized steel unless otherwise agreed.

4.3. Welding Requirements

- Welding shall be performed by a Coded Welder.
- Welding shall be performed in accordance with approved Welding Procedure Qualification Record (WPQR) and Welding Procedure Specifications (WPS).

- A Welding Procedure Qualification Record (WPQR) and Welding Procedure Specifications (WPS) shall be submitted for approval.

4.4. Labelling

- The *Contractor* shall ensure that all equipment is properly labelled for operating purpose.

4.5. Clean working Conditions

- The *Contractor* stores equipment, materials and plant for which he is responsible in an orderly manner.
- The site is kept and left in a clean and orderly condition as the work progresses and upon completion thereof.

4.6. Quality Management

- The programming of inspections, hold and witness points is agreed between the *Employer* and the *Contractor* prior to undertaking any work.
- The *Contractor* defines the level of QA/OC or inspection imposed on his *Sub-contractors* or suppliers.
- The quality requirements are as per Eskom Standard GGS 0462: QUALITY REQUIREMENTS FOR ENGINEERING AND CONSTRUCTION WORKS.

4.7. Meetings

- Daily morning meetings will be held during implementation to assess the progress according to the schedules and to discuss other matters such SHE (Safety Health and Environment) etc.
- Meetings for compensation events will be held separately.
- Attendees for the meetings will include the *Contractor* Supervisor and *Project Supervisor*.

4.8. Use of standard forms

- Standard forms are to be used by the *Contractor* in the administration of the contract.
- Eskom will supply the *Contractor* with drafts of the standard forms which will be used for early warning and compensation event notifications.

4.9. Factory Testing

4.10. Types of Test Certificates

- Copies of all type test certificates, indicating the result of all type tests performed, are submitted.

4.11. Manufacturing Test

- Copies of all tests, indicating the results of all tests performed, are submitted.

4.12. Factory Acceptance Test

- Copies of all tests, indicating the results of all tests performed, are submitted.

4.13. Dispatch, Delivery and Offload

- The *Contractor* ensures that all materials and equipment is adequately transported and delivered to the Works.

4.14. Quality Management

- The quality requirements are as per Eskom Standard GGS 0462: QUALITY REQUIREMENTS FOR ENGINEERING AND CONSTRUCTION WORKS.
- The *Contractor* defines the level of QA/QC or inspection imposed on his *Sub-Contractors* and suppliers.
- The programming of inspections, hold and witness points is agreed between the *Employer* and the *Contractor* prior to undertaking any work.

4.15. Safety Management

- The *Contractor* takes every precaution to ensure safety and to protect the *Works* and temporary works.
- The *Contractor* is responsible for the safety and security of his personnel, materials on site and the *Works* at all times.
- The *Contractor* adheres to the safety regulations pertaining to the power station.
- The *Contractor* provides all the required safety and personal protective equipment to his staff for the duration of the contract. Safety barriers and access scaffolding is *Equipment* and is the responsibility of the *Contractor*.
- The *Contractor* complies with the requirements of the Construction Regulation, 2003 No. R1010 of the Act, and forwards proof of Notification of Construction Works to the Department of Labour as required in the Construction regulations.
- The *Contractor* and his personnel attend an induction meeting on site and sign the attendance sheet provided as proof of attendance.

4.16. Environmental Management

- The Contractor's attention is drawn to the fact that the Power Station is situated in a highly sensitive area with respect to the environment.
- The *Contractor* acquaints himself with all statutory and local environment regulations and adheres to these without exception.
- The *Contractor* complies with the Hazardous Chemical Regulations when using any hazardous chemicals, as well as complying with the requirements of the National Environmental Management Act of 1988.

4.17. Installation

- Before work starts on Site, a site inaugural meeting is held between the *Contractor* and the *Employer*, where details of the *Works* are discussed and clarified.

4.18. Spares

- The *Contractor* submits and itemized list of spares and accessories recommended for maintenance purposes of the hydraulic system.
- The *Contractor* also states which spares and accessories are universally applicable.

4.19. Site Testing & Commissioning

- The *Contractor* tests the Works in accordance with accepted testing procedure.
- The *Employer* commissions in the Works in accordance with accepted with the accepted commissioning procedure assisted by the *Contractor*.

4.20. Documentation

Pre-implementation Documentation

The *Contractor* submits the following (within 3 weeks after contract award):

- Method Statements
- Quality Control Plans and Checks
- Installation Procedure and Work package
- Testing procedure
- A Corrosion Protection Specification for any coating that needs to be performed on the piping, pipe supports and equipment.
- A bar chart program (preferably in MS Project format) detailing all scope of work activities.
- Hard copies of the following:
 - Material, Dimensional and Test Certificates.
 - Calibration Certificates.

The Contractor submits 1 hardcopy and 1 electronic version of all the above documentation

Post-implementation Documentation

The *Contractor* submits one hardcopy and one electronic version of all documentation described below on take-over of the Works.

- Signed-off operating and maintenance procedures.
- User technical manuals.
- Signed-off test certificates
- Signed-off Quality Control Plan and check sheets

5. Invoicing and payment

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

Eskom Holdings SOC Ltd
Peaking Generation
PO Box 3487,
Tygervalley
7536
ATT: Accounts Payable

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

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

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

4.2 Records of Defined Cost

The *Contractor* to provide adequate proof of incurred expenses should a compensation event arise.

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

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

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

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

4.4 BBBEE and preferencing scheme

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

4.5 Facilities to be provided by the *Contractor*

4.5.1 Crane

- An overhead crane is available in the station Machine Hall. It's the *Contractor's* responsibility to ensure that all necessary arrangements and preparations are made for the use of this crane.
- The *Contractor* ensures that the crane is capable of handling the loads to be lifted and any limitations with respect to the height and operation.

4.5.2 Forklift

- A forklift is available at the station. It's the *Contractor's* responsibility to ensure that all necessary arrangements and preparations are made for the use of this forklift.
- The *Contractor* ensures that the forklift is capable of handling the loads to be lifted and any limitations with respect to the height and operation.

4.5.3 Water Supply

- All points of supply are provided in terms of availability and location
- The *Employer* indicates which supply points may be used.

4.5.4 Electricity Supply

- All points of supply are provided in terms of availability and location
- The *Employer* indicates which supply points may be used.
- 220V electrical supply is generally available in the power station complex.
- The *Contractor* verifies extension lead requirements.

4.5.5 Compressed Air Supply

- All points of supply are provided in terms of availability and location
- The *Employer* indicates which supply points may be used.
- The *Contractor* verifies air compression hose requirements.

4.5.6 Area for Site establishment and Storage

- A storage yard is indicated to the *Contractor*.
- An area for Site Establishment is indicated to the Contractor
- Security to the *Contractor's* storage or site yard is the responsibility of the *Contractor*.
- The area allocated to the *Contractor* is reinstated to their former condition on takeover of the Works.

All other services and things needed to provide the works, is supplied by the *Contractor*.

4.5.7 Title to material from excavation and demolition

The *Contractor* has no title to plant and/or materials resulting from him carrying out the works.

4.5.8 Design by the Contractor

The *Contractor* clarifies all requirements for the works at Palmiet Power Station during the site meeting day conducted by the *Employer*.

5. REQUIREMENTS FOR THE PROGRAMME

The *Contractor* submits a bar (Gantt) chart program in MS Project format, detailing how the *Works* is executed within the stipulated dates, and required resources including rest days, weekends and public holidays.

The program indicates the following phases:

- Submission of execution documentation for review and acceptance.
- Site Inductions.
- Site establishment and preparations.
- Disassembly, testing, installation and commissioning.
- Signing off the *Works*.

The programme indicates links between activities.

6. SERVICES AND OTHER THINGS PROVIDED BY THE *EMPLOYER*

6.1. Site Acceptance

The *Contractor* witnesses inspections performed by the *Employer* and any deviations are addressed by the *Contractor*.

6.2. Plant Isolation

The *Employer* isolates the plant ensuring that it is safe for the *Contractor* to perform the *Works* and issue permits to work. The *Employer* and *Contractor* perform a risk analysis before work commence on daily basis. The *Contractor* together with the *Employer* completes the workers register before and after each working day as stipulated in the *Employer's* Plant Safety Regulations.

6.3. Clean Working Conditions

- The *Employer* is responsible for Clean Working Conditions, for the duration of the work, and uses the *Employer's* Standard Reference no 167A-139, as a minimum requirement.
- The *Employer* is responsible to establish and maintain a protected environment around the work area. Only persons authorized by the *Employer* have access to the work area. Precautions are enforced by the *Contractor* to ensure that no foreign objects are left inside the machines at any stage of the work.
- The *Employer* stores plant components, other materials and equipment for which he is responsible in an orderly manner.
- The *Employer* ensures that the working area remains clean for the duration of the installation.

6.4. Site Clearance

- The *Employer* performs site clearance inspection after the *Works* has been completed.
- The *Contractor* removes all his equipment and put all scrap materials into the scrap bins provided by the *Employer*.

6.5. Ablution Facilities

The *Employer* indicates which ablution facilities may be used.

6.6. Messing Facilities

The *Employer* indicates which messing facilities may be used.

6.7. Office Space

- No office is provided.
- Charges for telephone calls and faxes are for the *Contractor's* account.

6.8. Parking Space

Parking space is available outside of the Power Station building or at the Headrace main gate.

6.9. Storage

The *Contractor* indicates storage requirements.

Item	Date by which it will be provided
360T Overhead Crane	TBC
Area for site establishment and storage	TBC
Electricity supply	TBC

Compressed air supply	TBC
Forklift	TBC

C4: Site Information

Palmiet Pumped Storage Scheme has a nominal generating capacity of 400 MW which is produced from two 200 MW Francis type vertical turbine generator/pump sets. The power station is situated south of Grabouw, between Rockview Dam (upper reservoir) and Kogelberg Dam (lower reservoir). Construction of the station started in 1983 and the two units were commissioned in 1988.

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

7.1. Access limitations

Access to the power station is directly off the N2 highway via the Rockview Dam road, up to an electrified fenced access gate at the power station premises.

The electrified fence access gate will be controlled with an access card by the *Employer*.

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

None

7.3. Hidden and other services within the *site*

None

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

As viewed at the Site Meeting.