

PHOKWANE LOCAL MUNICIPALITY



BID DOCUMENT

BID NO.: PLM/TREF/1409 - 2025

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP WASTE WATER TREATMENT WORKS

CLOSING DATE & TIME: 21 OCTOBER 2025 at 12h00

TECHNICAL ENQUIRIES	BIDDING RELATED ENQUIRIES
PROJECT MANAGER Mr. L Jange PHOKWANE LOCAL MUNICIPALITY 24 Hertzog Street Hartswater 8570 Tel: 053 474 9700 Fax: 053 474 1768	Supply Chain Management Mrs. M Viljoen PHOKWANE LOCAL MUNICIPALITY 24 Hertzog Street Hartswater 8570 Tel: 053 474 9700 Fax: 053 474 1768

NAME OF BIDDER (BIDDING ENTITY) :

TEL NUMBER :

FAX NUMBER :

THE OFFERED TOTAL OF THE PRICES INCLUDING VALUE ADDED TAX IS:

R (In figures)

LIST OF PROJECT DOCUMENTS

The following documents are relevant to this Bid and Bidders are advised to obtain their own copies thereof:

- 1) "General Conditions of Contract for Construction Works, Third Edition 2015 (GCC 2015) issued by the South African Institution of Civil Engineering. (Short title "General Conditions of Contract 2015").
- 2) "Standardized Specifications for Civil Engineering Construction" SANS 1200.
- 3) The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulations 2014 (Government Gazette No 373050 of 07 February 2014, Notice No R84).
- 4) In addition, Bidders are advised, in their own interest, to obtain their own copies of the following acts, regulations and standards referred to in this document as they are essential for the Bidder to get acquainted with the basics of construction management, the implementation of preferential construction procurement policies and participation of targeted enterprise and labour.
 - a) The Construction Industry Development Board Act No 38 of 2000 and the Regulations in terms of the CIDB Act 38/2000, Government Gazette Notice No 38960 of 10 July 2015,
 - b) SANS 1921:2004 Construction and Management
 - Part 1: General Engineering and Construction Works;
 - Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor;
 - Part 5: Earthworks Activities which are to be performed by hand.
 - c) Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000) and its Regulations as published in the Government Gazette No. 34350 of 8 June 2011

The Project Document, containing the Bid Notice, Conditions of Tender, Bid Data, Returnable Schedules, General and Particular Conditions of Contract, Project Specifications, Pricing Schedule, Form of Offer and Site Information, is issued by the Employer. The Employer's Form of Acceptance and any correspondence from the selected Bidder, Performance Security and all Addenda issued during the period of bid will also form part of this document once a successful bidder has been appointed.

1) and 2) are available from the following organisations (as applicable):

- **CESA, PO Box 68482, Bryanston, 2021. Tel : (011) 463 2022 Fax : (011) 463 7383, Email: general@cesa.co.za**
- **SAICE, Private Bag X200, Halfway House, 1685. Tel : 011 805 5947/8, Email : civilinfo@saice.org.za**
- **SAFCEC**
- **South African Bureau of Standards**

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

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Section C1.2 Contract data	White / Yellow
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 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

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END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

**UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS**

CONTRACT: PLM/TREF/1409 - 2025

THE INFORMATION INCLUDED ON THIS SUMMARY PAGE IS FOR BID OPENING PURPOSES ONLY. IN RESPECT OF THE BID PRICE, THE FORM OF OFFER WILL GOVERN.

BID SUMMARY PAGE

NAME OF BIDDER

JV – LEAD PARTNER

DETAILS OF CONTACT PERSON

NAME

TELEPHONE NUMBER

FAX NUMBER

E-MAIL ADDRESS

ADDRESS OF BIDDER

VAT REGISTRATION NO.

DESCRIPTION	FIGURES
BID AMOUNT	R
CONSTRUCTION PERIOD OFFERED	 (WEEKS)

PREFERENCE POINTS CLAIMED (Max. 20 points)

DATE OF BID

BIDDER'S SIGNATURE

(Person authorised to sign the Bid)

*** NOTE: The Contract Period in terms of Clause 1.1.1.14 of GCC 2015 is calculated by adding 35 calendar days to the construction period offered.**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

RETURABLE DOCUMENT CHECKLIST

Bidders to complete this checklist to ensure that all information in the Bid Document is completed, included and read by the Bidder.

DESCRIPTION	OUTCOME IF NOT COMPLIED WITH	COMPLETED / INCLUDED / READ
All pages requiring signatures signed by the Bidder (Authorized Person)	Non-responsive, bid eliminated	☐
Correct Bid Offer Amount on BOQ's carried forward to Bid Summary (Pages iv), Form of Offer and Acceptance (Pages 105 – 111) and Contract Forms for Rendering of Services (Pages 112 – 113)	Non-responsive, bid eliminated	☐
RETURABLE SCHEDULES (SECTION T2.1)		
Bid Briefing / Site Inspection Certificate Attendance Certificate – Part T2 Section 2.2.1	No contract shall be awarded upon failure to provide the required information	☐
Compulsory Enterprise Questionnaire – Part T2 Section 2.2.2	Non-responsive, bid eliminated	☐
Certificate of Authority for Signatory – Part T2 Section 2.2.3	Non-responsive, bid eliminated	☐
Record of Addenda to Bid Document – Part T2 Section 2.2.4	Non-responsive, bid eliminated	☐
Schedule of Amendments, Qualifications and Alterations – Part T2 Section 2.2.5	Non-responsive, bid eliminated	☐
Schedule of Works Previously Executed – Part T2 Section 2.2.6	Regarded as Bidder with no experience	☐
Schedule of Present Commitments – Part T2 Section 2.2.7	Regarded as Bidder with no experience	☐
Key Personnel Qualifications and Experience – Part T2 Section 2.2.8	No designated personnel, possible experience risk	☐
Labour Utilisation – Part T2 Section 2.2.9	Regarded Bidder with limited experience and understanding of contract scope	☐
Schedule of Plant and Equipment – Part T2 Section 2.2.10	Regarded Bidder with limited experience and understanding of contract scope	☐
Functionality Criteria and Points Claimed by Bidder – Part T2 Section 2.2.11	Non-responsive, bid eliminated	☐
Schedule of Proposed Sub-Contractors – Part T2 Section 2.2.12	All work to be carried out by main Contractor or joint entity	☐
Preference Claim Form – Part T2 Section 2.2.13	Bidder not bidding for PPPFA points	☐
Declaration of Interest – Part T2 Section 2.2.14	Non-responsive, bid eliminated	☐
Letter of Intend to Provide Performance Guarantee – Part T2 Section 2.2.15	Information not available. (Evaluated as possible risk)	☐
Declaration of Good Standing Regarding Tax – Part T2 Section 2.2.16	Non-responsive, bid eliminated	☐
Registration Certificates / Agreements / Identity Documents – Part T2 Section 2.2.17	Non-responsive, bid eliminated	☐
Letter of Good Standing for Compensation for Occupational Injuries and Deceases Act 130 of 1993 (Amended) As Issued by the Department of Labour – Part T2 Section 2.2.18	Non-responsive, bid eliminated	☐
Unemployment Insurance Fund (UIF) Registration – Part T2 Section 2.2.19	Non-responsive, bid eliminated	☐
Property Rates Clearance – Part T2 Section 2.2.20	No contract shall be awarded upon failure to provide the required information	☐
Financial References – Part T2 Section 2.2.21	Information or bank history not available. (Evaluated as possible risk)	☐
Compliance with OHSA (Act 85 of 1993) – Part T2 Section 2.2.22	Regarded as a Bidder with limited ability and available resources to comply with the OHSA act	☐
Declaration of Bidder's Past Supply Chain Management Practices – Part T2 Section 2.2.23	Non-responsive, bid eliminated	☐
Certificate of Independent Bid Determination – Part T2 Section 2.2.24	Non-responsive, bid eliminated	☐

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CONTRACT DATA (SECTION C1.2)

Data Provided by the Contractor – Part C1 Section C1.2 (Page 126)	Non-responsive, bid eliminated	☐
Agreement in Terms of Occupational Health & Safety Act - Part C1 Section C1.2 (Pages 135 - 138)	Non-responsive, bid eliminated	☐

PRICING DATA (SECTIONS C2.1 – C2.3)

Schedule of Quantities (All items in black ink) - Section C2.2	Refer to pricing Instructions	☐
Calculation of Bid Sum - Section C2.3	Refer to pricing Instructions	☐
Information Sheets for Mechanical Equipment – Section C2.4	Non-responsive, bid eliminated	☐

REASON FOR NON-COMPLIANCE

CONTACT DETAILS

Office Phone No. _____

Office Fax No. _____

Cell Phone No. _____

SIGNED ON BEHALF OF BIDDER

DATE

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

PORTION 1: THE BID

Part T1
Bid Procedures

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

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END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

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Section T1.1

Bid Notice and Invitation to Bid

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY



INVITATION TO BID

BID NO.	DESCRIPTION	EVALUATION CRITERIA	PRICE PER DOCUMENT (Non-refundable)	CIDB GRADING	COMPULSORY BRIEFING SESSION	CONTACT PERSON (TECHNICAL)	CLOSING DATE AND TIME
PLM/TR EF/1409 - 2025	Upgrading and Refurbishment of the Jan Kempdorp Waste Water Treatment Works	80 / 20 80 – Price 20 – Specific goals Compliance and functionality Criteria inside tender document	R 1 000.00	7CE & 7 ME and /or Higher	Date: Time: Place: No Briefing session	Mr. Frans De Beer @ 018 462 9603 frans@moedi.co.za (Moedi Consulting Engineers)	21 October 2025 @ 12h00
Documents are available from:			All bids' documents to be submitted at:				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Bid Notice and Invitation to Bid

Phokwane Local Municipality Supply Chain Manager's Office 24 Hertzog Street Hartswater 8570 Tel: +27 53 474 970	Phokwane Local Municipality 24 Hertzog Street Hartswater 8570 Tel: +27 53 474 970
All SCM related queries must be directed to:	
Mrs. M Viljoen - 053 474 9700 Email : marinda@phokwane.gov.za	
Mr. L Jange - 053 474 9700 Email : jange@phokwane.gov.za	

Minimum Requirements:

1. Bidders must submit Tax compliance verification pin on a SARS letterhead.
2. In the case of the Joint venture valid and Tax compliance verification pin of all parties must be attached.
3. Certified Copy of Company Registration Certificate reflecting names and identity numbers of active shareholding must be attached (Except for sole traders and partnerships).
4. Copy of JV agreement (in case of JV) must be attached.
5. Municipal Rates & Taxes Clearance Certificate not older than 30 days or a lease agreement must be attached.
6. All supplementary / compulsory forms contained in the bid document must be completed and signed in full.
7. Failure to comply with the above-mentioned conditions may invalidate your bid.
8. CSD registration summary report.

Please Note:

1. Section 217 of the constitution of the Republic of South Africa requires an organ of state to contract for goods and services in accordance with a system which is fair, equitable, transparent, competitive and cost effective.
2. **No bid(s) will be accepted from a person in the service of the state.**
3. No telegraphic, telefax and late bids will be accepted.
4. The lowest bid / proposal will not necessarily be accepted, and the Municipality reserves the right to accept where applicable a part or portion of any bid or where possible accepts bids or proposals from multiple bidders.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Bid Notice and Invitation to Bid

5. Municipal Supply Chain Management policy and Preferential Procurement policy Framework Act No 5 of 2000 and its regulations will be applied.
6. Phokwane Local Municipality reserves the right to appoint or not to appoint.

APPROVED BY:**Z NIKANI****MUNICIPAL MANAGER****NOTICE:**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY



UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP WASTE WATER TREATMENT WORKS

CONTRACT NO.: PLM/TREF/1409 - 2025

DESCRIPTION	BRIEFING SESSION	EVALUATION CRITERIA	CIDB GRADING	CLOSING DATE
Upgrading and Refurbishment of the Jan Kempdorp Waste Water Treatment Works	No Briefing Session	80/20 80 – Price 20 - Specific goal Compliance and functionality Criteria inside tender document	7CE and 7ME or Higher	21 st October 2025 at 12:00 pm.

Phokwane Local Municipality invites bids from suitably qualified and experienced Contractors for the above-mentioned project. Bidders should have a CIDB registration stated in the table above or higher. Joint Ventures or potentially emerging enterprises that satisfy the criteria stated in the tender data are eligible to tender.

Phokwane Local Municipality Supply Chain Policy and Preferential Procurement policy 2023 will apply, and bids will be evaluated in terms of the 80/20 points system as set out in the PPPFA. A maximum of 20 points (80/20 preference points system) will be allocated for specific goal. The targeted goal is locality. Locality points will be allocated as follows:

Locality	80/20	90/10
Office within Phokwane municipal area	20	10
Office within Frances Baard District Municipality	8	6
Province	6	4
National	4	2
Total Points	20	10

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

The Municipality shall adjudicate and award tenders in accordance with the Preferential Procurement Policy Framework Act 5 of 2000 as amended. Tenders will remain valid for 90 (ninety) days.

Bid Documents will be downloadable from the 17th of September 2025 from the E-Tender portal at <https://www.etenders.gov.za/> or municipal website www.phokwane.gov.za. The bid document can be acquired from the SCM office at the Phokwane Local Municipality Main Building from 22nd of September 2025 during office hours from 08h00 to 16h00 (Monday to Friday), after payment of the non-refundable fee of **R1 000.00** by the cashiers.

Alternatively, bidders can make an EFT payment to the Municipality, then forward the Proof of payment via email to the SCM office at: seane@phokwane.gov.za. Proof of payment must be included in the tender document when submitted.

Phokwane Local Municipality Banking Details: Account Type: Current Accounts Bank: First National Bank, Branch Code: 250655, Branch Name: Branch 560, Account Number: 630 385 809 49, Bidder Reference: Company Name and Tender Number.

Duly completed tender documents sealed in an envelope marked with the **Bid Name, Bid Number and Bid Description** are to be deposited into the tender box located on the ground floor at Phokwane Local Municipality, 24 Hertzog Street, Hartswater, 8570, by no later than 12h00 pm on the 21st of October 2025. Enquiries on technicalities may be directed to Mr L Jange (053) 474 9700 and for supply chain matters to Mrs M Viljoen at tel. (053) 474 9700 during office hours.

Phokwane Local Municipality does not bind itself to accept the lowest or any tender, or to furnish any reason for the acceptance or rejection of a tender. The municipality reserves the right to appoint or not to appoint to lowest bidder in an event the bidder is below the market related rates.

This tender is drawn up in line with the Municipality's Supply Chain Management Policy.

Please note that faxed, e-mailed or late submission will not be accepted.

Mr. Z Nikani

Municipal Manager

Contractor

Witness 1

Witness 2

Employer

Witness 1

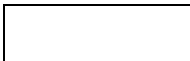
Witness 2

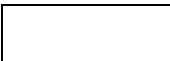
VERY IMPORTANT NOTICE ON DISQUALIFICATION

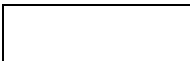
A Bid not complying with the peremptory requirements stated hereunder will be regarded as being a not **“Acceptable Bid”** and as such will be rejected.

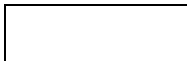
“Acceptable Bid” means any bid which, in all respects, complies with the conditions of Bid and specifications as set out in the bid document, including conditions as specified in the Preferential Procurement Policy Framework Act, revised Preferential Procurement Regulations and related legislations:

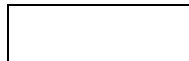
1. Submit bid in the correct bid box.
2. Submit bid before closing date and time.
3. Fill in the required information in all Forms / Schedules.
4. Complete all Forms / Schedules in ink. Do not use pencils or correction fluid to make corrections.
5. Make corrections, if necessary, only by placing a line across the words / numbers to be corrected and initial next to the amended text. Do not scratch out, write over rates, paint over rates or use correction fluid.
6. Do not remove pages from the bid document. Do not take the document apart or remove any pages.
7. Ensure that witnesses sign where required.
8. Price the Bill of Quantities in full as required and not only provide lump sums.
9. Attend the compulsory site / clarification meetings.
10. Submit the applicable completed Authority for Signatory form and attach a certified copy of the members / director's resolution.
11. Attach to the bid documents a **certified** copy of a signed Joint Venture agreement (if applicable).
12. Only the person authorised to do so may sign the bid offer.
13. Submit written **certified** proof of registration with the CIDB, in an appropriate contractor grading designation of **7 CE & 7 ME and / or Higher** (category), as required in the bid documentation.
In the case of a joint venture bidders must submit a consolidated CIDB grading.
14. Submit **certified Company Registration** documents. **Certified copies of Identification Documents of active shareholding must be attached (Except for sole traders and partnerships).**
15. If a valid and **certified** original tax clearance certificate and SARS verification pin on the SARS letterhead has not been submitted with the bid document on closing date of the bid (in the case of a joint venture, of all the partners in the joint venture must attach). **No Bid may be awarded to any person whose tax matters have not been declared by the South African Revenue Service to be in order.**
16. Form of offer must be completed and signed by the authorised signatory.
17. **Certified** proof of registration with the Central Data Base (CSD) of the National Treasury must be attached.
18. Submit **certified** proof of registration for Workmen's compensation with the Department of Labour in terms of Act No 130 of 1993.

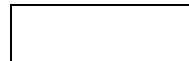

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

19. Bidders must submit a valid, up to date letter from the bidder's bank stating the bidder's bank rating based on the amount offered for this contract. The amount offered MUST therefore be stated on the letter and MUST correspond with the tendered amount.

Furthermore, the bid will be considered as not acceptable if:

20. The bidder attempts to influence or has in fact influenced the evaluation of the bid and / or the awarding of the contract.
21. The bidder during the last 5 years has failed to perform satisfactorily on a previous contract with the municipality, municipal entity or any other organ of state after written notice was given to that bidder that performance was unsatisfactory.
22. The bidder or any of his directors is listed on the Register of Bid Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector.
23. The bidder has abused the PLM's Supply Chain Management System.
24. The bidder or any of its directors is in arrears for more than 3 months for any municipal rates and taxes owed to the PLM or any other municipality.
25. Irrespective of the procurement process followed, no award may be given to a person -
- a) who is in the service of the state; or,
 - b) if that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state; or,
 - c) who is an advisor or consultant contracted with the municipality in respect of contract that would cause a conflict of interest
26. The bidder may only submit a bid on the documentation provided by the PLM.

Bids containing any one or more of the following errors or omissions **will not be rejected**, provided that when the bid is awarded to such a bidder, the error or omission is corrected:

27. Failure to initial each page of the bid document.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

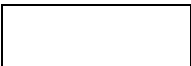
PLEASE NOTE:

- 1. Section 217 of the constitution of the Republic of South Africa requires an organ of state to contract for goods and services in accordance with a system which is fair, equitable, transparent, competitive and cost effective.
- 2. The lowest bid / proposal will not necessarily be accepted, and the Municipality reserves the right to accept where applicable a part or portion of any bid or where possible accepts bids or proposals from multiple bidders.
- 3. Municipal Supply Chain Management policy and Preferential Procurement Policy Framework Act No 5 of 2000 and its regulations will be applied.
- 4. In this document and other documents referred to but not attached, the following words are synonymous with each other:
 - a) Client, Employer, Phokwane Local Municipality (PLM)
 - b) Bidder, Contractor, Service Provider
 - c) Bid and Tender and Variations Thereof
 - d) Joint Venture / Consortium

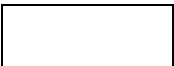
APPROVED BY:

Z NIKANI

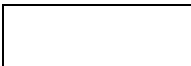
MUNICIPAL MANAGER



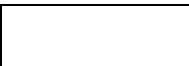
Contractor



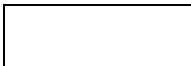
Witness 1



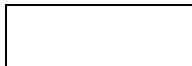
Witness 2



Employer



Witness 1



Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT : PLM/TREF/1409 - 2025

Section T1.2
Bid Data

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 – 2025

BID DATA

The Conditions of Bid applicable to this contract are the Standard Conditions of Tender as contained in Annexure F of the CIDB Standard for Uniformity in Construction Procurement (10 July 2015) as published in Government Gazette No. 38960, Board Notice 136 of 2015. This Annexure is reproduced hereafter as an Appendix for the convenience of Bidder's.

The Standard Conditions of Tender make several references to the Bid Data for details that apply specifically to this Bid. The Bid Data shall have preference in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

Each item of Bid Data given below is cross-referenced to the relevant clause in the Standard Conditions of Tender to which it mainly applies.

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
F1.1	Actions	The Employer is Phokwane Local Municipality The term “ bid ” in the context of this standard is synonymous with the term “ tender ”.
F1.2	Bid Document	The Bid Document issued by the Employer comprises of one (01) volume. The volume consists of the following: PORTION 1 BID Part T1 Bid Procedures Section T1.1 Bid notice and invitation to bid Section T1.2 Bid data Part T2 Returnable documents Section T2.1 List of returnable documents Section T2.2 Returnable Schedules PORTION 2 CONTRACT Part C1 Agreements and contract data Section C1.1 Forms of offer and acceptance Section C1.2 Contract Data Part C2 Pricing Data Section C2.1 Pricing Instructions Section C2.2 Bill of Quantities Section C2.3 Calculations of Bid Sum

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		Part C3 Scope of work Section C3.1 Description of Works Section C3.2 Engineering Section C3.3 Procurement Section C3.4 Construction Section C3.5 Management Section C3.6 Particular Variations, Specifications and Additions to Standard Specifications Section C3.7 Health and Safety: Specification AO Part C4 Site Information Section C4.1 Annexure : Site Information APPENDICES Appendix A Bid Drawings (Issued) Appendix B Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP) (Issued on Request) The Bid Document and the drawings shall be obtained from the Employer or his authorised representative at the physical address stated in the Bid Notice, upon payment of the amount stated in the Bid Notice. The following documents are relevant to this Bid and Bidders are advised to obtain their own copies thereof: 5) “General Conditions of Contract for Construction Works, Third Edition 2015 (GCC 2015) issued by the South African Institution of Civil Engineering. (Short title “General Conditions of Contract 2015”). 6) “Standardized Specifications for Civil Engineering Construction” SANS 1200. 7) The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulations 2014 (Government Gazette No 373050 of 07 February 2014, Notice No R84). 8) In addition, Bidders are advised, in their own interest, to obtain their own copies of the following acts, regulations and standards referred to in this document as they are essential for the Bidder to get acquainted with the basics of construction management, the implementation of preferential construction procurement policies and participation of targeted enterprise and labour. d) The Construction Industry Development Board Act No 38 of 2000 and the Regulations in terms of the CIDB Act 38/2000, Government Gazette Notice No 38960 of 10 July 2015, e) SANS 1921:2004 Construction and Management Part 1: General Engineering and Construction Works; Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor: Part 5: Earthworks Activities which are to be performed by hand.

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CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		f) Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000) and its Regulations as published in the Government Gazette No. 34350 of 8 June 2011
F1.3.2	Interpretation	The Standard Conditions of Tender, the Bid Data, List of Returnable Documents and Returnable Schedules which are required for the bid evaluation purposes, shall also form part of the Contract arising from the invitation to bid.
Add the following new clause F1.3.3		The Bid Documents have been drafted in English. The Contract arising from the invitation of bid shall be interpreted and constructed in English.
F1.4		Communication and Employer's Agent (also known as the Engineer) Moedi Consulting Engineers (PTY) Ltd. 2 Van Ryneveld Street Wilkoppies, Klerksdorp 2571 Tel no. (018) 462 9603 Fax no. (018) 462 1919 Email – frans@moedi.co.za
F2.1	Eligibility	A Bidder will not be eligible to submit a Bid if: 1) The Bidder submitting the Bid is under restrictions or has principals who are under restriction to participate in the Employer's procurement due to corrupt or fraudulent practices; 2) The Bidder does not have the legal capacity to enter into the contract; 3) The Bidder submitting the Bid is insolvent, in receivership, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of the foregoing; 4) The bidder does not comply with the legal requirements stated in the Employer's procurement policy; 5) The Bidder cannot provide proof that he is in good standing with respect to duties, taxes, levies and contributions required in terms of legislation applicable to the works in the contract; Only those bidders who satisfy the following criteria are eligible to have their bids evaluated: 6) Only bidders that score above the minimum threshold of 60 points for Functionality will be considered. 7) Only bidders that offer materials and products that fully comply with the requirements of the specifications will be considered. 8) Only those Bidders who are registered with the CIDB, in a Contractor Grading equal to or higher than a Contractor Grading designation determined in accordance with the sum offered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry

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		Development Regulations, for a 7CE & 7 ME or Higher Class of construction work, are eligible to submit Bids. Joint ventures are eligible to submit bids provided that: (a) every member of the joint venture is registered with the CIDB; (b) the lead partner and the additional members have a contractor grading designation in the CE class of construction work OR at least the lead partner has a grading designation in the CE class, and the additional member/s have a grading designation in the CE class of construction work; and (c) the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum bided for class of construction work or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations. Only those Bidders who satisfy the following criteria are eligible to submit bids: Only Bidders who employ staff which satisfy EPWP requirements are eligible to submit bids. The Bidder must have a staff member who has completed, or is registered for training towards, the NQF level 5-unit standard "Develop and Promote Labour Intensive Construction Strategies" Joint Ventures are eligible to submit bids provided that: 1. Every member of a Joint Venture is registered with the CIDB within 10 days from the closing date of Bids; 2. The lead partner has a Contractor Grading Designation in the 7CE & 7 ME or Higher class of construction work; and, 3. The combined Contractor Grading Designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor designation determined in accordance with the sum offered for a 7 CE & 7 ME / or Higher class of construction work, is eligible to submit Bids.
F2.2	Cost of Bidding	Add the following to the clause: A non-refundable Bid deposit of R 1 000.00 payable in cash or by bank guaranteed cheque made out in favour of the Phokwane Local Municipality, is required on collection of the Bid documents. Accept that the Employer will not compensate the Bidder for any costs incurred in attending interviews in the office of the employer or the Employer's agent (if required).
F2.5	Reference Documents	The document "General Conditions of Contract for Construction Works, Third Edition 2015 (GCC 2015)" of the South African Institution of Civil Engineers. Bidder's Contractors and Subcontractors shall obtain their own copies of this document for Bid purposes and for use for the duration of the Contract from the Secretary of the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685 or SAICE House, Block 19 Thornhill Office Park, Becker Street, Midrand, Tel. 011 805 5947 and shall bear all expenses in this regard.

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CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
F2.7	Site Visit and Clarification Meeting	A compulsory site visit and clarification meeting will be held as follows: Refer to bid notice and invitation to bid in Part T1.1 Bidders must sign the attendance list in the name of the Bidding entity. Addenda will be issued to, and Bids will be received only from those Bidding entities appearing on the attendance list. Detail relating to the collection of Bid Documents is indicated in the Bid Notice and Invitation to Bid (Section T1.1 of the document)
F2.8	Seek Clarification	Replace the contents of the clause with the following: Request clarification of the Bid Documents, if necessary, by notifying the Employer's Official or the Employer's Agent indicated in the Bid Notice and Invitation to Bid (Section T1.1) in writing at least ten (10) working days before the closing time stated in clause 2.15.
F2.11	Alterations to Document	Add the following to the clause: To correct errors made, draw a line through the incorrect entry and write the correct entry above in black ink and place the full signatures of the authorised signatories next to the correct entry.
F2.12.1	Alternative Bid Offers	Add the following to the clause: All alternative Bid Offers shall be referred to in Section T2.2.2 – Alterations to Bid. The original individual item as specified in this document must still be quoted on as the main tender offer. Failure to bid for individual items may result in disqualification for posing and unduly high commercial risk.
F2.12.2		Should the Bidder wish to offer alternative designs and / or construction materials, he shall include with this Bid full details thereof, including a complete bill of quantities, formal design calculations, and full details of all alternative components proposed to be included in the Works. This should be submitted to the Employer. Acceptance of an alternative Bid Offer will mean acceptance in principle of the offer. It will be an obligation of the contract for the Bidder, in the event that the alternative is accepted, to accept full responsibility and liability that the alternative offer complies in all respects with the Employer's standards and requirements. The modified Pricing Data must include an amount equal to 5% of the amount Offered for the alternative offer to cover the Employer's costs of confirming the acceptability of the detailed design before it is constructed. No fixed price Bids will be accepted.
F2.13	Submitting of Bid Offer	Add the following to the clause: No claim will be entertained for faults in the Offer Price resulting from any discrepancies, omissions or indistinct figures.
F2.13.2		Each Bidder is required to return the complete set of documents as listed in the Bid Data with all the required information supplied and completed in all respects.

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CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
F2.13.3		Parts of each Bid Offer communicated on paper shall be submitted as an original plus zero copies.
F2.13.4		Add the following to the clause: “Only authorised signatories may sign the original and all copies of the Bid Offer where required in terms of 2.13.3. In the case of a ONE-PERSON CONCERN submitting a Bid, this shall be clearly stated. In case of a COMPANY submitting a Bid, include a copy of a resolution by its board of directors authorising a director or other official of the company to sign the documents on behalf of the company. In the case of a CLOSED CORPORATION submitting a Bid, include a copy of a resolution by its members authorising a member or other official of the corporation to sign the documents on each member’s behalf. In the case of a PARTNERSHIP submitting a Bid, all the partners shall sign the documents, unless one partner or a group of partners has been authorised to sign on behalf of each partner, in which case proof of such authorisation shall be included in the Bid. In the case of a JOINT VENTURE submitting a Bid, include a resolution of each company of the Joint Venture together with a resolution by its members authorising a member of the Joint Venture to sign the documents on behalf of the Joint Venture.” Accept that failure to submit proof of authorisation to sign the Bid shall result in a Bid Offer being regarded as non-responsive.
F2.13.5	Delivery of Bid	The Employer’s address for delivery of Bid Offers and identification details to be shown on each Bid Offer package are: Tender box location : The entrance of the Phokwane Local Municipality offices Physical address : Phokwane Local Municipality 24 Hertzog Street HARTSWATER 8570 Identification details : Contract No. PLM/TREF/1409 - 2025 Upgrading and Refurbishment of the Jan Kempdorp Waste Water Treatment Works
F2.13.6		A two-envelope procedure will not be followed.
F2.13.9		Telephonic, telegraphic, telex, facsimile, electronic or e-mailed Bids will not be accepted.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
F2.14	Information and Data to be completed in all respects	Add the following to the clause: “Accept that the Employer shall in the evaluation of Bid Offers take due account of the Bidder’s past performance in the execution of similar engineering works of comparable magnitude, and the degree to which he possesses the necessary technical, financial and other resources to enable him to complete the Works successfully within the contract period. Satisfy the Employer and the Engineer as to his ability to perform and complete the Works timeously, safely and with satisfactory quality, and furnish details in section T2.2 of contracts of a similar nature and magnitude which they have successfully executed in the past.” Accept that the Employer is restricted in accordance with clause 5(h) of the Construction Regulations 2014, to only appoint a Contractor whom he is satisfied has the necessary competencies and resources to carry out the work safely. Accept that submitting inferior and inadequate information relating to Health & Safety (as required in clause 2.23) shall be regarded as justifiable and compelling reasons not to award a Contract to a Bidder.”
F2.15.1	Closing Time	The closing time and location for the submission of Bid Offers are: Time : 21th of October 2025 at 12:00 pm Location : Tender box at Phokwane Local Municipality, Hartswater
F2.16.1	Bid Offer validity	The bid offer validity period is 90 days. Add the following to the clause: If the Bid validity expires on a Saturday, Sunday or public holiday, the Bid shall remain valid and open for acceptance until the closure of business on the following working day.
F2.17	Clarification of Bid Offer after Submission	Replace the contents of the clause with the following clause: “Provide clarification of a Bid Offer in response to a request to do so from the Employer during the evaluation of Bid Offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors resulting from the product of the unit rate and the quantity by the adjustment of certain rates or item prices (or both). No change in the competitive position of Bidders or substance of the Bid Offer is sought, offered, or permitted. The total of the prices shall govern, and unit rates shall be adjusted to reflect the arithmetically correct summation of corrected line-item totals and shall be binding upon the Bidder.”
F2.18		The Bidder shall, when requested by the Employer to do so, submit the names of all Management and Supervisory staff that will be employed to supervise the labour-intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.
F2.19	Inspections, tests and analysis	The Bidder must provide access during working hours to his premises for inspections on request.

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CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
F2.22	Return of Bid Documents	Where a Bidder who received a Bid Document does not submit a Bid, the Bid Documents issued to him must be returned to the Employer within 14 days after the closing date for submission of Bids.
F2.23	Certificates	The following certified certificates / information must be provided with the Bid Offer (any Bid not complying with the below stipulations, listed a. to h. will be regarded as non-responsive and will therefore not be considered for further evaluation): a. Bidders must submit a tax compliance verification pin on a SARS letterhead; and b. Certificate of Contractor Registration of CIDB Grading of 7CE & 7 ME (and / or higher grading) issued by the Construction Industry Development Board. Certificates of Registration in respect of each partner, where a bidder satisfied the CIDB contractor grading designation requirements through the formation of a joint venture; c. Evidence of registration and proof of good standing by the Department of Labour in terms of section 80 of the compensation for injury and Disease Act (COIDA) (Act No 130 of 1993); d. Authority for signature on an original company letterhead as requested by T2.2.5 – Form E. e. Copy of Identity Document (if member is a one-man concern) f. Copy of Deed of Trust (if a trust is involved) g. Copy of the curriculum vitae of the person who prepares the Contractor's Health and Safety Plan, and h. Copy of curriculum vitae of the Health and Safety officer the successful bid intends appointing in accordance with the Occupational and Safety Act. Note: Any Bidder not complying with above stipulations, listed will be regarded as non-responsive and will therefore not be considered for further evaluation.
F2.24 (Add the following new Clause)	Canvassing and obtaining of additional information by Bidder's	Accept that no Bidder shall make any attempt either directly or indirectly to canvass any of the Employer's officials or the Employer's agent in respect of his Bid, after the opening of the Bids but prior to the Employer arriving at a decision thereon. No Bidder shall make any attempt to obtain particulars of any relevant information, other than that disclosed at the opening of Bids.
F2.25 (Add the following new Clause)	Awards to close family members of persons in the service of the state	Accept that the notes to the Employer's annual financial statements must disclose particulars of any award of more than R 2 000.00 to a person who is a spouse, child or parent of a person in the service of the state (defined in Section T2.2.14), or has been in the service of the state in the previous twelve months, including – a) the name of that person; b) the capacity in which that person is in the service of the state; and c) the amount of the award. In order to give effect to the above, the questionnaire for the declaration of interests in the bid of persons in service of state in Section T2.2.14 must be completed.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
F2.26 (Add the following new Clause)	Tax compliance pin	Submission of a Tax Compliance Verification Pin on a SARS letterhead is compulsory. Bidders should note, that in accordance with legislation, no contract may be awarded to a person / an entity who has failed to submit a Tax Compliance Verification Pin on a SARS letterhead from the South African revenue Service (SARS)
F3.1	Respond to clarification	Replace the contents of the clause with the following: Respond to a request for clarification received up to ten (10) working days before the Bid Closing time stated in the Bid Data and notify all Bidders who drew procurement documents within seven (7) working days of the same date.
F3.4	Opening of Bid submissions	Bids will be opened immediately after the closing time for Bids
F3.11	Evaluation of Bids	The procedure for the evaluation of responsive Bids is Method 2 (Functionality, Price and Preference). The financial offer will be scored using <u>Formula 2 (option 1)</u> as described under F3.11.7 of the Standard Conditions of Bid, where the value of W_1 is 80. The maximum points for Preference to be awarded in terms of the Preferencing Schedule for Broad Based Black Economic Empowerment Status is 20 points. (i.e.: 80 points for Financial Offer and 20 Points for Preference).
F3.11.1	General	Evaluation of Bid Offers The bids will be evaluated in three (03) stages, namely: • Stage 1 : Administrative Compliance • Stage 2 : Functionality • Stage 3 : Financial Offer and Preference Evaluation (80/20) Stage 1: Administrative Compliance Over and above the test for responsiveness as described under 3.8 of the Standard Conditions of Tender, failure of the Bidder to submit the following will result in immediate disqualification: (i) Proof of attendance of Compulsory Briefing Session (Form A – T2.2.1). (ii) Certificate of authority for signatory (Form C – T2.2.3). (iii) Certified copies of Company / CC / Trust / Partnership registration certificates as well as signed agreements and power of attorney for Joint Venture / Consortium if applicable.

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CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER																		
		Certified copies of Identification Documents of active shareholding must be attached (Except for sole traders and partnerships). (Form Q – T2.2.17). (iv) Certified Joint Venture Agreement and Power of attorney in case of Joint Ventures (Form Q – T2.2.17). (v) Certified Original and Valid Tax Clearance Certificate with Tax Compliance Status (SARS Pin) or Declaration by the South African Revenue Services that tax matters of the Tendering company / association or Joint Venture parties are in order (Form P – T2.2.16). (vi) Certified copy of valid Workmen's Compensation Certificate issued by Department of Labour. This must be submitted for all members / partners in case of Joint Venture / Partnership (Form R – T2.2.18). (vii) Certified proof of Central Supplier Database registration. This must be submitted for all members / partners in case of Joint Venture / Partnership. (viii) Certified proof of payment of Municipal Services, which is not more than three (03) months in arrears. If Municipal Services are paid by the Lessor, in the case where the bid is leasing the premises occupied, a copy of valid Lease Agreement and proof of payment of Municipal Services, which is not more than three (03) months in arrears, must be submitted (Form T – T2.2.20). (ix) Certified proof of Registration with CIDB – Grade 7 CE & 7 ME / or higher. Stage 2: Functionality Functionality of responsive bids submitted will be evaluated according to the predetermined criteria described below, taking into account, among other factors, the quality, reliability and the technical capacity and ability of a Bidder. Form K (T2.2.11) will be utilised for the evaluation of Functionality. A Bid will not be evaluated further if it fails to meet the minimum threshold of total 70 points out of maximum 100 points for functionality as prescribed in the following tables: <table border="1"> <thead> <tr> <th>CATEGORY</th><th>FUNCTIONAL CRITERIA</th><th>POINTS ALLOCATION</th></tr> </thead> <tbody> <tr> <td>i</td><td>Experience of the bidder</td><td>40</td></tr> <tr> <td>ii</td><td>Key personnel qualifications and experience</td><td>30</td></tr> <tr> <td>iii</td><td>Scoring Financial Capacity</td><td>10</td></tr> <tr> <td>iv</td><td>List of Plant</td><td>20</td></tr> <tr> <td colspan="2">TOTAL</td><td>100</td></tr> </tbody> </table>	CATEGORY	FUNCTIONAL CRITERIA	POINTS ALLOCATION	i	Experience of the bidder	40	ii	Key personnel qualifications and experience	30	iii	Scoring Financial Capacity	10	iv	List of Plant	20	TOTAL		100
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CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER																						
		(i) EXPERIENCE OF THE BIDDER (40 POINTS) The Bidder must submit proof of successfully completed similar and comparative projects, i.e. construction works. (Certified copies of Appointment Letter and Completion Certificate must be attached). <table><tr><th>TARGETED GOALS</th><th>POINTS ALLOCATION</th></tr><tr><td>Bidder has submitted no information or inadequate information to determine scoring levels</td><td>0</td></tr><tr><td>Bidder has successfully completed at least <u>1 similar Water</u> project with a project value of <u>R 10 000 000</u> or more with positive references within the past 5 years</td><td>3</td></tr><tr><td>Bidder has successfully completed at least <u>1 similar Wastewater</u> project with a project value of <u>R 10 000 000</u> or more with positive references within the past 5 years</td><td>5</td></tr><tr><td>Bidder has successfully completed at <u>least 1 similar WWTW</u> project with a project value of <u>R 15 000 000</u> or more with positive references within the past 5 years</td><td>10</td></tr><tr><td>Bidder has successfully completed at least <u>2 similar Water</u> project with a project value of <u>R 20 000 000</u> or more with positive references within the past 5 years</td><td>10</td></tr><tr><td>Bidder has successfully completed at least <u>2 similar Wastewater</u> project with a project value of <u>R 20 000 000</u> or more with positive references within the past 5 years</td><td>20</td></tr><tr><td>Bidder has successfully completed at least <u>2-3 similar WWTW</u> projects with a project value of <u>R 20 000 000</u> or more with positive references within the past 5 years</td><td>30</td></tr><tr><td>Bidder has successfully completed at least <u>3 similar Water</u> project with a project value of <u>R 30 000 000</u> or more with positive references within the past 5 years</td><td>20</td></tr><tr><td>Bidder has successfully completed at least <u>3 similar Wastewater</u> project with a project value of <u>R 30 000 000</u> or more with positive references within the past 5 years</td><td>30</td></tr><tr><td>Bidder has successfully completed at least <u>4 similar WWTW</u> projects with a project value of <u>R 30 000 000</u> or more with positive references within the past 5 years</td><td>40</td></tr></table> (ii) KEY PERSONNEL QUALIFICATIONS AND EXPERIENCE (30 POINTS)	TARGETED GOALS	POINTS ALLOCATION	Bidder has submitted no information or inadequate information to determine scoring levels	0	Bidder has successfully completed at least <u>1 similar Water</u> project with a project value of <u>R 10 000 000</u> or more with positive references within the past 5 years	3	Bidder has successfully completed at least <u>1 similar Wastewater</u> project with a project value of <u>R 10 000 000</u> or more with positive references within the past 5 years	5	Bidder has successfully completed at <u>least 1 similar WWTW</u> project with a project value of <u>R 15 000 000</u> or more with positive references within the past 5 years	10	Bidder has successfully completed at least <u>2 similar Water</u> project with a project value of <u>R 20 000 000</u> or more with positive references within the past 5 years	10	Bidder has successfully completed at least <u>2 similar Wastewater</u> project with a project value of <u>R 20 000 000</u> or more with positive references within the past 5 years	20	Bidder has successfully completed at least <u>2-3 similar WWTW</u> projects with a project value of <u>R 20 000 000</u> or more with positive references within the past 5 years	30	Bidder has successfully completed at least <u>3 similar Water</u> project with a project value of <u>R 30 000 000</u> or more with positive references within the past 5 years	20	Bidder has successfully completed at least <u>3 similar Wastewater</u> project with a project value of <u>R 30 000 000</u> or more with positive references within the past 5 years	30	Bidder has successfully completed at least <u>4 similar WWTW</u> projects with a project value of <u>R 30 000 000</u> or more with positive references within the past 5 years	40
TARGETED GOALS	POINTS ALLOCATION																							
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Contractor

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Witness 2

Employer

Witness 1

Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER																																								
		The Bidder must submit Proposed Team Structure, identifying Site Foreman, Site Agent / Artisan and Plant (Excavator / TLB) Operator or Formwork and Reinforced Concrete Foreman as key personnel. (Copies of CVs and certified copies of certificates must be attached). <table border="1"> <thead> <tr> <th>KEY PERSONNEL</th><th>TARGETED GOALS</th><th>POINTS ALLOCATION</th></tr> </thead> <tbody> <tr> <td rowspan="3">Electrical Specialist</td><td>No information or inadequate information submitted to determine scoring level</td><td>0</td></tr> <tr> <td>Qualified Electrical Specialist/ Electrician with 5 – 10 years of relevant construction experience</td><td>5</td></tr> <tr> <td>Qualified Electrical Specialist/ Electrician with more than 10 years of relevant construction experience</td><td>10</td></tr> <tr> <td rowspan="3">Site agent / Artisan</td><td>No information or inadequate information submitted to determine scoring level</td><td>0</td></tr> <tr> <td>Qualified Artisan with Trade Test Certificate and 1 – 3 years of relevant construction experience</td><td>5</td></tr> <tr> <td>Qualified Artisan with Trade Test Certificate and more than 3 years of relevant construction experience</td><td>10</td></tr> <tr> <td rowspan="3">Mechanical Specialist</td><td>No information or inadequate information submitted to determine scoring level</td><td>0</td></tr> <tr> <td>Qualified Mechanical Specialist with 5 – 10 years of relevant construction experience</td><td>5</td></tr> <tr> <td>Qualified Mechanical Specialist with more than 10 years of relevant construction experience</td><td>10</td></tr> </tbody> </table> (iii) SCORING FINANCIAL CAPACITY (10 POINTS) Score quality in each of the categories stated in the Table below: <table border="1"> <thead> <tr> <th>CATEGORY</th><th>EVALUATION CRITERIA</th><th>SCORING TEMPLATE</th></tr> </thead> <tbody> <tr> <td colspan="3">FINANCIAL</td></tr> <tr> <td rowspan="2">Letter of intent to provide Performance Guarantee (Form O – T2.2.15)</td><td>Provided</td><td>8</td></tr> <tr> <td>Not Provided</td><td>0</td></tr> <tr> <td rowspan="2">Letter of intent to provide All Risk & Third-Party Insurance (Form O – T2.2.15)</td><td>Provided</td><td>2</td></tr> <tr> <td>Not Provided</td><td>0</td></tr> </tbody> </table>	KEY PERSONNEL	TARGETED GOALS	POINTS ALLOCATION	Electrical Specialist	No information or inadequate information submitted to determine scoring level	0	Qualified Electrical Specialist/ Electrician with 5 – 10 years of relevant construction experience	5	Qualified Electrical Specialist/ Electrician with more than 10 years of relevant construction experience	10	Site agent / Artisan	No information or inadequate information submitted to determine scoring level	0	Qualified Artisan with Trade Test Certificate and 1 – 3 years of relevant construction experience	5	Qualified Artisan with Trade Test Certificate and more than 3 years of relevant construction experience	10	Mechanical Specialist	No information or inadequate information submitted to determine scoring level	0	Qualified Mechanical Specialist with 5 – 10 years of relevant construction experience	5	Qualified Mechanical Specialist with more than 10 years of relevant construction experience	10	CATEGORY	EVALUATION CRITERIA	SCORING TEMPLATE	FINANCIAL			Letter of intent to provide Performance Guarantee (Form O – T2.2.15)	Provided	8	Not Provided	0	Letter of intent to provide All Risk & Third-Party Insurance (Form O – T2.2.15)	Provided	2	Not Provided	0
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	Not Provided	0																																								

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER																					
		(iv) LIST OF PLANT (20 POINTS) Bidders are expected to have the following plant: Excavator, TLB, Tipper Truck, Water Cart and Compactor. (Certified registration documents of plant or letter of intent to rent the relevant plant must be attached). <table border="1"> <thead> <tr> <th>TARGETED GOALS</th><th>Owned</th><th>Rent</th></tr> </thead> <tbody> <tr> <td>No relevant documents attached</td><td>0</td><td>0</td></tr> <tr> <td>TLB</td><td>4</td><td>2</td></tr> <tr> <td>Excavation</td><td>4</td><td>2</td></tr> <tr> <td>Tipper Truck</td><td>4</td><td>2</td></tr> <tr> <td>Mobile diesel pump – End Suction centrifugal</td><td>4</td><td>2</td></tr> <tr> <td>Mobile diesel pump unit - Submersible</td><td>4</td><td>2</td></tr> </tbody> </table> Stage 3: Financial Offer and Preference Evaluation All responsive bids that qualify by meeting the minimum thresholds for functionality will then be evaluated on the basis of price and preference in accordance with the Preferential Procurement Regulations 2017 (Government Gazette No. 40553 dated 20 January 2017). The points scored for functionality are not carried over or considered in the calculation of the Financial and Preference evaluation. For bids with a Rand Value above R 30 000.00 and up to a Rand value of R 50 million (80 / 20) (1) The following formula will be used to calculate the points out of 80 for price in respect of a tender with a Rand value equal to or above R30 000.00 and up to a Rand value of R50 million, inclusive of all applicable taxes. $P_s = 80 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right)$ Where: Ps = Points scored for comparative price of bid or offer under consideration; Pt = Comparative price of bid or offer under consideration, and; Pmin = Comparative price of lowest acceptable bid or offer.	TARGETED GOALS	Owned	Rent	No relevant documents attached	0	0	TLB	4	2	Excavation	4	2	Tipper Truck	4	2	Mobile diesel pump – End Suction centrifugal	4	2	Mobile diesel pump unit - Submersible	4	2
TARGETED GOALS	Owned	Rent																					
No relevant documents attached	0	0																					
TLB	4	2																					
Excavation	4	2																					
Tipper Truck	4	2																					
Mobile diesel pump – End Suction centrifugal	4	2																					
Mobile diesel pump unit - Submersible	4	2																					

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		(7) The points scored must be rounded off to the nearest two decimal places. (8) Subject to sub-regulation (9) and regulation 11, the contract must be awarded to the tenderer scoring the highest points. (9) (a) If the price offered by a Bidder scoring the highest points is not market-related, the organ of state may not award the contract to that Bidder. (b) The organs of state may: (i) negotiate a market-related price with the tenderer scoring the highest points or cancel the Bid; (ii) if the Bidder does not agree to a market-related price, negotiate a market-related price with the Bidder scoring the second highest points or cancel the Bid; (iii) if the Bidder scoring the second highest points does not agree to a market-related price, negotiate a market-related price with the Bidder scoring the third highest points or cancel the Bid.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		(c) If a market-related price is not agreed as envisaged in paragraph (b)(iii), the organ of state must cancel the Bid.
Government Gazette No. 26427 of 9 June 2004, Section F.3.9,	Risk Evaluation Methodology	In addition to price and preference evaluation, all bidders who qualify for further consideration will be subjected to a structured risk evaluation process. The purpose of this process is to safeguard the Employer against potential commercial, financial, and technical risks that may compromise project delivery. The risk evaluation will consist of two steps, as outlined below. <u>Step 1: Verification of Arithmetical Errors</u> In line with Government Gazette No. 26427 of 9 June 2004, Section F.3.9, responsive tender offers shall be checked for arithmetical errors and corrected in the following manner: •Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern. •Where a bill of quantities (or schedule of quantities/rates) applies and an error exists in the line-item total resulting from the product of the unit rate and the quantity, the line-item total shall govern, and the rate shall be corrected. •Where there is an obvious gross misplacement of the decimal point in the unit rate, the line-item total as quoted shall govern, and the unit rate will be corrected. •Where an error occurs in the total of prices, either as a result of the above corrections or due to miscalculations in addition, the total of prices shall govern. In such cases, the tenderer will be asked to revise selected item prices (and rates if applicable) to align with the corrected total. •The Employer reserves the right to reject a tender offer if the bidder does not accept the corrections. <u>Step 2: Evaluation of Critical Rates</u> Following the correction of arithmetical errors, the tenderer's Bill of Quantities (BOQ) will be evaluated for abnormally low or high rates on critical items. These items are considered essential for the success of the project, and unduly priced items may expose the Employer to significant commercial risk. The evaluation will compare the following: • Bidder's rate • Consultant's estimate • Market average (derived from top four bids) An item will be flagged where the bidder's rate deviates substantially from both the consultant's estimate and the market average, creating a risk that the item cannot be delivered at a reasonable profit or that the Employer may be overcharged. <u>Example:</u> For sludge removal, the bidder submitted a rate of R 5.00/m³, compared to the consultant's estimate of R 130.00/m³ and a market average of R 92.50/m³. The financial effect of this unduly low rate was calculated as R 2 194 150.00 (excl. VAT), presenting a significant commercial risk to the Employer.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		For the purpose of risk assessment and pricing analysis, the following Bill of Quantities (BOQ) items will be carefully evaluated. This evaluation aims to identify potential commercial risks, abnormally high or low pricing, and any anomalies that may affect project execution or financial viability. The list provided below is indicative and not exhaustive, as the evaluation panel reserves the right to include any additional items considered critical to ensuring a comprehensive and fair assessment of all tender submissions: <u>Mechanical and Process Equipment</u> • Pumping of liquid substances from ponds • Sludge removal by mechanical means • Sludge removal by hand • Installation of one (1) T6 Gorman-Rupp pump and motor • Installation of one (1) T4 Gorman-Rupp pump and motor • Installation of new filter media (Hewi-Africa CF-27 Cross-Fluted Film Fill) <u>Refurbishment Works</u> • Refurbishment of bearings • Refurbishment of scum baffles • Refurbishment of weir plates • Refurbishment of scum boxes • Refurbishment of scrapers • Refurbishment of motors and drive units <u>New Equipment Supply and Installation</u> • Supply, removal of existing, and installation of new mixer units • Supply, removal of existing, and installation of new aerator units • Supply, installation, alignment, testing, and commissioning of new axial pumps and motors • Supply, installation, testing, and commissioning of new 4.8 m tilting weirs • Supply of ultrasonic flowmeters • Installation of ultrasonic flowmeters <u>Pipelines and Linings</u> • 200 mm Ø Class 9 uPVC Z-lok pipes • 250 mm Ø Class 9 uPVC Z-lok pipes • High-density polyethylene (HDPE) liner (700 micrometres) <u>Layered Materials for Wetland/Filter Beds</u> • 100 mm thick growth layer of fertilizer compost (SANS 10400 compliant) • 150 mm thick layer of 19 mm crushed stone (approved material) • 300 mm thick filter layer constructed of river sand (or equivalent) • 70% shading cloth (HDPE or polypropylene fibres, used as a separation layer) <u>Aquatic Planting</u> • Berula erecta • Cyperus prolifer • Cyperus textilis • Juncus effusus

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		• Juncus inflexus • Schoenoplectus corymbosus <u>Laboratory and Testing Equipment</u> • Procurement of laboratory equipment "Complete Green Drop Kit", including dissolved oxygen (DO) meter supplied by Chemical Plus <u>Civil Works</u> Perimeter Wall (Face Brick) • Construction of one brick perimeter wall - face brick complete with reinf. • Extra over brickwork: lay bricks on edge at wall capping • Straight joints in brick wall with 5.6 mm Ø × 600 mm long dowel bars • 1.8 m high × 3 m wide sliding access gates, complete with all parts & labour • Strip brick wall footing (600 mm × 450 mm) in 25 MPa concrete • High-tensile steel reinforcement in foundations • Mild steel reinforcement in foundations <u>Concrete Palisade Fencing</u> • 2.4 m high concrete palisade fencing including fence posts and corner posts, painted with one primer coat (red oxide) and two coats aluminium paint • 500 mm high razor wire coil system fixed to the top of fencing complete with all parts and labour <u>Electrical and Power Supply</u> Substations and Panels • OHL Yard Substation (YSS) assembly (11/0.42 kV, 200 kVA, 300 A, 10 kA), outdoor, corrosion-resistant metal, IP65 • Supply of new 11/0.42 kV, 200 kVA MSS • Supply and installation of new 11/0.42 kV, 75 kV OHL POC assembly • Supply and installation of new electrical panel (including delivery, rigging, and positioning) <u>Cabling (Supply, Installation, Terminations, and Joints)</u> • LV copper cables: 70 mm², 50 mm², 35 mm², 25 mm², 16 mm², 10 mm², 6 mm², and 4 mm² (all 4-core, PVC insulated) • LV aluminium cables: 120 mm², 95 mm², 75 mm², 50 mm², 35 mm², 25 mm², 16 mm², and 10 mm² (all 4-core, PVC insulated) <u>Standby Generators</u> • Supply and installation of new 0.42 kV, 300 kVA (240 kW) standby diesel generator, complete with: • Weatherproof, sound-attenuated canopy • Motor assembly (Perkins, Cummins, CAT, Volvo, or approved equivalent) • Alternator assembly (Leroy Somer, Marathon, Marelli, or approved equivalent) • LV distribution panel with full switchgear (ABB, Schneider, CBI, or approved equivalent) • Automatic mains failure (ATS) system

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE		ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		- Generator controller (DSE 6000 series or approved equivalent) - Synchronising controller (DSE 8000 series or approved equivalent) - Controller modem (Deep Sea Electronics range or approved equivalent) - Supply and installation of new 0.42 kV, 175 kVA (140 kW) standby diesel generator, complete with all accessories as specified above
3.13.1	Acceptance of Bid Offer	A Bid Offer will only be accepted on condition that such acceptance is not prohibited in terms of clause 44 of the Municipal Supply Chain Management Regulations published in terms of the Municipal Finance Management Act, 2003.
3.17	Copies of Contract	The successful Bidder shall receive ONE (01) copy of the signed Contract. The additional Conditions of Bid are: 1 Phokwane Local Municipality may also request that the Bidder provide written evidence that his financial, labour and resources are adequate for carrying out project. 2 The Phokwane Local Municipality reserves the right to appoint a firm of chartered accountants and auditors and / or execute any other financial investigations on the financial resources of any Bidder. The Bidder shall provide all reasonable assistance in such investigations. 3 The Phokwane Local Municipality reserves the right to appoint a different Service Provider for each project. The Bidder shall be required to complete the Form of Offer (C1.1) and the Bill of Quantities (C2.2) for each project. 4 The bid document shall be submitted as a whole and shall not be taken apart. 5 List of Returnable Documents (PART T2) must be completed in full. (A bidder's company profile will not be used by the PHOKWANE Local Municipality to complete PART T2 on behalf of the Bidder) NB: If PART T2 is not completed in full by the Bidder, this offer will be rejected

END OF SECTION

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section T1.2
Standard Conditions of Tender

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

STANDARD CONDITIONS OF TENDER

The Standard for Uniformity in Construction Procurement is available on the CIDB website or from the on the following link:

<http://www.cidb.org.za/publications/Documents/Standard%20for%20Uniformity%20in%20Construction%20Procurement%20-%20July%202015.pdf>

Annexure F of CIDB Standard for Uniformity in Construction Procurement (July 2015), contains references to the Bid Data that apply specifically to the Bid.

END OF SECTION

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT : PLM/TREF/1409 - 2025

PART T2
Returnable Documents

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP

WASTE WATER TREATMENT WORKS

CONTRACT : PLM/TREF/1409 - 2025

INDEX

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T2.2	RETURNABLE SCHEDULES	37

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT : PLM/TREF/1409 - 2025

Section T2.1
List of Returnable Documents

The Bid Document must be submitted as a whole. All forms must be properly completed as required and the document shall not be taken apart or altered in any way whatsoever.

All forms must be duly completed in **black ink** as required.

The list of returnable documents, which consists of forms and schedules to be completed and company specific certificates and information pages to be attached, are listed under Section T2.1 below.

For ease of reference, Bidders are to complete all the yellow pages in the bid document and submit all certificates and documentation requested on such yellow pages.

Bidders shall also complete the **RETURNABLE DOCUMENT CHECKLIST** included in the bid document on page v - vi.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

LIST OF RETURNABLE DOCUMENTS

The Bidder must submit the following documents with this Bid. If the documents are not included in the document, the Municipality will not consider this Bid.

CLAUSE REFERRED TO IN STANDARD CONDITIONS OF TENDER	DOCUMENT
2.1	Copy of Certificate of Contractor Registration or proof of registration with the CIDB as a Category 7 CE & 7 ME / or Higher-class Contractor.
2.13.4	Letter of authorization to sign the Form of Offer and where required in Bid Document.
2.28	Tax Compliance Verification pin on SARS letterhead

END OF SECTION

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

INDEX

THE RETURNABLE SCHEDULES LISTED BELOW MUST BE COMPLETED AND SUBMITTED WITH THE BID OFFER. IF THE DOCUMENTS ARE NOT INCLUDED IN THE DOCUMENT, THE MUNICIPALITY WILL NOT CONSIDER THIS BID.

ITEM	DESCRIPTION	PAGE NO.
T2.2.1	FORM A : Bid Briefing / Site Inspection Certificate Attendance Certificate	38
T2.2.2	FORM B : Compulsory Enterprise Questionnaire	39
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T2.2.4	FORM D : Record of Addenda to Bid Document	44
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T2.2.6	FORM F : Schedule of Works Previously Executed	46
T2.2.7	FORM G : Schedule of Present Commitments	50
T2.2.8	FORM H : Key Personnel Qualifications and Experience	51
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T2.2.10	FORM J : Schedule of Plant and Equipment	56
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T2.2.12	FORM L : Schedule of Proposed Sub-Contractors	62
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T2.2.14	FORM N : Declaration of Interest	73
T2.2.15	FORM O : Letter of Intend to Provide Performance Guarantee & Letter of intent to provide All Risk & Third-Party Insurance	76
T2.2.16	FORM P : Declaration of Good Standing Regarding Tax	78
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T2.2.18	FORM R : Letter of Good Standing for Compensation for Occupational Injuries and Deceases Act 130 Of 1993 (Amended) as Issued by the Department of Labour	82
T2.2.19	FORM S : Unemployment Insurance Fund (UIF) Registration	84
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T2.2.21	FORM U : Financial References	88
T2.2.22	FORM V : Compliance with OHSA (Act 85 of 1993)	90
T2.2.22	FORM W : Declaration of Bidder's Past Supply Chain Management Practices	92
T2.2.24	FORM X : Certificate of Independent Bid Determination	94

Note: The Bidder is required to complete each and every schedule and form listed above to the best of his ability, as the evaluation of Bids and eventual Contract will be based on the information provided by the Bidder. Failure of a Bidder to complete the schedules and forms to the satisfaction of the Employer will inevitably prejudice the Bid and may lead to rejection on the basis that the Bid is non-responsive.

END OF SECTION

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT : PLM/TREF/1409 - 2025

Section T2.2

Returnable Schedules

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**FORM A: BID BRIEFING / SITE INSPECTION CERTIFICATE ATTENDANCE
CERTIFICATE**

I / we further certify that I am / we are satisfied with the description of the Work and the explanations given by the Engineer and that I understand perfectly the work to be done, as specified and implied for the execution of this contract at the site visit and clarification meeting.

DATE:

This will certify that _____
 representing _____
 attended a Site Inspection for this Contract on _____ day of _____, 20____.

DATE:

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

T2.2.2**FORM B: COMPULSORY ENTERPRISE QUESTIONNAIRE**

In the case of a Joint Venture – This questionnaire is to be completed and submitted in respect of each partner.

1. **Name of Enterprise:**
2. **VAT Registration number, if any:**
3. **CIDB Registration number:**
4. **Particulars of sole proprietors and partners in partnership:**

Name	Identity Number	Personal Tax Income Number

* Complete only if sole proprietor or partnership and attach separate page if more than 4 partners.

5. Particulars of companies and close corporations:

Company Registration Number:

Close Corporation Number:

Tax reference Number:

6. Record in the service of the state:

Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership of director, manager, principal stakeholder or stakeholder in a company or close corporation is currently of has been within the last 12 months in the service of any of the following:

- ☐ a member of any Municipal Council
- ☐ a member of any Provincial Legislature
- ☐ a member of the National Assembly or the National Council of Province
- ☐ a member of the board of Directors of any Municipal entity
- ☐ an official of any Municipality or Municipal entity
- ☐ an employee of any Provincial Department, National or Provincial Public entity or Constitutional Institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- ☐ a member of an accounting authority of any National or Provincial Public entity
- ☐ an employee of Parliament or a Provincial Legislature

If any of the above boxes are marked, disclose the following information:

Name of Sole Proprietor, Partner, Director, Manager or Provincial Stakeholder	Name of Institution, Public Office, Board or Organ of State and Position Held	Status of Service (Tick Appropriate Column)	
		Current	Within the last 12 months

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

T2.2.3

FORM C: CERTIFICATE OF AUTHORITY FOR SIGNATORY

Details of person responsible for bid process:

Name:

Contact number:

Office address:

Signatories for close corporations and companies shall confirm their authority by attaching to this form a **duly signed and dated original or certified copy on the Company Letterhead** of the relevant resolution of their members or their board of directors, as the case may be.

PRO-FORMA FOR COMPANIES AND CLOSE CORPORATIONS

Certificate of Authority

"By resolution of the board of directors passed on (date)

Mr/s.

has been duly authorized to sign all documents in connection with the Bid for Contract Number and any Contract which may arise there from on behalf of

(BLOCK CAPITALS)

SIGNED ON BEHALF OF THE COMPANY :

IN HIS CAPACITY AS :

DATE :

FULL NAMES OF SIGNATORY :

AS WITNESSES : 1.

: 2.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PRO-FORMA FOR JOINT VENTURES:

Certificate of Authority for Joint Ventures

We, the undersigned, are submitting this Bid Offer in Joint Venture and hereby authorise **Mr/Ms**
authorised signatory of, acting in the capacity
of **Lead Partner**, to sign all documents in connection with the Bid Offer and any contract resulting
therefrom on behalf of the Joint Venture.

The nominated **Lead Partner** for the Joint Venture shall be:

-

The nominated **Supporting Partner** shall be:

-
-

Name of Firm	Address	Duly Authorised Signature
Lead Partner: CIDB Reg No:		Signature: Name: Designation:
Supporting Partner: CIDB Reg No:		Signature: Name: Designation:
Supporting Partner: CIDB Reg No:		Signature: Name: Designation:

Joint Venture Partner Identification

Bidders submitting an offer as a Joint Venture are required to clearly stipulate the nominated **Lead Partner** and all **Supporting Partner(s)** in the space provided in this document. Failure to provide this information in full, or to properly designate the Lead Partner and Supporting Partner(s), shall render the bid **non-responsive** and will result in the **disqualification** of the bid submission.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**ATTACH HERETO THE DULY SIGNED AND DATED
ORIGINAL OR CERTIFIED COPY OF AUTHORITY OF
SIGNATORY ON COMPANY LETTERHEAD**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T2.2.4

FORM D: RECORD OF ADDENDA TO BID DOCUMENT

We confirm that the following communications received from the Employer before the submission of this Bid Offer, amending the Bid Documents, have been taken into account in this Bid Offer:

	Date	Title of Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

T2.2.5

FORM E: SCHEDULE OF AMENDMENTS, QUALIFICATIONS AND ALTERATIONS

Should the Bidder desire to make any departures from or modifications to the General or Special Conditions of Contract, the Specifications, the Schedule of Quantities or the Drawings, or to qualify his Bid in any way, he shall set out his proposals clearly hereunder or alternatively state them in a covering letter attached to his Bid and referred to hereunder, failing which the Bid will be deemed to be unqualified.

Page, Clause or Item	Proposed Qualifications, Alternatives, Amendments or Discounts

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T2.2.6
FORM F: SCHEDULE OF WORKS PREVIOUSLY EXECUTED

The following is a statement of major works successfully executed by myself / ourselves in recent years.
Failure to detail the required information shall signify that the Bid is submitted by an inexperienced Bidder.

Employer	Engineer / Consultant Firm	Nature of Works / Description of Works	Value of Construction Works	Duration and Completion Date
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Employer	Engineer / Consultant Firm	Nature of Works / Description of Works	Value of Construction Works	Duration and Completion Date
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

NOTE:

- 1

Completion Certificate with a project value above R 10 million must be attached in order to qualify for twenty (20) points.
- 2 – 3

Completion Certificates with a project value above R 10 million must be attached in order to qualify for forty (40) points.
- 4 and above

Completion Certificates with a project value above R 10 million must be attached in order to qualify for fifty-five (55) points.

The following information must be contained in each Completion Certificate for it to qualify for points as prescribed above:

- I. Description of work
- II. Value
- III. Contract Construction Period
- IV. Actual Construction Period
- V. Date Completed

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

ATTACH HERETO THE CERTIFIED COMPLETION CERTIFICATES

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T2.2.7

FORM G: SCHEDULE OF PRESENT COMMITMENTS

Employer	Engineer / Consultant Firm	Nature of Works / Description of Works	Value of Construction Works	Duration and Completion Date
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			

SIGNED ON BEHALF OF BIDDERDATE:

POSITIONNAME OF BIDDER

T2.2.8

FORM H: KEY PERSONNEL QUALIFICATIONS AND EXPERIENCE

The experience of the key personnel will be evaluated in relation to the scope of work from three different points of view:

- 1) General experience and qualifications in relation to the works
- 2) Adequacy for the Project
- 3) Knowledge of issues pertinent to the works.

The experience of the Tenderer in similar projects or similar areas and conditions in relation to the required service as described in the scope of work **over the last five years** will be evaluated.

A CV of the key person of **not** more than 3 pages should be attached to this schedule.

The CV should be structured under the following headings:

- 1 Personal particulars
 - name
 - date and place of birth
 - place (s) of tertiary education and dates associated therewith
 - professional awards
- 2 Qualifications (degrees, diplomas, grades of membership of professional societies and professional registrations) (Attach copies of each)
- 3 Name of current employer and position in enterprise
- 4 Overview of work experience (year, organization and position)
- 5 Outline of recent experience that has a bearing on the scope of work

The scoring of the experience of the Key Personnel will be as follows:

KEY PERSONNEL	TARGETED GOALS	POINTS ALLOCATION
Electrical Specialist	No information or inadequate information submitted to determine scoring level	0
	Qualified Electrical Specialist/ Electrician with 5 – 10 years of relevant construction experience	5
	Qualified Electrical Specialist/ Electrician with more than 10 years of relevant construction experience	10
Site agent / Artisan	No information or inadequate information submitted to determine scoring level	0
	Qualified Artisan with Trade Test Certificate and 1 – 3 years of relevant construction experience	5
	Qualified Artisan with Trade Test Certificate and more than 3 years of relevant construction experience	10
Mechanical Specialist	No information or inadequate information submitted to determine scoring level	0
	Qualified Mechanical Specialist with 5 – 10 years of relevant construction experience	5
	Qualified Mechanical Specialist with more than 10 years of relevant construction experience	10

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

SIGNED ON BEHALF OF BIDDER	DATE:
POSITION	NAME OF BIDDER

**ATTACH HERETO CURRICULUM VITAE AND
CERTIFIED COPIES OF QUALIFICATIONS**

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

T.2.2.9
FORM I: LABOUR UTILIZATION

LABOUR CATEGORIES - Definitions

NOTE: These definitions serve as a guideline to complete the following table and will in no respect alter the Project Specifications or Standardised Specifications.

1. General Foreman / Foreman

An employee who gives out work, directly co-ordinates and supervises employees. His duties encompass any one or more of the following activities:

- a) Supervision;
- b) maintaining discipline;
- c) ensuring safety on the workplace;
- d) being responsible to the Contractor for efficiency and production for his portion of the works; and
- e) performing skilled work, whether in an instructional capacity or otherwise.

2. Charge hand

An employee engaged in any one or more of the following activities:

- a) Being primarily employed in a supervisory capacity, but who may also be doing the work of an artisan;
- b) giving out work to other employees under his control and supervision;
- c) ensuring safety on the workplace;
- d) maintaining discipline; and
- e) being directly responsible to a general foreman or foreman or the Contractor or the Contractor's representative for efficiency and production for his portion of the works.

3. Artisan

An employee who has successfully completed all prescribed courses at a practical institutional training centre for a particular trade and who has successfully completed the on-site period of training as prescribed and who has successfully passed the prescribed trade tests.

4. Team Leader

An employee engaged in any one or more of the following activities:

- a) Being employed in a supervisory capacity, but who may also be doing the work of a skilled person;
- b) giving out work to other employees under his control and supervision;
- c) maintaining discipline;
- d) being directly responsible to a Charge hand or a foreman or a general foreman or the employer's authorised representative for efficiency and production for his portion of the works.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

5. **Skilled Employee**

An employee engaged in an ancillary trade or an assistant artisan.

6. **Semi-Skilled Employee**

An employee with any specified skills, an apprentice or a trainee-artisan.

7. **Unskilled Employee**

An employee engaged on any task or operation not specified above.

8. **Imported Employee**

Personnel permanently employed by Contractor.

9. **Local Employee**

Temporary workforce employed through Labour Desk.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM I: LABOUR UTILISATION - MAN DAYS

Categories	No. of Man Days	
	Imported	Local
1. Contracts Manager		
2. Site Agent		
3. Foreman / Supervisors (Specify Type)		
3.1. _____		
3.2. _____		
3.3. _____		
4. Safety Inspectors (Specify Type)		
4.1. _____		
4.2. _____		
5. Charge Hands		
6. Artisans		
7. Operators / Drivers		
8. Clerks / Storeman		
9. Team Leader		
10. Skilled Labour		
11. Semi-skilled Labour		
12. Unskilled Labour		

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

T.2.2.10
FORM J: SCHEDULE OF PLANT AND EQUIPMENT

1. Major Plant and Equipment available for this Contract:

Quantity	Size, Description, Capacity, etc.

2. Major Plant and Equipment that will be hired or acquired for this contract if my / our Bid is accepted:

Quantity	Size, Description, Capacity, etc.	How Acquired	
		Hire / Buy	Source

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- Points allocated to bidder without Documentation for Equipment **(0 points)**
- Points allocated to bidder with Documentation for Equipment **(maximum of 5 points)**
- Proof must be provided that equipment is owned by the company.
- Proof must be provided (if available) from supplier if the bidder intends to hire and does not have his own plant.

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

ATTACH HERETO CERTIFIED PROOF OF EQUIPMENT OWNED
AND / OR EQUIPMENT TO BE HIRED

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

T.2.2.11

FORM K: FUNCTIONALITY CRITERIA AND POINTS CLAIMED BY BIDDER

A Bid will not be evaluated further if it fails to meet the minimum threshold of total **70 points** out of maximum 100 points for functionality as prescribed in the following tables:

Category	Functional Criteria	Points Allocation	Points Claimed by Bidder
1	Experience of the Bidder	40	
2	Key personnel qualifications and experience	30	
3	Scoring financial capacity	10	
4	List of plant	20	
TOTAL		100	

CATEGORY 1: Experience of the Bidder

TARGETED GOALS Contractor has successfully completed similar and comparative projects	BID GOAL	MINIMUM POINTS	POINTS CLAIMED BY BIDDER
Bidder has submitted no information or inadequate information to determine scoring levels	0	20	
Bidder has successfully completed at least 1 similar Water project with a project value of R 10 000 000 or more with positive references within the past 5 years	3		
Bidder has successfully completed at least 1 similar Wastewater project with a project value of R 10 000 000 or more with positive references within the past 5 years	5		
Bidder has successfully completed at least 1 similar WWTW project with a project value of R 15 000 000 or more with positive references within the past 5 years	10		
Bidder has successfully completed at least 2 similar Water project with a project value of R 20 000 000 or more with positive references within the past 5 years	10		
Bidder has successfully completed at least 2 similar Wastewater project with a project value of R 20 000 000 or more with positive references within the past 5 years	20		
Bidder has successfully completed at least 2-3 similar WWTW projects with a project value of R 20 000 000 or more with positive references within the past 5 years	30		
Bidder has successfully completed at least 3 similar Water project with a project value of R 30 000 000 or more with positive references within the past 5 years	20		
Bidder has successfully completed at least 3 similar Wastewater project with a project value of R 30 000 000 or more with positive references within the past 5 years	30		
Bidder has successfully completed at least 4 similar WWTW projects with a project value of R 30 000 000 or more with positive references within the past 5 years	40		
MINIMUM POINTS: Category 1	20		

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

MAXIMUM POINTS: Category 1	40

The Bidder must submit proof of successfully completed similar and comparative projects, i.e. construction works (Copies of Appointment Letter and Completion Certificate must be attached).

CATEGORY 2: Key personnel qualifications and experience

KEY PERSONNEL	TARGETED GOALS	POINTS ALLOCATION	POINTS CLAIMED BY BIDDER
Electrical Specialist	No information or inadequate information submitted to determine scoring level	0	
	Qualified Electrical Specialist/ Electrician with 5 – 10 years of relevant construction experience	5	
	Qualified Electrical Specialist/ Electrician with more than 10 years of relevant construction experience	10	
Site agent / Artisan	No information or inadequate information submitted to determine scoring level	0	
	Qualified Artisan with Trade Test Certificate and 1 – 3 years of relevant construction experience	5	
	Qualified Artisan with Trade Test Certificate and more than 3 years of relevant construction experience	10	
Mechanical Specialist	No information or inadequate information submitted to determine scoring level	0	
	Qualified Mechanical Specialist with 5 – 10 years of relevant construction experience	5	
	Qualified Mechanical Specialist with more than 10 years of relevant construction experience	10	
MINIMUM POINTS: Category 2		10	
MAXIMUM POINTS: Category 2		30	

The Bidder must submit Proposed Team Structure, identifying Electrical Specialist, Site Agent/ Artisan and Mechanical Specialist as key personnel (Copies of CV's and certified copies of certificates must be attached).

CATEGORY 3: Scoring Financial Capacity

CATEGORY	EVALUATION CRITERIA	SCORING TEMPLATE	MINIMUM POINTS	POINTS CLAIMED BY BIDDER
FINANCIAL				
Letter of intent to provide Performance Guarantee (Form O – T2.2.15)	Provided	8	2	
	Not Provided	0		
Letter of intent to provide All Risk & Third-Party Insurance (Form O – T2.2.15)	Provided	2		
	Not Provided	0		

 Contractor	 Witness 1	 Witness 2	 Employer	 Witness 1	 Witness 2

MINIMUM POINTS: Category 3	2	
MAXIMUM POINTS: Category 3	10	

CATEGORY 4: List of plant

Bidders are expected to have the following plant: Excavator, TLB, Tipper Truck, Water Cart and Compactor. (Registration documents of plant or letter of intent to rent the relevant plant must be attached).

TARGETED GOALS	Owned	Rent	POINTS CLAIMED BY BIDDER
No relevant documents attached	0	0	
TLB	4	2	
Excavation	4	2	
Tipper Truck	4	2	
Mobile diesel pump – End Suction centrifugal	4	2	
Mobile diesel pump unit - Submersible	4	2	
MINIMUM POINTS: Category 4	0	0	
MAXIMUM POINTS: Category 4	20	20	

Bid Evaluation Points

Description	Section Number	No of Points	
		Maximum	Claimed
Bid Amount (VAT Inclusive) – From Pricing Data	C1.1		
Price Points {80 x (1 – Pt – PM / Pm)}		80	
Preference Points	T2.2	20	
Total Points		100	

SIGNED ON BEHALF OF BIDDER	DATE:

POSITION	NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

T.2.2.12

FORM L: SCHEDULE OF PROPOSED SUB-CONTRACTORS

As per section 9 of the PPPFA 2000: Preferential Procurement Regulations 2017, it is the condition of this Bid that 30% (determination by the PHOKWANE Local Municipality to achieve the minimum Contact Participation Goal (CPG)) of the value of the contract must be Sub-contracted to –

- (a) an EME or QSE which is at least 51% owned by black people;
- (b) an EME or QSE which is at least 51% owned by black people who are youth;
- (c) an EME or QSE which is at least 51% owned by black people who are women;
- (d) an EME or QSE which is at least 51% owned by black people with disabilities.

Although the Act states that this becomes applicable for contracts above R 30 000 000, it is at the discretion of the Municipality that it applies to all construction contracts procured through the Supply Chain Management process, for the purpose of empowering the small and emerging Contractors within our area of jurisdiction.

Therefore, the Bidder shall list below any sub-contractors he intends to employ to carry out part(s) of the Works.

	Name and address of proposed Sub-Contractor	Nature and extent of work	Previous experience with Sub-Contractor
1.			
2.			
3.			
4.			
5.			

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

T.2.2.13

FORM M: PREFERENCE CLAIM FORM

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017.

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:
the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and

1.2 To be completed by the organ of state

- a) The applicable preference point system for this tender is the 80/20 preference point system.
- b) The 80/20 preference point system will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

- (a) Price; and
- (b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and SPECIFIC GOALS	100

1.5 Failure on the part of a Bidder to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.6 The organ of state reserves the right to require of a Bidder, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

DEFINITIONS

- (a) “tender” means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) “price” means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) “rand value” means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) “tender for income-generating contracts” means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) “the Act” means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000)

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 The 80/20

A maximum of 80 or 90 points is allocated for price on the following basis: **80/20**

$$Ps = 80 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$$

Where

- Ps = Points scored for price of tender under consideration
- Pt = Price of tender under consideration
- Pmin = Price of lowest acceptable tender

3.2 FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

A maximum of 80 points is allocated for price on the following basis: 80/20

$$Ps = 80 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right)$$

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Where

- Ps = Points scored for price of tender under consideration
Pt = Price of tender under consideration
Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the Bidder will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:
- 4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear that the 80/20 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—
- (a) an invitation for tender for income-generating contracts, that the 80/20 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
 - (b) any other invitation for tender, that the 80/20 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system, then the organ of state must indicate the points allocated for specific goals for the 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.
(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such. Note to Bidder s: The Bidder must indicate how they claim points for each preference point system)

3.2.1. LOCALITY

Locality of supplier	Number of Points for Preference (80/20)
Within the boundaries of Phokwane Local Municipality	20
Within the boundaries of the Frances Baard District Municipality	8
Within the boundaries of the Northern Cape	6
Outside the boundaries of the Northern Cape	4

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

1. DECLARATION

Bidders wishing to claim points for Locality must indicate their points claimed by circling table above and then complete the following section.

1.1 SPECIF GOALS CLAIMED IN TERMS OF PARAGRAPHS 4.2.1 AND 4.2.2

SPECIFIC GOALS: (maximum of 10)

1.2 LOCALITY CLAIMED IN TERMS OF PARAGRAPH 1.4 AND 5.2

LOCALITY: (maximum of 20)

2. DECLARATION WITH REGARD TO COMPANY / FIRM

2.1 Name of company / firm: _____

2.2 Company registration number: _____

2.3 VAT registration number: _____

2.4 Type of company / firm

- ☐ Partnership / Joint Venture / Consortium
- ☐ One-person business / sole propriety
- ☐ Close Corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company
- ☐ State Owned Company

2.5 MUNICIPAL INFORMATION

Municipality where business is situated: _____

Street address of business:

Registered municipal account number

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

- a) The information furnished is true and correct;
- b) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- c) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 5, the contractor may be required to furnish documentary proof to the satisfaction of the municipality that the claims are correct;
- d) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the municipality may, in addition to any other remedy it may have –

- (a) disqualify the person from the tendering process;
- (b) recover costs, losses or damages it has incurred or suffered as result of that person's conduct;
- (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
- (d) recommend that the Bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any municipality for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
- (e) forward the matter for criminal prosecution, if deemed necessary.

.....
SIGNATURE(S) OF BIDDER(S)

SURNAME AND NAME :

DATE:

ADDRESS :

.....

.....

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.14

FORM N: DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state ¹.
2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority and/or take an oath declaring his/her interest.
3. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.
- 3.1 Full Name :
- 3.2 Identity Number :
- 3.3 Company Registration Number :
- 3.4 Tax Reference Number :
- 3.5 VAT Registration Number :
- 3.6 Are you presently in the service of the state? ¹ **YES / NO**
- 3.6.1 If so, furnish particulars.
-
-
- 3.7 Have you been in the service of the state for the past twelve months? **YES / NO**
- 3.7.1 If so, furnish particulars.
-
-
- 3.8 Do you, have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
- 3.8.1 If so, furnish particulars.
-
-
- 3.9 Are you, aware of any relationship (family, friend, other) between a bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
- 3.9.1 If so, furnish particulars.
-
-

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.10 Are any of the company’s directors, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.10.1 If so, furnish particulars.

.....

.....

3.11 Are any spouse, child or parent of the company’s directors, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.11.1 If so, furnish particulars.

.....

.....

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CERTIFICATION

I, the undersigned certify that the information furnished on this declaration form is correct. I accept that the state may act against me should this declaration prove to be false.

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

¹ MSCM Regulations: "in the service of the state" means to be –

- (a) a member of –
 - (i) any municipal council;
 - (ii) any provincial legislature; or
 - (iii) the national Assembly or the national Council of provinces;
- (b) a member of the board of directors of any municipal entity;
- (c) an official of any municipality or municipal entity;
- (d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);
- (e) a member of the accounting authority of any national or provincial public entity; or
- (f) an employee of Parliament or a provincial legislature

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

T.2.2.15

FORM O: LETTER OF INTEND TO PROVIDE PERFORMANCE GUARANTEE AND
LETTER OF INTENT TO PROVIDE ALL RISK & THIRD-PARTY INSURANCE

The Bidder must attach hereto a letter from the bank or institution with whom he has made the necessary arrangements, to the effect that the said bank or institution will be prepared to provide the required performance guarantee and all risk & third-party insurances for the works when asked to do so.

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**ATTACH HERETO LETTER OF INTEND
TO PROVIDE PERFORMANCE GUARANTEE**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.16

FORM P: DECLARATION OF GOOD STANDING REGARDING TAX

SOUTH AFRICAN REVENUE SERVICES	Bid No: Closing Date:
DECLARATION OF GOOD STANDING REGARDING TAX PARTICULARS	
1. Name of Taxpayer / Bidder: 2. Trade Name: 3. Identification Number: (If applicable) 4. Company / Close Corporation registration number: 5. Income Tax reference number: 6. VAT registration number: (If applicable) 7. PAYE employer's registration number: (If applicable) 8. Monetary value of Bid: 	
DECLARATION	
I, ... the undersigned, the above Taxpayer / Bidder, hereby declare that my Income Tax, Pay-As-You-Earn (PAYE) and Value-Added-Tax (VAT) obligations of the above-mentioned taxpayer, which include the rendition of returns and payment of the relevant taxes: (i) Have been satisfied in terms of the relevant Acts; or (ii) That suitable arrangements have been made with the Receiver of Revenue to satisfy them. *	
..... SIGNATURE	 CAPACITY
..... DATE	
<u>PLEASE NOTE: *</u> The declaration (ii) cannot be made unless formal arrangements have been made with the Receiver of Revenue with regard to any outstanding revenue/outstanding tax returns.	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

ATTACH HERETO CERTIED TAX COMPLIANCE VERIFICATION PIN
ON A SARS LETTERHEAD

FOR COMPANIES AND CLOSE CORPORATIONS:

Tax Compliance Letter with a unique PIN in terms of Electronic Tax Compliance Status (TCS) system from SARS.

FOR JOINT VENTURES:

Each party to a Joint Venture shall submit separate Tax Compliance Letter with a unique PIN in terms of Electronic Tax Compliance Status (TCS) system from SARS.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.17

FORM Q: **REGISTRATION CERTIFICATES / AGREEMENTS / IDENTITY DOCUMENTS**

Attach hereto certified copies of Registration Certificates for Companies and Closed Corporations and certified copies of Identity Documents for Partnerships and Sole proprietors as well as signed Agreements and Powers of Attorney for Joint Venture / Consortium if applicable.

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**ATTACH HERETO CERTIFIED REGISTRATION
CERTIFICATES / AGREEMENTS / IDENTITY DOCUMENTS**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.18

**FORM R: LETTER OF GOOD STANDING FOR COMPENSATION FOR
OCCUPATIONAL INJURIES AND DECEASES ACT 130 OF 1993
(AMENDED) AS ISSUED BY THE DEPARTMENT OF LABOUR**

The Bidder is to attach to this page a valid Certificate of good standing with the Compensation Commissioner or with the Federated Employers’ Mutual Assurance (FEM). Failure to attach this certificate will render the Bid non-responsive.

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**ATTACH HERETO CERTIFIED CERTIFICATE OF GOOD STANDING
WITH COMPENSATION COMMISSIONER**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.19

FORM S: UNEMPLOYMENT INSURANCE FUND (UIF) REGISTRATION

A certified copy of the Bidder's Unemployment Insurance Fund (UIF) Registration Certificate to be inserted here.

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**ATTACH HERETO CERTIFIED COPY OF UNEMPLOYMENT INSURANCE
FUND (UIF) REGISTRATION**

FORM T: PROPERTY RATES CLEARANCE

Each party to a Joint Venture shall submit separate proof of payment of Municipal rates and taxes and / or lease agreement.

DATE:

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**ATTACH HERETO CERTIFIED PROOF OF PAYMENT OF MUNICIPAL RATES
AND TAXES AND / OR LEASE AGREEMENT**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.21

FORM U: FINANCIAL REFERENCES

FINANCIAL STATEMENTS

I / We agree, if required, to furnish an audited copy of the latest set of financial statements together with my / our Directors' and Auditors' report for consideration by the Client.

DETAILS OF BIDDER'S BANKING INFORMATION

I / We hereby authorise the Client / Engineer to approach all or any of the following banks for the purposes of obtaining a financial reference. You are also required to attach a financial reference letter stating bank rating from your financial institution.

Bank Name:

Account Name: (e.g. ABC Civil Construction CC.)

Account Type: (e.g. Savings, Cheque etc.)

Account No:

Address of Bank:
.....
.....
.....

Contact Person:

Tel No. of Bank / Contact:

How long has this account been in existence: 0 – 6 months ☐ (Thick which is
 7 – 12 months ☐ appropriate)
 13 – 24 months ☐
 More than 24 months ☐

SIGNED ON BEHALF OF BIDDER	DATE:
POSITION	NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

ATTACH HERETO CERTIFIED FINANCIAL REFERENCE LETTER
STATING BANK RATING FROM FINANCIAL INSTITUTION

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.22

FORM V: COMPLIANCE WITH OHSA (ACT 85 OF 1993)

Bidders are required to satisfy the Employer and the Engineer as to their ability and available resources to comply with the above by answering the following questions and providing the relevant information required below.

1. Is the Contractor familiar with the OHSA (ACT 85 OF 1993) and its Regulations? **YES / NO**

2. Who will prepare the Contractor's Health and Safety Plan? (Provide a copy of the person/s curriculum vitae/s or company profile).

3. Does the Contractor have a health and safety policy? If yes, provide a copy. **YES / NO**
How is this policy communicated to all employees?

4. Does the Contractor keep records of safety aspects of each construction site? **YES / NO**
If yes, what records are kept?

5. Does the Contractor conduct monthly safety meetings? If yes, who is the chairperson of the meeting, and who attends these meetings? **YES / NO**

6. Does the Contractor have a safety officer in his employment, responsible for the overall safety of his company? If yes, please explain his duties and provide a copy of his CV - (Attach) **YES / NO**

7. Does the Contractor have trained first aid employees? If yes, indicate who. **YES / NO**

8. Does the Contractor have a safety induction training programme in place? **YES / NO**
If yes, provide a copy.

SIGNED ON BEHALF OF BIDDER	DATE:

POSITION	NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**ATTACH HERETO CURRICULUM VITAE AND
SAFETY INDUCTION TRAINING PROGRAMME**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.23

FORM W: DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

1. This Municipal Bidding Document must form part of all bids invited.
2. It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
3. The bid of any bidder may be rejected if that bidder, or any of its directors have:
 - a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
 - b. been convicted for fraud or corruption during the past five years.
 - c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - d. been listed in the Register for Bid Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).

4. **In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.**

- 4.1. **Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector? YES / NO**

(Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the *audi alteram partem* rule was applied).

The Database of Restricted Suppliers now resides on the National Treasury's website (www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.

- 4.1.1. If so, furnish particulars:

- 4.2. **Is the bidder or any of its directors listed on the Register for Bid Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? YES / NO**

The Register for Bid Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.

- 4.2.1. If so, furnish particulars:

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.3.

Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?

YES / NO

4.3.1.

If so, furnish particulars:

4.4.

Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?

YES / NO

4.4.1.

If so, furnish particulars:

4.5.

Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?

YES / NO

4.5.1.

If so, furnish particulars:

CERTIFICATION

I, the undersigned (full name)
certify that the information furnished on this declaration form true and correct.

I accept that, in addition to cancellation of a contract, action may be taken against me should this declaration prove to be false.

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T.2.2.24

FORM X: CERTIFICATE OF INDEPENDENT BID DETERMINATION

1. This Municipal Bidding Document (MBD) must form part of all bids¹ invited.
2. Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging) ² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
3. Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
 - a) take all reasonable steps to prevent such abuse;
 - b) reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
 - c) cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.
4. This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.
5. In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

¹ Includes price quotations, advertised competitive bids, limited bids and proposals.

² Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

I, the undersigned, in submitting the accompanying bid:

(Bid Number and Description)

in response to the invitation for the bid made by:

(Name of Municipality / Municipal Entity)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of:

(Name of Bidder)

That:

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - a) has been requested to submit a bid in response to this bid invitation;
 - b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder
6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium³ will not be construed as collusive bidding.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
- a) prices;
 - b) geographical area where product or service will be rendered (market allocation);
 - c) methods, factors or formulas used to calculate prices;
 - d) the intention or decision to submit or not to submit, a bid;
 - e) the submission of a bid which does not meet the specifications and conditions of the bid;
 - or
 - f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

³ Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

SIGNED ON BEHALF OF BIDDER

DATE:

POSITION

NAME OF BIDDER

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP

WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

PORTION 2: THE CONTRACT

Part C1

Agreements and Contract Data

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

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END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C1.1
Forms of Offer and Acceptance
And
Contract Forms for Rendering of Services

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM OF OFFER AND ACCEPTANCE (AGREEMENT)

OFFER

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a Contract in respect of the following works:

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP WASTE WATER TREATMENT WORKS

which includes amongst other:

- The upgrade and full refurbishment of the existing Jan Kempdorp WWTW including; Inlet Structure, Primary Settling Pond no. 1-3, Oxidation Pond System, BNR Reactor, MCC Building at BNR, Clarifier, Biological Filter, Biological Filter Pumping Station, Hummus Tank, RAS/WAS Pumping station, Oxidation Pond - Recycling Pumping Station, Oxidation Pond System, Chlorine Dosing facility and Contact Channel, Sludge Drying Beds, Admin Building, High Mast Lighting and the construction of Boundary Wall & Perimeter Fence,

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

By the representative of the Bidder, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Bidder 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 INCLUSIVE OF VALUE-ADDED TAX IS

.....
..... rand [in words]; R..... [in figures],

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 to the Bidder before the end of the period of validity stated in the Bid Data, whereupon the Bidder becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

Signature(s)

Name(s)

Capacity

.....
[Name and address of organisation]

CIDB Registration number

Name and signature

Of witness Date

.....
Contractor

.....
Witness 1

.....
Witness 2

.....
Employer

.....
Witness 1

.....
Witness 2

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Bidders 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 Bidders Offer shall form an agreement between the Employer and the Bidder 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 Agreement]
Part C2	Pricing Data
Part C3	Scope of Work
Part C4	Site Information

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C4 above.

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

The Bidder shall within two weeks after 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 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 Bidder receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Bidder (now Contractor) within five (05) working days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding Contract between the parties.

Signature(s)

.....

Name(s)

.....

Capacity

.....

.....
[Name and address of organisation]

Name and signature of
witness

.....

Date

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

SCHEDULE OF DEVIATIONS

Notes:

1. The extent of deviations from the Bid Documents issued by the Employer prior to the Bid closing date is limited to those permitted in terms of the Conditions of Tender.
2. A Bidder's covering letter shall not be included in the final Contract Document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the Bid Documents and which is agreed by the Parties becomes an obligation of the Contract and shall also be recorded here.
4. Any change or addition to the Bid Documents arising from the above agreements and recorded here, shall also be incorporated into the final draft of the Contract.

1. Subject
Details

2. Subject
Details.....

3. Subject
Details

4. Subject
Details

5 Subject
Details

6 Subject
Details

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Bidder agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Bid Data and Addenda thereto as listed in the Bid Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Bidder 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 Bid Documents and the receipt by the Bidder of a completed signed copy of this Agreement shall have any meaning or effect in the Contract between the parties arising from this Agreement.

FOR THE BIDDER:

Signature(s)

.....

Name(s)

.....

Capacity

.....

.....

[Name and address of organisation]

Name and signature
of witness Date

FOR THE EMPLOYER:

Signature(s)

.....

Name(s)

.....

Capacity

.....

.....

[Name and address of organisation]

Name and signature
of witness Date

CONFIRMATION OF RECEIPT

The Bidder (now Contractor), identified in the Offer part of this Agreement, hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this Agreement, including the Schedule of Deviations (if any) today:

the [day] of..... [month] 20..... [year] at [place].

For the Contractor:

.....
Signature

.....
Name

.....
Capacity

Signature and name of witness:

.....
Signature

.....
Name

CONTRACT FORM - RENDERING OF SERVICES

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SERVICE PROVIDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SERVICE PROVIDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE SERVICE PROVIDER)

1. I hereby undertake to render services described in the attached bidding documents to (name of the institution)
in accordance with the requirements and task directives / proposals specifications stipulated in Bid Number at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the Purchaser during the validity period indicated and calculated from the closing date of the bid.
2. The following documents shall be deemed to form and be read and construed as part of this agreement:
 - (i) Bidding documents, viz
 - Invitation to bid;
 - Tax clearance certificate;
 - Pricing schedule(s);
 - Filled in task directive/proposal;
 - Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2011;
 - Declaration of interest;
 - Declaration of Bidder's past SCM practices;
 - Certificate of Independent Bid Determination;
 - Special Conditions of Contract;
 - (ii) General Conditions of Contract; and
 - (iii) Other (specify)
3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) and rate(s) quoted cover all the services specified in the bidding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.
4. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfilment of this contract.
5. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.
6. I confirm that I am duly authorised to sign this contract.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

NAME (PRINT): WITNESSES:

CAPACITY: 1.

SIGNATURE: 2.

NAME OF FIRM: DATE:

DATE:

PART 2 (TO BE FILLED IN BY THE PURCHASER)

1. I.....in my capacity as accept
your bid under reference number dated for the rendering of
services indicated hereunder and/or further specified in the annexure(s).
2. An official order indicating service delivery instructions is forthcoming.
3. I undertake to make payment for the services rendered in accordance with the terms and
conditions of the contract, within 30 (thirty) days after receipt of an invoice.

DESCRIPTION OF SERVICE	PRICE (ALL APPLICABLE TAXES INCLUDED)	COMPLETION DATE	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)

4. I confirm that I am duly authorised to sign this contract.

SIGNED AT ON

NAME (PRINT):

SIGNATURE:

OFFICIAL STAMP

WITNESSES:

1.
2.
- DATE:

END OF SECTION

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C1.2
Contract Data

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

GENERAL CONDITIONS OF CONTRACT

CONTRACT DATA

The General Conditions of Contract for Construction Works, Third Edition, 2015, published by the South African Institution of Civil Engineering, is applicable to this Contract and is obtainable from www.saice.org.za

Copies of these Conditions of Contract may be obtained from the South African Institution of Civil Engineering, tel. (011) 805 5947.

CONTRACT SPECIFIC DATA

The following contract specific data are applicable to this contract:

Part 1: Data Provided by the Employer

Compulsory Data:

Clause	Description				
1.1.1.5	Clause 1.1.1.5 of the GCC is replaced by the following: The "Commencement date" shall be the date the site is handed over to the Contractor.				
1.1.1.13	The Defects Liability Period is twelve (12) months from the date of issuing a completion certificate.				
1.1.1.14	The time for achieving Practical Completion is twelve (12) months.				
1.1.1.15	The Employer is the Phokwane Local Municipality.				
1.1.1.16	The Engineer is Moedi Consulting Engineers (Pty) Ltd.				
1.1.1.26	Pricing Strategy is: Re-measurement Contract				
1.2.1.2	The employer's address for receipt of communication is: <table> <tr> <td><u>Physical Address</u> 24 Hertzog Street HARTSWATER 8570 Tel: 053 474 9700 Fax: 053 474 1768 Email: segalo@phokwane.gov.za</td><td><u>Postal Address</u> Private Bag X3 HARTSWATER 8570</td></tr> </table> The engineer's address is: <table> <tr> <td><u>Physical Address</u> 2 Van Ryneveld Street KLERKSDORP 2571 Tel no: (018) 462 9603 Fax no: (018) 462 1919 e-mail : consult@moedi.co.za</td><td><u>Postal Address</u> Postnet Suite 18 KLERKSDORP 2570</td></tr> </table>	<u>Physical Address</u> 24 Hertzog Street HARTSWATER 8570 Tel: 053 474 9700 Fax: 053 474 1768 Email: segalo@phokwane.gov.za	<u>Postal Address</u> Private Bag X3 HARTSWATER 8570	<u>Physical Address</u> 2 Van Ryneveld Street KLERKSDORP 2571 Tel no: (018) 462 9603 Fax no: (018) 462 1919 e-mail : consult@moedi.co.za	<u>Postal Address</u> Postnet Suite 18 KLERKSDORP 2570
<u>Physical Address</u> 24 Hertzog Street HARTSWATER 8570 Tel: 053 474 9700 Fax: 053 474 1768 Email: segalo@phokwane.gov.za	<u>Postal Address</u> Private Bag X3 HARTSWATER 8570				
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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Description
1.3.3	The language of the Contract and for written communications is English
3.2.3	The Engineer shall obtain specific approval from the Employer before executing any of his functions or duties according to the following Clauses of the General Condition of Contract: - New Clause 3.2.3.1 "For expenditure on the Contract to exceed the Contract Price"; - Existing Clauses: 3.2.1 - Nomination of person as Engineer's Representative. 5.6 - Approval of the programme 5.7.2 - Work at night as well as by day 5.8 - Non-working times 5.12 - Granting of extension of time excluding Clause 5.12.2.2 (Abnormal climatic conditions) 5.13 - Reduction of penalty for delay. 5.14.2 - The issue of a Certificate of Practical Completion. 5.14.4 - The issue of a Certificate of Completion. 5.16.1 - The issue of a Final Approval Certificate. 6.3 - Variations in respect of Variations which are not small (R 20 000) 6.6 - Instruction to expend on Provisional and Prime Cost Sums 6.11 - Adjustment of General Items & Approval of Claims 8.2.2.2 - Order to repair and make good damage arising from any "excepted" risk.
3.2.4	Occupational Health, Safety & Wellness Sub Directorate – Public Health and the duly appointed H&S Officials has been appointed as Client Agents on this contract, in terms of Clause 4(5) of the Construction Regulations, 2003 as promulgated in terms of Section 43 of the Occupational Health and Safety Act, 1993. The Principal Contractor shall perform a preliminary assessment of the project generated H&S plan and submit such to Occupational Health, Safety & Wellness Sub Directorate – Public Health for legal compliance reassessment & verification / approval prior to any works commencing. The duly appointed H&S Officials will be responsible for further monitoring and the auditing of the approved H&S plan for legal compliance.
3.4	Add the following new sub-clause 3.4: The Employer may, at his sole discretion, provide technical support services to the Contractor or Sub Contractor(s). The technical team providing such support services will be appointed and remunerated by the Employer. In the case of EPWP Contractor Learnership Programmes, support services may be provided by the Department of Public Works. The technical team will consist of the Engineer and a person or persons acting as Training, Construction and Materials Managers or Construction Mentor, depending on the services to be provided and the scope of the functions to be executed. 3.4.1 In addition to his duties and functions in terms of 3.2.1, the Engineer will co-ordinate the work of the technical team providing the support services.


Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

Clause	Description
	3.4.2 The Construction Manager acts as mentor to the Contractor in respect of the following functions, which are described fully in the CESA document, Guideline Contract Specific Data C4 - Construction Management Services of the Form of Agreement for Consulting Services for Labour -Intensive Construction Projects: i) Programming the execution of the works. ii) Interpretation of drawings, specifications and related contractual matters. iii) Workforce structuring, employment and management. iv) Guidance to expedite work progress/ improve productivity. v) Setting out of works. vi) Safety measures and legislation requirements. vii) Materials handling. viii) Tools and equipment needs. ix) Financial matters. x) Training requirements. xi) Security aspects. xii) Quality control systems. 3.4.3 The Materials Manager is responsible for the following functions which are described fully in the CESA document, <u>Guideline Contract Specific Data C5 - Materials Procurement Services</u> of the <u>Form of Agreement for Consulting Services for Labour-Intensive Construction Projects on the Contract</u>: i) Establishment of stores. ii) Determination of store administration procedures. iii) Determination of requirements of store staff. iv) Employment of store staff. v) Staff guidance, supervision and training. vi) Acquisition of materials. vii) Issue of materials. viii) Upholding of an assets register. ix) Insurance of assets. 3.4.4 The main role of the Mentor is to support the Learner Contractor and to impart knowledge that will enable the Contractor to compete independently as soon as possible. The Mentor provides a wide range of support and advice functions, including but not limited to advice with regard to: (i) Finance and dealing with banks (ii) Business management (iii) Contract management (iv) Procurement of materials and other required services (v) Technical and engineering (vi) Construction Planning and Management (vii) Fulfilling of statutory and tax obligations (viii) Labour and human resource advice

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Description
4.3.1	Add the following to the clause: “For conventional construction works the Basic Conditions of Employment Act of 1997 (Act No 75 of 1997) shall apply and the minimum employment conditions which will apply shall be guided by the latest Sectorial Determination: Civil Engineering Sector published from time to time. Compliance with the National Environmental Management Act (NEMA), Act 107 of 1998. Basic Conditions of Employment Act of 1997 (Act No 75 of 1997) as per Government Notice R63 of 25 January 2002, shall apply to works described in the Scope of Work as being labour intensive and which are undertaken by unskilled or semi-skilled workers.” “The Contractor shall comply with the Occupational Health and Safety Specification prepared by the Employer in terms of the Construction Regulations, 2014 promulgated in terms of Section 43 of the Occupational Health and Safety Act (Act No. 85 of 1993). Without limiting the Contractor’s obligations in terms of the Contract, the Contractor shall before commencement of the Works or any part thereof, be in the possession of an approved Health and Safety Plan.”
4.5	Add the following new sub-clauses: 4.5.5 On the request of the Contractor, the Employer may, at his sole discretion, provide a support service to the Contractor in the giving of notices and in obtaining requisite consents, permissions and permits. 4.5.6 On the request of the Contractor and certified by the Engineer as payable by the Contractor, the Employer may, in his sole discretion, advance funds to the Contractor in the form of a cheque in favour of the relevant institution or body, to facilitate the Contractor in complying with the provisions of this Clause. The Contractor shall provide proof to the Engineer of all payments effected by him. The Employer will deduct the sums advanced by the Employer and adjusted in accordance with the Contract Price Adjustment Formula or other rise-and-fall provision applicable to the Contract, from future payment certificates of the Contractor, if such sums are payable by the Contractor in the ordinary course of his business. The Employer will not advance funds in respect of cyclic sums payable by the Contractor in the ordinary course of his business.
4.11.3	Add the following to Clause 4.11: Notwithstanding the wording of this Clause, on request of the Contractor the Employer may at his sole discretion, provide trade-skills training to the Contractor’s employees to improve their competency and efficiency commensurate with the requirements of the Works.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Clause	Description
5.3.1	The documentation required before Commencement of the Works are: - Health and Safety Plan (Refer to Clause 4.3) - Initial Programme (Refer to Clause 5.6) - Security (Refer to Clause 6.2) - Insurance (Refer to Clause 8.6)
5.3.2	The Contractor is required, within 14 days of the Commencement Date, to submit the documents listed below to the Engineer for his approval. Health and Safety Plan The Contractor shall deliver his health and safety plan, in terms of Clause 5(1) of the Construction Regulations (July 2003). Initial Programme The Contractor shall deliver his Initial Programme of work in terms of Clause 5.6 Security Submit a guarantee of an Insurance Company or Bank to be jointly and severally bound with the Contractor for an amount equal to 10% of the Contract Price. The wording of the Guarantee shall be identical to the pro forma provided in Part C1.2 – Annexure C of this Bid Document. Insurance Submit copies of receipts of registration, or payment for the premiums for the following insurances, as required by the new Clause 8.6 in this Contract Data. (a) Proof of registration with the Department of Labour as an employer, in terms of the Compensation for Occupational Injuries and Diseases Act 1993, as amended (b) Common Law Liability Insurance for the duration of the Contract Period and with a minimum Limit of Indemnity of not less than R10 000 000 for any one accident; (c) Insurance on an All-Risks basis for construction plant, equipment and other things (except those intended to incorporation into the works) brought onto the site to the full value of such construction plant, equipment and other things; (d) Where the Contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the site, the Contractor shall satisfy the employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event of the Employer having an insurable interest in such works during manufacture or fabrication, then such interest shall be noted by endorsement to the Contractor's Policies of Insurance. (e) Imported equipment or component parts or materials to be supplied in terms of this Contract which require any process of assembly or finishing in South Africa prior to delivery to the site are to be insured by the Contractor up to the commencement of transit to site of the assembled or finished equipment, component parts or materials, unless special arrangements are made with the Employer.

 Contractor	 Witness 1	 Witness 2	 Employer	 Witness 1	 Witness 2

Clause	Description
	These insurances shall be maintained in force for the duration of the Contract, including any Defects Liability Period and in respect of Sub-Contractors, the Contractor shall be deemed to have complied with the provisions of the requirements relating to insurance by ensuring that the Sub-Contractors have effected such insurance.
5.8.1	The special non-working days are all Gazetted Public Holidays falling outside the year end break, Saturdays, Sundays and the year-end break commencing on 15/12/2021 and ending on 10/01/2022.
5.12.2.2	Add the following to sub-clause 5.12.2.2: “Normal rainfall is not regarded as “abnormal climatic conditions” which entitles the Contractor to extension of time. Allowance for normal rainfall shall be deemed to have been made in his offered rates, prices and programme. Extension of time for abnormal rainfall will be handled according to the formula below: $V = (N_w - N_n) + (R_w - R_n) / X$ Where: V = Extension of time in calendar days in respect of the calendar month under consideration. Nw = Actual number of days during the calendar month on which a rainfall of Y mm or more has been recorded. Nn = Average number of days, as derived from existing rainfall records, on which a rainfall of Y mm or more has been recorded for the calendar month. Rw = Actual rainfall in mm recorded for the calendar month under consideration. Rn = Average rainfall in mm for the calendar month as derived from existing rainfall records. The factor (Nw - Nn) shall be considered to represent a fair allowance for variations from the average number of days during which rainfall exceeds Y mm. The factor (Rw - Rn) / X shall be considered to represent a fair allowance for variations from the average in the number of days during which the rainfall did not exceed Y mm but wet conditions prevented or disrupted work. For the purposes of the Contract Nn, Rn, X and Y shall have those values assigned to them in the Appendix and/or the Specifications. The total extension of time shall be the algebraic sum of all monthly totals for the period under consideration, but if the total be negative the time for completion shall not be reduced. Extension of time for part of a month shall be calculated using pro rata values of Nn and Rn. Any extension of time granted in terms of this Clause will not be cause for additional payment.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Clause	Description																																										
	This formula does not take account of flood damage which could cause further or concurrent delays and will be treated separately as far as extension of time is concerned". The values of X, Y, Nn and Rn to be used in above-mentioned formula are as follows: X = 10 mm & Y = 4 mm Source of Information: Weather Bureau, Department of Environment Affairs RAINFALL STATION: Hartswater Period: <table><tr><th>MONTH</th><th>Nn</th><th>Rn</th></tr><tr><td>JANUARY</td><td>7.6</td><td>83</td></tr><tr><td>FEBRUARY</td><td>8.8</td><td>83</td></tr><tr><td>MARCH</td><td>9</td><td>81</td></tr><tr><td>APRIL</td><td>6</td><td>50</td></tr><tr><td>MAY</td><td>2.7</td><td>20</td></tr><tr><td>JUNE</td><td>1.7</td><td>7</td></tr><tr><td>JULY</td><td>1.2</td><td>3</td></tr><tr><td>AUGUST</td><td>1.4</td><td>8</td></tr><tr><td>SEPTEMBER</td><td>1.2</td><td>6</td></tr><tr><td>OCTOBER</td><td>4</td><td>27</td></tr><tr><td>NOVEMBER</td><td>6.4</td><td>43</td></tr><tr><td><u>DECEMBER</u></td><td><u>6.4</u></td><td><u>46</u></td></tr><tr><td>Total</td><td>56</td><td>457</td></tr></table>	MONTH	Nn	Rn	JANUARY	7.6	83	FEBRUARY	8.8	83	MARCH	9	81	APRIL	6	50	MAY	2.7	20	JUNE	1.7	7	JULY	1.2	3	AUGUST	1.4	8	SEPTEMBER	1.2	6	OCTOBER	4	27	NOVEMBER	6.4	43	<u>DECEMBER</u>	<u>6.4</u>	<u>46</u>	Total	56	457
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Total	56	457																																									
5.12.2.4	Add the following to sub-clause 5.12.2.4: “Any disruption of labour on a regional or national level due to political unrest, organized mass action or related incidents which is considered to be beyond the Contractor’s Control. Any strike within the confines of the Contractor’s company, which may affect this project, will be deemed to be within the Contractor’s control”.																																										
5.13.1	The Penalty for delay to achieve completion by the due completion date is 0,05% of the contract price per day																																										
5.16.3	The latent defect period is 10 years for civil engineering works																																										
6.3	All variations shall be in writing, confirmed by the Contractor and finally approved by the Employer. The Contractor shall not perform any variation work until written approval is issued from the Employer.																																										
6.8.2	The value of payment certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule with the following values The value of “x” is 0,15.																																										

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

	The values of the coefficients are: L = 0,25 P = 0,15 M = 0,55 F = 0,05 $(1-x) \left[\frac{aL_t}{L_o} + \frac{bP_t}{P_o} + \frac{cM_t}{M_o} + \frac{dF_t}{F_o} - 1 \right]$ “L” is the “Labour Index” and shall be the “Consumer Price Index” for the urban area specified in the Contract, as published in the Statistical Release P0141.1 in table 21 of Statistics South Africa. “P” is the “Plant Index” and shall be the “Civil Engineering Plant” index as published in the Statistical Release P0142.1 in table 16 of Statistics South Africa. “M” is the “Materials Index” and shall be the price index for “Civil Engineering (Materials)” as published in the Statistical Release P0142.1 in table 15 of Statistics South Africa. “F” is the “Fuel Index” and shall be the index for “Civil Engineering” as published in Statistical Release P0142.1 Table 16 of Statistics South Africa. The suffix “o” denotes the basic indices applicable to the base month, which shall be the month prior to the month in which the closing date for the bid falls. The suffix “t” denotes the current indices applicable to the month in which the last day of the period falls to which the relevant payment certificate relates. If any index relevant to any particular certificate is not known at the time when the certificate is prepared, the Engineer shall estimate the value of such index. Any correction, which may be necessary when the correct indices become known, shall be made by the Engineer in subsequent payment certificates. The area wherein the larger part of the Site is located is Free State Province (Inland). The base month is the month prior to the closing date of the Bid.
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80% .
6.10.3	The limit of retention money is 10% on interim payment certificates up to a maximum of 10% of the contract sum
8.6.1.1.2	The value of plant and materials supplied by the Employer to be included in the insurance sum is Nil .
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is R 50,000.00
8.6.5	The insurance shall be undertaken with an insurance company registered in South Africa.
10.5.1	Disputes are to be referred to adjudication.
10.5.3	The number of Adjudication Board Members to be appointed is one (01) .
10.7.1	Disputes are to be referred for final settlement to arbitration.


Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

Additional Data:

Clause	Description
1.1.1.2	“Definitions” Add the following new sub-clause 1.1.1.2: “For this Contract “Schedule of Quantities” will have the same meaning as “Bill of Quantities” and will form part of the Pricing Data as defined in the General Conditions of Contract.”
1.1.1.35	“Definitions” Add the following new sub-clause 1.1.1.35: “Drawings” means all drawings, calculations and technical information forming part of the Contract Documents and any modifications thereof or additions thereto from time to time approved in writing by the Engineer or delivered to the Contractor by the Engineer.
1.2.1	“Interpretations” Add the following new sub-clauses: 1.2.1.3 Sent by facsimile, electronic or any like communication irrespective of it being during office hours or otherwise. 1.2.1.4 Posted to the Contractor’s address and delivered by the postal authorities. 1.2.1.5 Delivered by a courier service and signed for by the recipient or his representative.” 1.2.1.6 Sent by e-mail one (1) working day after transmission
1.3.7	“General Provisions” Add the following new sub-clause 1.3.7: The copyright in all documents, drawing and records (prepared by the Engineer) related in any manner to the Works shall vest in the Employer or the Engineer or both (according to the details of the Contract that has been entered into by the Engineer and the Employer for the Works), and the Contractor shall not furnish any information in connection with the Works to any person or organization without the prior approval of the Employer to this effect.
4.1.2	“Extent of obligations and liability” Add the following to the clauses: The Contractor shall provide the following to the Engineer for retention by the Employer or his assignee in respect of all works designed by the Contractor: 4.1.2.1 A Certificate of Stability of the Works signed by a registered Professional Engineer confirming that all such works have been designed in accordance with the appropriate codes of practice. 4.1.2.2 Proof of registration and of adequate and current professional indemnity insurance cover held by the designer(s). 4.1.2.3 Design calculations should the Engineer request a copy thereof. 4.1.2.4 Engineering drawings and workshop details (both signed by the relevant professional engineer), in order to allow the Engineer to compare the design


Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

Clause	Description
	with the specified requirements and to record any comments he may have with respect thereto. 4.1.2.5 "As-Built" drawings in DWG electronic format after completion of the Works. The Contractor shall be responsible for the design of the Temporary Works.
4.5	"Notices and fees" Clause 4.5.4: Contractor to be compensated The fees, taxes, levies and other charges to be paid by the Contractor in terms of sub-clause 4.5 will not be refunded by the Employer. The cost thereof shall be deemed to be included in the prices offered for relevant items in the Bill of Quantities.
5.12.2.4	"Extension of time for Practical Completion" Add the following new sub-clause 5.12.2.4: Any disruption of labour on a regional or national level due to political unrest, organized mass action or related incidents which is considered to be beyond the Contractor's Control. Any strike within the confines of the Contractor's company, which may affect this project, will be deemed to be within the Contractor's control.
5.12.5	"Extension of time for Practical Completion" Add the following additional sub-clause: Any additional statutory holidays proclaimed after the closing date of Bids over and above the statutory holidays which existed at the time of Bidding. In the case of an additional public holiday declared by the State President over and above the special non-working days which existed at the time of bidding, the Due Completion Date will be adjusted by such day. No claim for the cost of temporary or hourly-paid workers who would have been actively engaged in the construction work had the day not been declared a public holiday, will be considered by the Employer. Should the contractor elect to continue with the works on such day, the Due Completion Date will not be adjusted, and time related general costs will be paid as per normal working days. Any proven extra cost for overtime payment will be considered by the Employer. Such claim is subject to the prior approval by the Employer's Agent that works may commence on the proclaimed public holiday and prior submission of any additional estimated overtime cost by the contractor. Should no estimated overtime or additional cost be submitted, the contractor will forfeit the right to claim additional cost after such day has passed. No claims for standing time of plant and equipment will be considered as the cost thereof is deemed to be included in the Contractor's provisional and general items.
6.10.4	"Delivery, dissatisfaction with and payment of payment certificate" Add the following to the clause: Notwithstanding the above, the Engineer shall be empowered to withhold the delivery of the payment certificate until the Contractor has complied with his obligations to report in terms of Clause 4.10.2 and Clause 7.4 as described in the Scope of Work."


Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

9.2.1.3	“Termination by Employer” Add the following new sub-clauses: 9.2.1.3.9 The Contractor committed a corrupt or fraudulent act during the procurement process or the execution of the contract. 9.2.1.3.10 An official or other role player committed any corrupt or fraudulent act during the procurement process or in the execution of the contract that benefitted the Contractor.”
10.1.1.1	“Contractor’s claims” Add the following new sub-clause: 10.1.1.1.5 Discussions of claims during site meetings and minutes of such discussions shall not be regarded as a claim or notice by the Contractor of his intention to make a claim unless it is supported by a written submission in terms of Clause 10.1.1.1.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Part 2: Data Provided by the Contractor

Clause	Description								
1.1.1.9	The name of the Contractor is:								
1.2.1.2	The Contractor's address for receipt of communication is: <u>Physical Address:</u> Tel no: Fax no: Email: <u>Postal Address:</u> 								
1.1.1.14	The time for achieving Practical Completion as set out in the Scope of Works are Weeks								
6.2.1	The security provided by the company should be one of the following: <table border="1" style="width: 100%;"> <thead> <tr> <th>Type of Security</th><th>Contractor's choice indicates "YES" or "NO"</th></tr> </thead> <tbody> <tr> <td>Cash deposit of 10% of the Contract Sum plus Retention of 10% of the value of the Works</td><td></td></tr> <tr> <td>Performance guarantee of 10% of the Contract Sum plus Retention of 10% of the value of the Works</td><td></td></tr> <tr> <td>Deduction of 10% of the contract price from the Contractor's first payment certificate plus Retention of 10% of the value of the works</td><td></td></tr> </tbody> </table> Note: Value Added Tax is included in the Contract Sum for calculating the percentages.	Type of Security	Contractor's choice indicates "YES" or "NO"	Cash deposit of 10% of the Contract Sum plus Retention of 10% of the value of the Works		Performance guarantee of 10% of the Contract Sum plus Retention of 10% of the value of the Works		Deduction of 10% of the contract price from the Contractor's first payment certificate plus Retention of 10% of the value of the works	
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Deduction of 10% of the contract price from the Contractor's first payment certificate plus Retention of 10% of the value of the works									
6.5.1.2.3	The percentage allowance to cover overhead charges on day work is %.								

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C1.2

Annexure A: Additional Conditions of Contract

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

THE ADDITIONAL CONDITIONS OF CONTRACT ARE:

Clause

Add new Clause 4.3.3:

"4.3.3 Applicable labour laws

The Ministerial Determination, Special Public Works Programmes, issued in terms of the Basic Conditions of Employment Act, 1997 by the Minister of Labour in Government Notice No R63 of 25 January 2002, as reproduced below, shall apply to works described in the Scope of Work as being labour-intensive and which are undertaken by unskilled or semi-skilled workers.

1 Introduction

- 1.1 This document contains the standard terms and conditions for workers employed in elementary occupations on a Special Public Works Programme (SPWP). These terms and conditions do NOT apply to persons employed in the supervision and management of a SPWP.
- 1.2 In this document:

(a) "department" means any department of the State, implementing agent or Contractor;

(b) "employer" means any department, implementing agency or Contractor that hires workers to work in elementary occupations on a SPWP;

(c) "worker" means any person working in an elementary occupation on a SPWP;

(d) "elementary occupation" means any occupation involving unskilled or semi-skilled work;

(e) "management" means any person employed by a department or implementing agency to administer or execute an SPWP;

(f) "task" means a fixed quantity of work;

(g) "task-based work" means work in which a worker is paid a fixed rate for performing a task;

(h) "task-rated worker" means a worker paid on the basis of the number of tasks completed;

(i) "time-rated worker" means a worker paid on the basis of the length of time worked.
- 2 Terms of work
- 2.1 Workers on a SPWP are employed on a temporary basis.

2.2 A worker may NOT be employed for longer than 24 months in any five-year cycle on a SPWP.

2.3 Employment on a SPWP does not qualify as employment as a contributor for the purposes of the Unemployment Insurance Act No 30 of 1966.
- 3 Normal hours of work
- 3.1 An employer may not set tasks or hours of work that require a worker to work:

(a) more than forty hours in any week

(b) on more than five days in any week; and

(c) for more than eight hours on any day.
Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2
- Part C1

Page 117

Section C1.2

- 3.2 An employer and worker may agree that a worker will work four days per week. The worker may then work up to ten hours per day.
- 3.3 A task-rated worker may not work more than a total of 55 hours in any week to complete the tasks allocated (based on a 40-hour week) to that worker.

4 Meal breaks

- 4.1 A worker may not work for more than five hours without taking a meal break of at least thirty minutes duration.
- 4.2 An employer and worker may agree on longer meal breaks.
- 4.3 A worker may not work during a meal break. However, an employer may require a worker to perform duties during a meal break if those duties cannot be left unattended and cannot be performed by another worker. An employer must take reasonable steps to ensure that a worker is relieved of his or her duties during the meal break.
- 4.4 A worker is not entitled to payment for the period of a meal break. However, a worker who is paid on the basis of time worked must be paid if the worker is required to work or to be available for work during the meal break.

5 Special conditions for security guards

- 5.1 A security guard may work up to 55 hours per week and up to eleven hours per day.
- 5.2 A security guard who works more than ten hours per day must have a meal break of at least one hour or two breaks of at least 30 minutes each.

6 Daily rest period

Every worker is entitled to a daily rest period of at least eight consecutive hours.

The daily rest period is measured from the time the worker ends work on one day until the time the worker starts work on the next day.

7 Weekly rest period

Every worker must have two days off every week. A worker may only work on their day off to perform work which must be done without delay and cannot be performed by workers during their ordinary hours of work ("emergency work").

8 Work on Sundays and public holidays

- 8.1 A worker may only work on a Sunday or public holiday to perform emergency or security work.
- 8.2 Work on Sundays is paid at the ordinary rate of pay.
- 8.3 A task-rated worker who works on a public holiday must be paid:

(a) the worker's daily task rate, if the worker works for less than four hours;

(b) double the worker's daily task rate, if the worker works for more than four hours.
- 8.4 A time-rated worker who works on a public holiday must be paid:

(a) the worker's daily rate of pay, if the worker works for less than four hours on the public holiday;

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

(b) double the worker’s daily rate of pay, if the worker works for more than four hours on the public holiday.

9 Sick leave

- 9.1 Only workers who work four or more days per week have the right to claim sick-pay in terms of this clause.
- 9.2 A worker who is unable to work on account of illness or injury is entitled to claim one day’s paid sick leave for every full month that the worker has worked in terms of a Contract.
- 9.3 A worker may accumulate a maximum of twelve days sick leave in a year.
- 9.4 Accumulated sick leave may not be transferred from one Contract to another Contract.
- 9.5 An employer must pay a task-rated worker the worker’s daily task rate for a day’s sick leave.
- 9.6 An employer must pay a time-rated worker the worker’s daily rate of pay for a day’s sick leave.
- 9.7 An employer must pay a worker sick pay on the worker’s usual pay day.
- 9.8 Before paying sick pay, an employer may require a worker to produce a certificate stating that the worker was unable to work on account of sickness or injury if the worker is:
- (a) absent from work for more than two consecutive days; or
 - (b) absent from work on more than two occasions in any eight-week period.
- 9.9 A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity.
- 9.10 A worker is not entitled to pay sick leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Diseases Act.

10 Maternity leave

- 10.1 A worker may take up to four consecutive months unpaid maternity leave.
- 10.2 A worker is not entitled to any payment or employment-related benefits during maternity leave.
- 10.3 A worker must give her employer reasonable notice of when she will start maternity leave and when she will return to work.
- 10.4 A worker is not required to take the full period of maternity leave. However, a worker may not work for four weeks before the expected date of birth of her child or for six weeks after the birth of her child, unless a medical practitioner, midwife or qualified nurse certifies that she is fit to do so.
- 10.5 A worker may begin maternity leave:
- (a) four weeks before the expected date of birth; or

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- (b) on an earlier date:

(i) if a medical practitioner, midwife or certified nurse certifies that it is necessary for the health of the worker or that of her unborn child; or

(ii) if agreed to between employer and worker; or

(c) on a later date, if a medical practitioner, midwife or certified nurse has certified that the worker is able to continue to work without endangering her health.
- 10.6 A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth.
- 10.7 A worker who returns to work after maternity leave, has the right to start a new cycle of twenty-four months employment, unless the SPWP on which she was employed has ended.

11 Family responsibility leave

- 11.1 Workers who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances:

(a) when the employee’s child is born;

(b) when the employee’s child is sick;

(c) in the event of a death of:

(i) the employee’s spouse or life partner;

(ii) the employee’s parent, adoptive parent, grandparent, child, adopted child, grandchild or sibling.

12 Statement of conditions

- 12.1 An employer must give a worker a statement containing the following details at the start of employment:

(a) the employer’s name and address and the name of the SPWP;

(b) the tasks or job that the worker is to perform; and

(c) the period for which the worker is hired or, if this is not certain, the expected duration of the Contract;

(d) the worker’s rate of pay and how this is to be calculated;

(e) the training that the worker will receive during the SPWP.
- 12.2 An employer must ensure that these terms are explained in a suitable language to any employee who is unable to read the statement.
- 12.3 An employer must supply each worker with a copy of these conditions of employment.

13 Keeping records

- 13.1 Every employer must keep a written record of at least the following:

(a) the worker’s name and position;

(b) in the case of a task-rated worker, the number of tasks completed by the worker;

(c) in the case of a time-rated worker, the time worked by the worker;

(d) payments made to each worker.
- 13.2 The employer must keep this record for a period of at least three years after the completion of the SPWP.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

14 Payment

- 14.1 An employer must pay all wages at least monthly in cash or by cheque or into a bank account.
- 14.2 A task-rated worker will only be paid for tasks that have been completed.
- 14.3 An employer must pay a task-rated worker within five weeks of the work being completed and the work having been approved by the manager or the Contractor having submitted an invoice to the employer.
- 14.4 A time-rated worker will be paid at the end of each month.
- 14.5 Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker.
- 14.6 Payment in cash or by cheque must take place:
- (a) at the workplace or at a place agreed to by the worker;
 - (b) during the worker’s working hours or within fifteen minutes of the start or finish of work;
 - (c) in a sealed envelope which becomes the property of the worker.
- 14.7 An employer must give a worker the following information in writing:
- (a) the period for which payment is made;
 - (b) the numbers of tasks completed or hours worked;
 - (c) the worker’s earnings;
 - (d) any money deducted from the payment;
 - (e) the actual amount paid to the worker.
- 14.8 If the worker is paid in cash or by cheque, this information must be recorded on the envelope, and the worker must acknowledge receipt of payment by signing for it.
- 14.9 If a worker’s employment is terminated, the employer must pay all monies owing to that worker within one month of the termination of employment.

15 Deductions

- 15.1 An employer may not deduct money from a worker’s payment unless the deduction is required in terms of a law.
- 15.2 An employer must deduct and pay to the SA Revenue Services any income tax that the worker is required to pay.
- 15.3 An employer who deducts money from a worker’s pay for payment to another person must pay the money to that person within the time period and other requirements specified in the agreement law, court order or arbitration award concerned.
- 15.4 An employer may not require or allow a worker to:
- (a) repay any payment except an overpayment previously made by the employer by mistake;
 - (b) state that the worker received a greater amount of money than the employer actually paid to the worker; or
 - (c) pay the employer or any other person for having been employed.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

16 Health and safety

- 16.1 Employers must take all reasonable steps to ensure that the working environment is healthy and safe.
- 16.2 A worker must:
- (a) work in a way that does not endanger his/her health and safety or that of any other person;
 - (b) obey any health and safety instruction;
 - (c) obey all health and safety rules of the SPWP;
 - (d) use any personal protective equipment or clothing issued by the employer;
 - (e) report any accident, near-miss incident or dangerous behaviour by another person to their employer or manager.

17 Compensation for injuries and diseases

- 17.1 It is the responsibility of the employers (other than a Contractor) to arrange for all persons employed on a SPWP to be covered in terms of the Compensation for Occupational Injuries and Diseases 1993, (Act No. 130 of 1993).
- 17.2 A worker must report any work-related injury or occupational disease to their employer or manager.
- 17.3 The employer must report the accident or disease to the Compensation Commissioner.
- 17.4 An employer must pay a worker who is unable to work because of an injury caused by an accident at work 75% of their earnings for up to three months. The employer will be refunded this amount by the Compensation Commissioner. This does NOT apply to injuries caused by accidents outside the workplace such as road accidents or accidents at home.

18 Termination

- 18.1 The employer may terminate the employment of a worker for good cause after following a fair procedure.
- 18.2 A worker will not receive severance pay on termination.
- 18.3 A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the employer in advance to allow the employer to find a replacement.
- 18.4 A worker who is absent for more than three consecutive days without informing the employer of an intention to return to work will have terminated the Contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.
- 18.5 A worker who does not attend required training events, without good reason, will have terminated the Contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

19 Certificate of service

- 19.1 On termination of employment, a worker is entitled to a certificate stating:
- (a) the worker’s full name;
 - (b) the name and address of the employer;
 - (c) the SPWP on which the worker worked;
 - (d) the work performed by the worker;
 - (e) any training received by the worker as part of the SPWP;
 - (f) the period for which the worker worked on the SPWP;
 - (g) any other information agreed on by the employer and worker."

Clause

Add new sub clause 6.10.1.9:

"6.10.1.9 Payment for the labour-intensive component of the Works

Payment for works identified in the Scope of Work as being labour-intensive shall only be made in accordance with the provisions of the Contract if the Works are constructed strictly in accordance with the provisions of the Scope of Work. Any non-payment for such Works shall not relieve the Contractor in any way from his obligations either in Contract or in delict."

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C1.2

Annexure B: Agreement in terms of Occupational Health
and Safety Act

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH
AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)**

THIS AGREEMENT made at
on this the day of in the year
*between **PHOKWANE LOCAL MUNICIPALITY** [hereinafter called "the Employer"] of the one part,*
herein represented by
in his capacity as
and
[hereinafter called "the Mandatary"] of the other part, herein represented by
.....
in his capacity as

WHEREAS the Employer is desirous that certain works be constructed, viz
.....

and has accepted a Bid by the Mandatary for the construction, completion and maintenance of such Works and whereas the Employer and the Mandatary have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatary with the provisions of the Occupational Health and Safety Act, 1993 (Act 85 of 1993);

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

- 1

The Mandatary shall execute the work in accordance with the Contract Documents pertaining to this Contract.
- 2

This Agreement shall hold good from its Commencement Date, which shall be the date of a written notice from the Employer or Engineer requiring him to commence the execution of the Works, to either

(a)

the date of the Final Approval Certificate issued in terms of Clause 5.16.1 (GCC 2015) of the General Conditions of Contract *[hereinafter referred to as "the GCC"]*, or

(b)

the date of termination of the Contract in terms of Clauses 9.1, 9.2 or 9.3 (GCC 2015) of the GCC.
- 3

The Mandatary declares himself to be conversant with the following:

(a)

All the requirements, regulations and standards of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), hereinafter referred to as "The Act", together with its amendments and with special reference to the following sections of The Act:

(i)

Section 8: General duties of employers to their employees;

(ii)

Section 9:General duties of employers and self-employed persons to persons other than employees;
Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2
- Part C1

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Section C1.2

- (iii) Section 37: Acts or omissions by employees or mandataries, and
- (iv) Subsection 37(2) relating to the purpose and meaning of this Agreement.
- (b) The procedures and safety rules of the Employer as pertaining to the Mandatary and to all his subcontractors.
- 4 In addition to the requirements of Clause 8.4 (GCC 2010) of the GCC and all relevant requirements of the Contract, the Mandatary agrees to execute all the Works forming part of this Contract and to operate and utilise all machinery, plant and equipment in accordance with the Act.
- 5 The Mandatary is responsible for the compliance with the Act by all his subcontractors, whether or not selected and/or approved by the Employer.
- 6 The Mandatary warrants that all his and his subcontractors' workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act, 1993 which cover shall remain in force whilst any such workmen are present on site. A letter of good standing from the Compensation Commissioner to this effect must be produced to the Employer upon signature of the agreement.
- 7 The Mandatary undertakes to ensure that he and/or subcontractors and/or their respective employers will at all times comply with the following conditions:
 - (a) The Mandatary shall assume the responsibility in terms of Section 16.1 of the Occupational Health and Safety Act. The Mandatary shall not delegate any duty in terms of Section 16.2 of this Act without the prior written approval of the Employer. If the Mandatary obtains such approval and delegates any duty in terms of Section 16.2 a copy of such written delegation shall immediately be forwarded to the Employer.
 - (b) All incidents referred to in the Occupational Health and Safety Act shall be reported by the Mandatary to the Department of Labour as well as to the Employer. The Employer will further be provided with copies of all written documentation relating to any incident.
 - (c) The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of Section 32 of the Occupational Health and Safety Act into any incident involving the Mandatary and/or his employees and/or his subcontractors.

In witness thereof the parties hereto have set their signatures hereon in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF THE EMPLOYER:

WITNESS:

1. 2.

NAME:

1. 2.

(IN CAPITALS)

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

SIGNED FOR AND ON BEHALF OF THE MANDATARY:

WITNESS:

1. 2.

NAME:

1. 2.

(IN CAPITALS)

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C1.2

Annexure C: Performance Guarantee

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PRO FORMA PERFORMANCE GUARANTEE BY A RECOGNISED FINANCIAL INSTITUTION, BANK OR INSURANCE COMPANY

For use with the General Conditions of Contractor for Construction Works, Third Edition, 2015.

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means :

Physical address :

"Employer" means :

"Contractor" means :

"Engineer" means :

"Works" means :

"Site" means :

"Contract" means : The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.

"Contract Sum" means : The accepted amount inclusive of tax of R

Amount in words :

.....

"Guaranteed Sum" means : The maximum aggregate amount of R

Amount in words :

.....

"Expiry Date" means :

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificate and the Certificates Completion of the Works as defined in the Contract.

PERFORMANCE GUARANTEE

- 1 The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
- 2 The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.


Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

-
- 3 The Guarantor hereby acknowledges that:
- 3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;
- 3.2 its obligation under this Performance Guarantee is restricted to the payment of money.
- 4 Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:
- 4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;
- 4.2 A first written demand issued by the Employer to the guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;
- 4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.
- 5 Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:
- 5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or
- 5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and
- 5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.
- 6 It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.
- 7 Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.
- 8 Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
- 9 Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- 10

The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
- 11

The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
- 12

This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
- 13

This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
- 14

Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at:

Date:

Guarantor's signatory (1):

Capacity:

Guarantor's signatory (2):

Capacity:

Witness signatory (1):

Witness signatory (2):

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C1.2

Annexure D: Retention Money Guarantee

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PRO FORMA RETENTION MONEY GUARANTEE BY A RECOGNISED FINANCIAL INSTITUTION, BANK OR INSURANCE COMPANY

Issued to the **PHOKWANE LOCAL MUNICIPALITY** (hereinafter called "the Employer")

On behalf of (*insert name of Contractor*) (hereinafter called "the Contractor")

in connection with Contract No:(hereinafter called "the Contract").

Whereas the Employer and the Contractor have agreed that the Contractor may provide a guarantee in lieu of the whole or a portion of the retention moneys provided for under the Contract;

Now therefore we, the undersigned, undertake, in accordance with the following provisions, to pay to the Employer such amounts as the Employer may, from time to time, demand from us.

- 1Each demand by the Employer shall be in writing, signed by the Employer and delivered to us at (*insert Guarantor's full street address*) or such other address in (*insert name of Country*) as we shall in writing notify to the Employer and shall be accompanied by a certificate complying with Clause 2, signed by the Engineer in office as such in terms of the Contract.
- 2The Engineer's certificate referred to in Clause 1 shall certify that:

(a) he is the Engineer in office as such in terms of the Contract,

(b) the Contractor is in breach of his obligations under the Contract, and

(c) the amount demanded, which amount the certificate shall specify, does not exceed

(i) the amount of retention moneys which, but for this guarantee, would have been retained by the Employer in terms of the Contract at the date of the certificate, less the aggregate of the amounts of retention money actually retained by the Employer and the amounts previously paid by us to the Employer in terms hereof,

(ii) a genuine estimate of the cost to the Employer of having the breach referred to in paragraph (b) remedied less the aggregate of any amounts withheld by the Employer from payments due to the Contractor in terms of the Contract by reason of the breach referred to, and any amount of retention money actually held by the Employer save to the extent that the same had been deducted from any previous demand in terms hereof;
- 3We shall within days after our receipt of a demand complying with the provisions in Clauses 1 and 2 make payment to the Employer of the amount demanded at (*insert Employer's Street address*) or at such other address in (*insert Employer's Country*) as the Employer shall in writing notify to us.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- 4Subject to compliance with the provisions hereof, our liability to make the payments herein referred to shall be unconditional and shall not be affected or diminished by any disputes, claims or counterclaims between the Employer and the Contractor.
- 5Our aggregate liability under this guarantee is limited to
..... (insert amount of
guarantee in words) (R..... [insert amount of
guarantee in figures).
- 6This guarantee shall expire on the date on which the last of the retention moneys, which but for this guarantee would have been retained by the Employer, becomes payable to the Contractor.
- 7This guarantee is not transferable and must be produced for endorsement if any part payment is made and must be returned to us against final payment of our aggregate liability or on the date of the expiry of the guarantee in terms of Clause 6, whichever is the earlier.

Signed in the presence of the subscribing witnesses:

At for and on behalf of
on this the day of 20.....

Signature :

Capacity :

Address :
:
:

As Witnesses : 1
2

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C1.2

Annexure E: Transfer of Rights of Materials on Site

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

TRANSFER OF RIGHTS OF MATERIALS ON SITE

Claim for materials on site, Payment Certificate No. Date:

I, the undersigned (*name of signatory*), ... in my capacity as of (*name of Contractor*), duly authorized hereto on behalf of the Contractor hereby transfer, cede and assign all the Contractor’s rights title and interest in and to the materials and goods, for which evidence of bona fide ownership is attached hereto, unto and in favour of (*name of Employer*) insofar as the Contractor retains actual control of the materials and goods, the right of ownership thereof passes to the Employer by *constitutum possessorium*.

I herewith indemnify the Employer against any claim to and in respect of said materials by reason of the Contractor’s sequestration or liquidation or of any defect in the Contractor’s title to the materials and agree that no payment for materials on site will be made by the Employer until such time as I have submitted documentary proof of bona fide ownership of the said materials and goods.

This transfer shall become effective upon conclusion of the Contractor receiving payment from the Employer or from any other person on behalf of the employer for the materials and goods as Materials on Site, payment of retention money thereon excluded.

I further confirm that I am fully responsible for all materials and goods listed under this Transfer of Rights and that they have been insured adequately against all risks and will remain insured until they are built into or used in the permanent works and taken over by the Employer.

This certificate of Transfer of Rights applies only to the materials and goods as listed in the following table.

Description	Unit	Quantity	Rate	Amount	Supplier
Total value of materials and goods					

Signed by: Date:

For and on behalf of the Contractor.

Witnessed by: Date:

NOTE: This form, together with the documentary proof of ownership or proof of payment by the Contractor to the supplier, shall accompany the Contractor’s claim for payment for materials on site in terms of Clause 6.10.1.5 of the General Conditions of Contract 2015.

ContractorWitness 1Witness 2EmployerWitness 1Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

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Section C1.2

Annexure F: Proof of Ownership of Materials on Site

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PROOF OF OWNERSHIP OF MATERIALS ON SITE

TO:

.....
CONTRACTOR

SUBJECT: BID NO:

In order to facilitate payment for materials on Site in terms of Clause 6.10.1.5 of the Conditions of Contract, it is hereby confirmed that the materials as specified in the attached invoice and receipt have been supplied to and paid for by (Contractor), therefore ownership of such materials, when delivered for use in Bid No. will vest with (Contractor).

In the event therefore of such materials being delivered on Site or any authorised extended site in terms of Bid No..... ownership thereof will then vest with the (Employer) in terms of Clause 6.9.1 of the said Conditions of Contract.

Yours faithfully

SUPPLIER :

DATE :

NOTE: Failing a stamp of the Supplier's name, the foregoing shall be typed on paper bearing the Supplier's letterhead.

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
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PORTION 2: THE CONTRACT

Part C2
Pricing Data

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP

WASTE WATER TREATMENT WORKS

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PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
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Section C2.1

Pricing Instructions

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PRICING INSTRUCTIONS

1. GENERAL

These pricing instructions provide the Bidder with guidelines and requirements with regard to the completion of the bill of quantities. These pricing instructions also describe the criteria and assumptions which will be assumed in the Contract to have been taken into account by the Bidder when developing his prices.

The bill of quantities shall be read with all the documents which form part of this Contract.

The following words have the meaning hereby assigned to them:

- Unit : The Unit of measurement for each item of work in terms of the Scope of Work.
- Quantity : The number of units for each item.
- Rate : The payment per unit of work at which the bidder offers to do the work.
- Amount : The product of the quantity and the rate offered for an item.
- Lump sum : An amount offered for an item, the extend of which is described in the Pricing Instructions, Bill of Quantities or the Scope of Work but the quantity of work of which is not measured in any units.

2. PAY ITEMS

The method of measurement published by the South African Bureau of Standards in Clause 8 of the Standardised Specifications for Civil Engineering Construction (SABS 1200) is applicable, subject to the variations and amendments contained in section C3.4.2.

Descriptions in the Bill of Quantities are abbreviated and comply generally with those in the Standard Specifications. The measurement and payment clause of each Standard Specification, read together with the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standard Specification, or the Scope of Work, conflict with the terms of the Bill of Quantities, the requirements of the Standard Specification or Scope of Work, as applicable, shall prevail.

The item numbers appearing in the Bill of Quantities refer to the corresponding item number in the standard specifications or as amended in the Scope of Work. In the letter case, the item number is prefixed with the letter “B”. The same applies to new clauses added to the standard specification.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

The units of measurement described in the Bill of Quantities are metric units. Abbreviations used in the Bill of Quantities are as follows:

mm	=	millimetre	h	=	hour
m	=	metre	kg	=	kilogram
km	=	kilometre	t	=	ton (1000kg)
m ²	=	square metre	No.	=	number
m ² .pass	=	square metre pass	sum	=	lump sum
ha	=	hectare	MN	=	meganewton
m ³	=	cubic metre	MN.m	=	meganewton-metre
m ³ .km	=	cubic metre-kilometre	PC sum	=	Prime Cost Sum
l	=	litre	Prov sum	=	Provisional sum
kl	=	kilolitre	%	=	per cent
MPa	=	mega pascal	kW	=	kilowatt

3. QUANTITIES

- 3.1 Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.
- 3.2 The quantities set out in the Bill of Quantities are the estimated quantities of the Works, and do not necessarily represent the actual amount of work to be done. The quantities certified for payment, and not the quantities given in the Bill of Quantities, shall be used for determining payments to the Contractor. The Contract Price for the completed contract shall be computed from the actual quantities of work done, valued at the relevant unit rates and prices.

4. RATES

- 4.1 The prices and rates to be inserted in the Bill of Quantities are to be full inclusive prices for the work described under the several items. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the bid is based, as well as overhead charges and profit. Reasonable prices shall be inserted as these will be used as a basis for assessment of payment for additional work that may have to be carried out.

- 4.2 A price or rate is to be entered against each item in the Bill of Quantities, whether the quantities are stated or not. An item against which no price is entered or where a word or phrase such as "included" or "provided elsewhere" will be accepted as a rate of nil (R0,00) having been entered against such items and covered by the other prices or rates in the schedule.

Any work executed to which such a pay item applies, shall be measured under the appropriate items in the Bill of Quantities and valued at a rate of nil (R0,00). The rate of nil shall be valid irrespective of any change in the quantities during the execution of the Contract.

- 4.3 The Bidder shall fill in a rate against all items where the words "rate only" appears in the amount column. The intention is that, although no work is foreseen under such item and no quantities are consequently given in the quantity column, the offered rate shall apply should work under this item be actually required.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- 4.4 Except where rates only are required, the Bidder shall insert all amounts to be included in his total offered price in the “Amount” column and show the corresponding total offered price.
- 4.5 The Bidder shall not group together a number of items and offer one rate for such group of items.
- 4.6 All rates and sums of money quoted in the Bill of Quantities shall be in Rands and whole cents. Fractions of a cent shall be discarded.
- 4.7 All prices and rates entered in the Bill of Quantities must be **excluding Value Added Tax (VAT)**. VAT will be added last on the summary page of the Bill of Quantities.
- 4.8 Should excessively high unit prices be offered, such prices may be of sufficient importance to warrant rejection of a bid by the Employer.
- 4.9 Where the Contractor is required to furnish detailed drawings and designs or other information in terms of the Contract Documents, all costs thereof shall be deemed to have been provided for and included in the unit rates and sum amounts offered for the items scheduled in the Bill of Quantities, and separate additional payments will not be made.

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

**UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS**

CONTRACT: PLM/TREF/1409 - 2025

Section C2.2
Bill of Quantities

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

BILL OF QUANTITIES

Upgrading & Refurbishment of the Jan Kempdorp WWTW

**For further clarification : all activities for each item shall be as
described in the relevant SANS 1200 pay items**

FOR



Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 1 1200 Preliminary and general						
Preliminary financial implications						
1.1 Fixed charge items						
1.1.1	A8.3.1	Contractual requirements affecting the Contractor	sum	1		
		(this item covers the initial costs of sureties, insurances, liabilities and other initial financing obligations as required by Law)				
	A8.3.2	The Contractor to provide the following items or as amended in the Tender Document :				
1.1.2	A8.3.2.1c	Name board (2 number) as specified in the Tender Document	sum	1		
1.1.3	A8.3.2.1a	Furnished office for the Engineer's use (see item PSAB3.2 in the document)	sum	1		
1.1.4	PSAB 5.5	Survey assistant as & when required by the Engineer	sum	1		
1.1.5	PSAB 5.6	Survey equipment as & when required by the Engineer	sum	1		
1.1.6	A8.3.2.1b	Telephone facilities for the Engineer	Prov	1	20 000.00	20 000.00
1.1.7	A8.3.2.2a	Offices & storage facilities for the Contractor	sum	1		
1.1.8	A8.3.2.2b	Workshops for the Contractor as required by The Contract	sum	1		
1.1.9	A8.3.2.2d	Living accommodations for the Contractor's personnel	sum	1		
1.1.10	A8.3.2.2e	Ablution & latrine facilities for the Contractor's personnel	sum	1		
1.1.11	A8.3.2.2f	Supply tools & equipment as required by The Contract	sum	1		
1.1.12	A8.3.2.2g	Water, electricity & communications as required by The Contract	sum	1		
		Other obligations by the Contractor :				
1.1.13	A8.3.2.2h	Deal with rain and/or ground water in all type of excavations on site as described in SANS 1200 A section 5.5 (All compensations are to be included only in this payment item - no other claim shall be accepted)	sum	1		
1.1.14		Pumping of wastewater on a permanent basis (item shall be inclusive of operating the pump to isolate a treatment module during construction. Pump to be a Gorman Rupp T6 pump mounted on a trailer and energised by a diesel generator or similar approved by the engineer.)	Prov	1	200 000.00	200 000.00
1.1.15	A8.3.3	Other fixed charge obligations by the Contractor	sum	1		
		(the sum shall cover the cost of all other obligation that are not covered in items A8.3.1, A8.3.2 or A8.3.4 - proof and reason for payment required before claiming any amount on this item)				
1.1.16	A8.8.1	Establish access road to site where it is necessary & maintain	sum	1		
1.1.17	A8.3.4	Removal of site establishment	sum	1		
1.2 Time related items						
1.2.1	A8.4.1	Contractual requirements on a monthly bases affecting the Contractor	sum	1		
		(this item covers the time related costs of sureties, insurances, liabilities and other initial financing obligations as required by Law)				
		The Contractor to maintain the following items & other obligations for the duration of the Contract :				
1.2.2	A8.4.2.1	All facilities on the site for the Engineer	sum	1		
1.2.3	A8.4.2.2	All facilities on the site for the Contractor	sum	1		
1.2.4	A8.4.3	Full time supervision of the site as specified in the Tender Document	sum	1		
1.2.5	A8.4.4	Company & head office administration costs pertaining to the Contract	sum	1		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 3						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS 1200 Schedule 1 continued Preliminary and general						
-Schedule continued from page 2						
1.2.6	A8.4.5	Other time related obligations by the Contractor	sum	1		
		(the sum shall cover the cost of all other obligation that are not covered in items A8.4.1 - A8.4.4 - proof and reason for payment required before claiming any amount on this item)				
1.3 Provisional sums by the Engineer						
1.3.1	A8.5a	Provisional sum for various tests requested by the Engineer	Prov	1	35 000.00	35 000.00
1.3.2	A8.5a	Provisional sum for supply of computers	Prov	1	25 000.00	25 000.00
1.3.3	PSA5.10.1	Provisional sum for community involvement/CLO payment	Prov	1	235 200.00	235 200.00
1.3.4	PSA5.10.3	Provisional sum for accredited training of local labour by specialist	Prov	1	10 000.00	10 000.00
1.3.5	A8.3.3	Provision for traffic control as requested by the Engineer	Prov	1	5 000.00	5 000.00
1.3.6	A8.5b	Contractor's overhead and profit on Item 1.3.1 to 1.3.5	%		310 200.00	
1.3.7	A8.5a	Factory Acceptance Tests (FAT - on all electrical components)	Prov	1	90 000.00	90 000.00
1.3.8	A8.5a	Commissioning & Site Acceptance Tests (SAT- on all electrical components)	Prov	1	90 000.00	90 000.00
1.3.9	A8.5a	Provisional sum for the remuneration of instrumentation specialists to be appointed by Consultant	Prov	1	350 000.00	350 000.00
1.4 Re-commissioning of WWTW						
1.4.1		Provisional Sum for the process commissioning and initial operation of the WWTW. Includes start-up support, system checks, adjustment of process parameters (e.g. flow rates, MLSS, DO levels), seeding of bio reactors where required,& performance optimisation to achieve stable effluent quality. Work to be carried out under the supervision of the Engineer (Contractor's profit is excluded from this provisional allowance and shall be accommodated under a separate BOQ item.)	Prov	1.00	50 000.00	50 000.00
1.4.2		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		50 000.00	
1.4.3		Provisional Sum for the services of a qualified microbiologist or Process Eng. to assist with the optimisation & fine-tuning of biological treatment processes during WWTW commissioning. Incl. assessment of microbial activity, sludge health, oxygen demand, nutrient loading, & overall process stability. The work shall include on-site monitoring, sampling, process adjustments, and technical reporting as directed by the Engineer. (Contractor's profit is excluded from this provisional allowance and shall be accommodated under a separate BOQ item.)	Prov	1.00	75 000	75 000.00
1.4.4		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		75 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 3						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS 1200		Schedule 1 continued Preliminary and general				
-Schedule continued from page 3						
1.4		Re-commissioning of WWTW				
1.4.5		Provisional Sum for laboratory testing & on-site process monitoring during commissioning & optimisation phase of the WWTW. Includes sampling, transport, and analysis of influent and effluent for key parameters such as COD, BOD, TSS, NH ₄ ⁺ , NO ₃ ⁻ , PO ₄ ³⁻ , pH, and microbial indicators. <i>(Contractor's profit is excluded from this provisional allowance and shall be accommodated under a separate BOQ item.)</i>	Prov	1.00	80 000.00	80 000.00
1.4.6		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		80 000.00	
1.4.7		Provisional Sum for the on-site training of plant operators on the safe & effective operation of mechanical, electrical, & process systems within the WWTW. Includes preparation and handover of comprehensive O&M manuals, maintenance schedules, & manufacturer documentation. <i>(Contractor's profit is excluded from this provisional allowance and shall be accommodated under a separate BOQ item.)</i>	Prov	1.00	75 000	75 000.00
1.4.8		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		75 000.00	
1.4.9		Provisional Sum for the initial supply of consumables & chemicals required for the start-up & early operation of the wastewater treatment works. Includes dosing chemicals (e.g. polymer, chlorine) lubricants, grease, filter media, & other operational supplies necessary for a minimum of one month of operation, or as directed by the Engineer. <i>(Contractor's profit is excluded from this provisional allowance and shall be accommodated under a separate BOQ item.)</i>	Prov	1.00	100 000	100 000.00
1.4.10		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		100 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 3						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS 1200		Schedule 1 continued Preliminary and general				
-lschedule continued from page 4						
1.5 Commissioning and Operational Support						
1.5.1		Provisional Sum – Mechanical Expertise During Re-Commissioning <i>Prov. sum is included for the assistance of mechanical expertise during the initial phase of re-commissioning the plant. The scope shall include the provision of qualified fitters, turners, and millwrights to carry out inspections, adjustments, supervision of start-up sequences, troubleshooting, and verification of mechanical equipment performance to ensure safe and efficient operation. The detailed scope of works shall be agreed upon and approved by the Engineer prior to execution. Contractor's profit is excluded from this allowance & shall be acommodated under a separate item.</i>	Prov	1	200 000.00	200 000.00
1.5.2		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		200 000.00	
1.5.3		Provisional Sum – Electrical Expertise During Re-Commissioning <i>Provisional sum is included for the assistance of electrical expertise during the initial phase of re-commissioning the plant. The scope shall include the provision of qualified electricians, instrument technicians, and control specialists to carry out inspections, adjustments, supervision of start-up sequences, troubleshooting, and verification of electrical and instrumentation systems to ensure safe and efficient operation. The detailed scope of works shall be agreed upon and approved by the Engineer prior to execution. Contractor's profit is excluded from this allowance & shall be acommodated under a separate item.</i>	Prov	1	200 000.00	200 000.00
1.5.4		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		200 000.00	
1.5.5		Provisional Sum – Process Control Expertise During Re-Commissioning <i>Provisional sum is included for the assistance of process control expertise during the initial phase of re-commissioning the plant. Scope shall include the provision of qualified process controllers certified by Department of Water & Sanitation at Class 3, Class 4, or Class 5 level, as applicable. Duties will include monitoring of process performance, adjustment of operating parameters, supervision of start-up sequences, troubleshooting, and verification of treatment process compliance to ensure safe, reliable, and efficient operation. The detailed scope of works shall be agreed upon and approved by the Engineer prior to execution. Contractor's profit is excluded from this allowance & shall be acommodated under a separate item.</i>	Prov	1	400 000.00	400 000.00
1.5.6		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		400 000.00	
SCHEDULE 1 TOTAL CARRIED TO SUMMARY PAGE						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 2						
1 200 Occupational health and safety requirements						
2.1 Notification of Construction work						
		Quantities are re-measurable- proof shall be supplied by the Contractor of the quantities claimed				
2.1.1		Construction Work Permit to the Provincial Director as requested by the Engineer under the Construction Regulations of the Occupational health & Safety (Regulation 3) Act no. 85/1993	no	1		
2.2 Health and safety plan						
2.2.1		Setting up a job and site specific Health and Safety Plan by the representative of the Contractor and approved by the Engineer as required under the Construction Regulations (Regulation 5) of the Occupational Health & Safety Act no. 85/1993	no	1		
2.3 Health and safety main file						
2.3.1		Setting up a job and site specific Health & Safety Main file as requested by the Engineer under the Construction Regulations (Regulation 5) of the Occupational Health & Safety Act no. 85/1993 (one off item)	no	1		
		File to be a lever arch file with original colour document of acceptable standards including dividers. Emergency telephone numbers to be displayed on back of file. The file will be expanded during the project as and when required by the Client				
		The file to include all sections as specified by the H&S Specifications attached to the bid document				
		NOT TO BE REMOVED FROM SITE				
2.4 Health & safety register file						
2.4.1		Setting up a job and site specific Health & Safety Register File as requested by the Engineer under the Construction Regulations (Regulation 5) of the Occupational Health & Safety Act no. 85/1993	no	1		
		File to be a lever arch file with original colour document of acceptable standards including dividers.				
		NOT TO BE REMOVED FROM SITE				
2.5 Health & Safety training file						
2.5.1		Setting up a job and site specific Health & Safety Training File as requested by the Engineer under the Construction Regulations (Regulation 5) of the Occupational Health & Safety Act no. 85/1993	no	1		
		File to be a lever arch file with original colour document of acceptable standards including dividers.				
		NOT TO BE REMOVED FROM SITE				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 7						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS 1 200		Schedule 2 continued Occupational health and safety requirements				
-Schedule continued from page 6						
2.6 Service Provider appointments						
2.6.1		<u>One off lump sum</u> amount for the appointment of a competent person to perform risk assessment and training on site under Construction Regulations (<i>Regulation 7</i>) of the Occupational Health & Safety Act no. 85/1993	Lsum	1		
2.7 Training on site						
2.7.1		<u>One off lump sum</u> monetary allowance for the salary for the H&S representative as required by law for the duration of the project for training (<i>indicate the amount to be paid for the duration of the Contract - this is NOT a monthly repeatable amount</i>)	Lsum	1		
		The H&S Representative to perform the following :				
		H&S duties on site				
		Appointee to be permanently on site and under supervision of Contractor's Site Supervisor. Appointment to be for the duration of the Contract. Induction training of all workers of Sub-Contractors.				
		Public awareness training.				
		Toolbox talks on environmental awareness				
		First aid awareness				
		Fire fighting awareness				
		Tool box talks on hand tools and hand tool accidents				
		Hold tool box talks on machine guarding				
		Tool box talks on lifting materials by hand				
		Tool box talks on safe loading				
		Tool box talks on safety signs				
		Tool box talks on ten commandments of safety				
		Community training				
2.8 First aid equipment						
		Supply, install/construct the following items :				
2.8.1		First aid box the Contractor	no	1		
2.8.2		First aid boxes for Sub-Contractors if applicable	no	1		
2.8.3		Stretcher by the Contractor	no	1		
2.9 Fire fighting equipment						
		Supply, install/construct the following items :				
2.9.1		Fire extinguishers by the Contractor	no	2		
2.9.2		Fire extinguishers for Sub-Contractors if applicable	no	2		
2.9.3		Fire extinguishers test certificate for the Contractor	no	4		
2.9.4		Fire extinguishers test certificate for Sub-Contractors	no	4		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 8						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS 1 200		Schedule 2 continued Occupational health and safety requirements				
-Schedule continued from page 7						
2.10 Personal protective clothing						
2.10.1		One off lump sum allowance for the cost of the following PPE as required on site, for the contractor's permanent work force for the duration of the Contract (number of each type of item to be determined by the Tenderer - applied for the duration of the whole Contract, inclusive of all items such as hard hats, safety shoes, dust masks, safety goggles, gum boots, overalls, hand gloves, etc.) (indicate the amount to be paid for the duration of the Contract - this is NOT a monthly repeatable amount)	Lsum	1		
2.10.2		One off lump sum allowance for the cost of the following PPE as required on site, for the contractor temporary work force from the local population as recommended/requested by the Client/Engineer for the duration of the Contract :/in the region of up to ± 20, largely unskilled local employees:/ (number of each type of item to be determined by the Tenderer - applied for the duration of the whole Contract, inclusive of all items such as hard hats, safety shoes, dust masks, safety goggles, gum boots, overalls, hand gloves, etc.) (indicate the amount to be paid for the duration of the Contract - this is NOT a monthly repeatable amount)	Lsum	1		
2.11 Chemical toilets						
2.11.1		Supply, install/construct the following items : One off allowance for Chemical toilets on site as required by specifications (including the cost of cleaning of the toilets, the supply of required chemicals, paper etc. as required for the duration of the Contract. Separate toilets to be designated for male & female workers)	Lsum	1		
2.12 Eating facilities						
2.12.1		Supply, install/construct the following items : One off allowance for eating facilities on site in the form of a shaded net with table and chairs	Lsum	1		
2.13 Warning & Information Signs						
2.13.1		Supply, install/construct the following items : Signboards to be displayed on site as required: (including signs such as SMI board, No Entry, First Aid, Fire Equipment, Various warnings, Traffic Control, Fire siren, Name boards on vehicles etc.)	Lsum	1		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 9						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 9

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

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Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 3 Phase 1 - Inlet Works						
3.1 Outfall sewer line						
3.1.1		General cleaning of Outfall sewer line (Item to include the isolation, draining, dredging, cleaning, carting away of inorganic / organic material. Additionally, the mentioned activities should allow for an inspection of the associated component.)	days	20		
3.1.2		Provisional Allowance – Repair of Manholes A provisional sum is included for the repair and rehabilitation of existing manholes, including structural repairs, benching, rendering, sealing of leaks, replacement of covers and frames, adjustment of levels, & any other associated works as may be required. The detailed scope of work shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred supporting documentation such as invoices, delivery notes, & timesheets. The Contractor's profit is excluded and shall be accommodated under a separate BoQ item.	Prov	1	100 000.00	100 000.00
3.1.3		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		100 000.00	
3.2 Inlet channels						
3.2.1		General cleaning of Inlet channels (Item to include the isolation, draining, dredging, cleaning, carting away of inorganic / organic material. Additionally, the mentioned activities should incorporate Labour intensive construction methods - Manual Labour)	m²	46		
3.2.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
3.2.3		Provisional Allowance – Revisions to Pipework A provisional sum is included for revisions, alterations, or modifications to pipework as may be required during construction. The allowance covers adjustments to layout, connections, fittings, supports, & associated works necessary to complete the installation in accordance with site conditions & as approved by the Engineer. The detailed scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for actual costs incurred, supported by invoices, delivery notes, and timesheets. The Contractor's margin/profit is excluded and shall be accommodated under a separate BoQ item.	Prov	1	65 000.00	65 000.00
3.2.4		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		65 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 12						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 3 Phase 1 - Inlet Works						
-Schedule continued from page 11						
3.2 Inlet channels						
3.2.5		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings	Prov	1	80 000.00	80 000.00
		Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.				
3.2.6		Contractor's Markup on Provisional Sum	%		80 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
3.2.7		Provisional Sum – Repair of Concrete Works	Prov	1	15 000.00	15 000.00
		Provisional allowance for the repair of concrete works, including necessary prep. demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.				
3.2.8		Contractor's Markup on Provisional Sum	%		15 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
3.2.9		Provisional Sum – New Grit Channel - (Bypass Pipelines)	Prov	1	140 000.00	140 000.00
		A provisional sum is included for the construction of a new grit channel on the bypass pipelines. Work shall include earthworks, compaction of excavated areas, placement of G6 imported gravel compacted to 98% Mod AASHTO density, & casting of 25 MPa reinforced concrete to walls and floor slabs. Finishes shall include wood float finishes to floors, walls and slabs, rough and smooth vertical formwork where required, and 25 mm x 25 mm chamfers on exposed edges. The scope also includes openings in walls and the formation of construction and cut joints. The detailed scope of works shall be approved by the Engineer prior to execution, and the Contractor shall be reimbursed for actual costs incurred, supported by invoices. Contractor's margin/profit is excluded and shall be accommodated under a separate item				
3.2.10		Contractor's Markup on Provisional Sum	%		140 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 13						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 3 Phase 1 - Inlet Works						
-Schedule continued from page 12						
3.2 Inlet channels						
		Installation, testing, and calibration, of New flow meter (<i>Pulsar Greyline OCF 6.1 Ultrasonic Level & Flow Monitor, OCF 6.1-A-1-A-1-D-1-B-1-A, or similar approved by the Engineer. The item shall include supply, delivery, installation, commissioning, and calibration certificate, complete with white backlit matrix display, 4.57 m range, 4–20 mA output, two SPDT 5A relays, NEMA 4X / IP66 enclosure rating, accuracy of ±0.25% of range or 2 mm (whichever is greater), built-in 5-key calibrator, 26 million point data logger with free software, PVC and Teflon sensor, 15 m sensor cable, and 100–240 VAC power supply. The works shall also include supply and installation of a WaMSS Smart Flow, Level and Pressure Logger, Model FLP4-2A-3WAMSS, or similar approved by the Engineer, with inputs of 1 × pulse & 2 × 4–20 mA, modem technology with automatic switching between 3G/EDGE/GPRS via UDP/IP, alkaline batteries or external 12 VDC power supply, Bluetooth configuration, IP67 housing, and selectable logging intervals of 1 minute to 24 hours. System shall include 3 years WaMSS annual license & data fee The installation shall cover pipe sections, complete wiring, configuration, integration into the existing system, and issue of a calibration certificate. All works to be completed to the satisfaction of the Engineer.</i>)				
3.2.11		Supply of Ultrasonic Flowmeter	no	1		
3.2.12		Install Ultrasonic Flowmeter	no	1		
		Paving - Supply, install & construct the following items :				
3.2.13	D8.3.1.1	Clear and strip site, remove all vegetation, trees, bushes etc.	m²	150		
3.2.14	DM8.3.7a	Cut to spoil any unsuitable material at designated spoil area	m³	23		
3.2.15	DM8.3.3.2	Rip area to the full extent & compact to 93 % density	m²	150		
3.2.16	ME8.3.1	150 mm thick G5 imported natural gravel material compacted to 95% MOD	m³	23		
		AASHTO density - obtained from borrow pit for sub-base course				
3.2.17	MJ8.2.2	Supply & place 60 mm type S-A interlocking concrete paving blocks	m²	150		
3.2.18	MJ8.2.3	Allow for cutting of concrete paving blocks	m	10		
		Handrails				
3.2.19		Installation of Galvanized We-cro-lok (<i>or similar approved by the Engineer</i>) handrailing on existing structure	m	52		
3.2.20		Provisional Allowance – General Refurbishment Works	Prov	1	50 000.00	50 000.00
		<i>A provisional allowance is included for general refurbishment works including painting, cleaning, plastering repairs, minor masonry & steel works, electrical maintenance, and waterproofing. The allowance covers all labour, materials, equipment, and incidental works necessary to complete the refurbishment to the satisfaction of the Engineer. The detailed scope of works shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, receipts, and timesheets. Contractor's profit is excluded from the allowance and shall be accommodated under a separate BoQ item.</i>				
3.2.21		Contractor's Markup on Provisional Sum	%		50 000.00	
		<i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 14						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 3 Phase 1 - Inlet Works						
-Schedule continued from page 13						
3.2		Inlet channels				
3.2.22		Provisional Allowance – Miniskip Hydraulic Trailer & 1-Ton Skip Bins <i>A provisional allowance is included for the supply & delivery of one miniskip hydraulic trailer and two 1-ton skip bins for screenings removal. The trailer and bins shall be robust, hydraulically operated, and suitable for handling the intended load. All design drawings, mechanical specifications, and manufacturer details shall be submitted to and approved by the Engineer prior to procurement. The allowance covers delivery to site, inspection, and demonstration of correct operation. Measurement shall be based on actual costs incurred and approved by the Engineer. Contractor's profit is excluded from this provisional allowance and shall be accommodated under a separate BOQ item.</i>	Prov	1	300 000.00	300 000.00
3.2.23		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		300 000.00	
SCHEDULE 3 CARRIED OVER TO SUMMARY OF PHASE 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 4						
Phase 1 - Primary settling pond - No.1						
4.1 Primary settling pond - No.1						
4.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer.	m²	724		
4.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %	%			
4.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module in construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	5 733		
4.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer.	m²	82		
4.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
4.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	1 638		
4.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %	%			
4.1.8	D8.3.1.1	Clear and strip site, remove all vegetation, trees, bushes etc.	m²	250		
4.1.9	DM8.3.7a	Cut to spoil any unsuitable material at designated spoil area	m³	38		
4.1.10	DM8.3.3.2	Rip area to the full extent & compact to 93 % density	m²	250		
4.1.11	ME8.3.1	150 mm thick G5 imported natural gravel material compacted to 95% MOD AASHTO density - obtained from borrow pit for sub-base course	m³	38		
4.1.12	MJ8.2.2	Supply & place 60 mm type S-A interlocking concrete paving blocks	m²	250		
4.1.13	MJ8.2.3	Allow for cutting of concrete paving blocks	m	100		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 16						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 4						
Phase 1 - Primary settling pond - No.1						
-Schedule continued from page 15						
4.1 Primary settling pond - No.1						
4.1.14		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved by the Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	819		
4.1.15		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
4.1.16		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
4.1.17		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
4.1.18		Provisional Sum – Repair of Concrete Works & New Ramp <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	200 000.00	200 000.00
4.1.19		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		200 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 17						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 17

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Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 4						
Phase 1 - Primary settling pond - No.1						
-Schedule continued from page 17						
4.1 Primary settling pond - No.1						
		WAS Pump No. 1				
4.1.28		Provisional Allowance – Supply and Installation of Valves <i>Supply, installation, and commissioning of valves required for the project. Valves shall comply with the specifications approved by the Engineer, including materials, coating, gaskets, bolts, and associated fittings. The full scope of work, including installation, alignment, testing, and commissioning, shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, profit is excluded & shall be accommodated in separate item.</i>	Prov	1	20 000.00	20 000.00
4.1.29		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		20 000.00	
4.1.30		Provisional Allowance – Civil Works for Pump Installation <i>A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes. Contractor's profit is excluded accommodated under a separate BoQ item.</i>	Prov	1	30 000.00	30 000.00
4.1.31		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		30 000.00	
4.1.32		Provisional Allowance – Electrical Components for Pump Installation <i>Provisional allowance is included for the supply, installation, integration, and commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.</i>	Prov	1	150 000.00	150 000.00
4.1.33		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 19						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 19

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Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 4						
Phase 1 - Primary settling pond - No.1						
-Schedule continued from page 19						
4.1		Primary settling pond - No.1				
		Agitation Pump No. 1				
4.1.42		Provisional Allowance – Supply and Installation of Valves	Prov	1	10 000.00	10 000.00
		Supply, installation, and commissioning of valves required for the project.				
		Valves shall comply with the specifications approved by the Engineer, including materials, coating, gaskets, bolts, and associated fittings.The full scope of work, including installation, alignment, testing, and commissioning, shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, profit is excluded & shall be accommodated in separate item.				
4.1.43		Contractor's Markup on Provisional Sum	%		10 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
4.1.44		Provisional Allowance – Civil Works for Pump Installation	Prov	1	30 000.00	30 000.00
		A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes. Contractor's profit is excluded accommodated under a separate BoQ item.				
4.1.45		Contractor's Markup on Provisional Sum	%		30 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
4.1.46		Provisional Allowance – Electrical Components for Pump Installation	Prov	1	100 000.00	100 000.00
		Provisional allowance is included for the supply, installation, integration, and commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.				
4.1.47		Contractor's Markup on Provisional Sum	%		100 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 21						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 21

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 5 Phase 1 - Primary settling pond - No.2						
5.1 Primary settling pond - No.2						
5.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer.	m³	801		
5.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %	%			
5.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train as directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	6 552		
5.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer.	m²	105		
5.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
5.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. The item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	819		
5.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %	%			
5.1.8	D8.3.1.1	Clear and strip site, remove all vegetation, trees, bushes etc.	m²	250		
5.1.9	DM8.3.7a	Cut to spoil any unsuitable material at designated spoil area	m³	38		
5.1.10	DM8.3.3.2	Rip area to the full extent & compact to 93 % density	m²	250		
5.1.11	ME8.3.1	150 mm thick G5 imported natural gravel material compacted to 95% MOD AASHTO density - obtained from borrow pit for sub-base course	m³	38		
5.1.12	MJ8.2.2	Supply & place 60 mm type S-A interlocking concrete paving blocks	m²	250		
5.1.13	MJ8.2.3	Allow for cutting of concrete paving blocks	m	100		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 23						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 5						
Phase 1 - Primary settling pond - No.2						
-Schedule continued from page 22						
5.1 Primary settling pond - No.2						
5.1.14		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved by the Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	761		
5.1.15		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
5.1.16		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
5.1.17		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
5.1.18		Provisional Sum – Repair of Concrete Works & New Ramp <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	200 000.00	200 000.00
5.1.19		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		200 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 24						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 5						
Phase 1 - Primary settling pond - No.2						
-Schedule continued from page 23						
5.1 Primary settling pond - No.2						
		WAS Pump No. 1				
5.1.20		Provisional Allowance – Suction Pipe – for 6-inch Centrifugal Pump	Prov	1	200 000.00	200 000.00
		A provisional sum is included for the supply, installation, & connection of the suction pipe for a 6-inch centrifugal pump, as shown on the drawings. The allowance covers the actual cost of materials, fittings, supports, joints, & associated works, including cutting, welding, testing, and alignment, as approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, other documentation. Contractor's profit is excluded and shall be accommodated under a separate BoQ item.				
5.1.21		Contractor's Markup on Provisional Sum	%		200 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
		Installation of 1 x T6 - Gorman Rupp pump & motor				
		(item shall be inclusive of the supply, install, test and commissioning of the pump and motor. Motor to be 30 kW , 400/690 V , 50 Hz , 16.3/28.1 AMP or similar approved by the Engineer in charge of the Project.				
5.1.22		Supply Pump	no	1		
5.1.23		Install pump	no	1		
5.1.24		Supply Motor	no	1		
5.1.25		Install Motor	no	1		
5.1.26		Provisional Allowance – Discharge Pipe – for 6-inch Centrifugal Pump	Prov	1	65 000.00	65 000.00
		A provisional sum is included for the manufacture, supply, installation, and commissioning of discharge pipework. Pipework shall be coated with hot-dipped galvanizing in accordance with SANS EN 10240 (1999). All new gaskets shall be 3 mm CAF/non-asbestos, and all bolts shall be grade 4.6 electro-galvanized, unless otherwise approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, & other documentation. The Contractor's margin/ profit is excluded and shall be accommodated under a separate BoQ item.				
5.1.27		Contractor's Markup on Provisional Sum	%		65 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 25						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 5						
Phase 1 - Primary settling pond - No.2						
-Schedule continued from page 24						
5.1 Primary settling pond - No.2						
		WAS Pump No. 1				
5.1.28		Provisional Allowance – Supply and Installation of Valves <i>Supply, installation, and commissioning of valves required for the project. Valves shall comply with the specifications approved by the Engineer, including materials, coating, gaskets, bolts, and associated fittings. The full scope of work, including installation, alignment, testing, and commissioning, shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, profit is excluded & shall be accommodated in separate item.</i>	Prov	1	20 000.00	20 000.00
5.1.29		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		20 000.00	
5.1.30		Provisional Allowance – Civil Works for Pump Installation <i>A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes. Contractor's profit is excluded accommodated under a separate BoQ item.</i>	Prov	1	30 000.00	30 000.00
5.1.31		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		30 000.00	
5.1.32		Provisional Allowance – Electrical Components for Pump Installation <i>Provisional allowance is included for the supply, installation, integration, and commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.</i>	Prov	1	150 000.00	150 000.00
5.1.33		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 26						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 26

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 5						
Phase 1 - Primary settling pond - No.2						
-Schedule continued from page 26						
5.1 Primary settling pond - No.2						
		Agitation Pump No. 1				
5.1.42		Provisional Allowance – Supply and Installation of Valves <i>Supply, installation, and commissioning of valves required for the project. Valves shall comply with the specifications approved by the Engineer, including materials, coating, gaskets, bolts, and associated fittings. The full scope of work, including installation, alignment, testing, and commissioning, shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, profit is excluded & shall be accommodated in separate item.</i>	Prov	1	10 000.00	10 000.00
5.1.43		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		10 000.00	
5.1.44		Provisional Allowance – Civil Works for Pump Installation <i>A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes. Contractor's profit is excluded accommodated under a separate BoQ item.</i>	Prov	1	30 000.00	30 000.00
5.1.45		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		30 000.00	
5.1.46		Provisional Allowance – Electrical Components for Pump Installation <i>Provisional allowance is included for the supply, installation, integration, and commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.</i>	Prov	1	100 000.00	100 000.00
5.1.47		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		100 000.00	
SCHEDULE 5 CARRIED OVER TO SUMMARY OF PHASE 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 6						
Phase 1 - Primary settling pond - No.3						
6.1 Primary settling pond - No.3						
6.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer.	m²	869		
6.1.2		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %</i>	%			
6.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train as directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	7 371		
6.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer.	m²	164		
6.1.5		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
6.1.6		Sludge Removal by Mechanical Means <i>Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	819		
6.1.7		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %</i>	%			
6.1.8	D8.3.1.1	Clear and strip site, remove all vegetation, trees, bushes etc.	m²	250		
6.1.9	DM8.3.7a	Cut to spoil any unsuitable material at designated spoil area	m³	38		
6.1.10	DM8.3.3.2	Rip area to the full extent & compact to 93 % density	m²	250		
6.1.11	ME8.3.1	150 mm thick G5 imported natural gravel material compacted to 95% MOD	m³	38		
		AASHTO density - obtained from borrow pit for sub-base course				
6.1.12	MJ8.2.2	Supply & place 60 mm type S-A interlocking concrete paving blocks	m²	250		
6.1.13	MJ8.2.3	Allow for cutting of concrete paving blocks	m	100		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 29						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 6 Phase 1 - Primary settling pond - No.3						
-Schedule continued from page 28						
6.1		Primary settling pond - No.3				
6.1.14		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved by the Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	366		
6.1.15		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%	.		
6.1.16		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
6.1.17		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
6.1.18		Provisional Sum – Repair of Concrete Works & New Ramp <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	400 000.00	400 000.00
6.1.19		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		400 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 30						

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS		Schedule 6				
		Phase 1 - Primary settling pond - No.3				
-Schedule continued from page 29						
6.1		Primary settling pond - No.3				
		WAS Pump No. 1				
6.1.20		Provisional Allowance – Suction Pipe – for 6-inch Centrifugal Pump <i>A provisional sum is included for the supply, installation, & connection of the suction pipe for a 6-inch centrifugal pump, as shown on the drawings. The allowance covers the actual cost of materials, fittings, supports, joints, & associated works, including cutting, welding, testing, and alignment, as approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, other documentation. Contractor's profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	200 000.00	200 000.00
6.1.21		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		200 000.00	
		Installation of 1 x T6 - Gorman Rupp pump & motor <i>(item shall be inclusive of the supply, install, test and commissioning of the pump and motor. Motor to be 30 kW , 400/690 V , 50 Hz , 16.3/28.1 AMP or similar approved by the Engineer in charge of the Project.</i>				
6.1.22		Supply Pump	no	1		
6.1.23		Install pump	no	1		
6.1.24		Supply Motor	no	1		
6.1.25		Install Motor	no	1		
6.1.26		Provisional Allowance – Discharge Pipe – for 6-inch Centrifugal Pump <i>A provisional sum is included for the manufacture, supply, installation, and commissioning of discharge pipework. Pipework shall be coated with hot-dipped galvanizing in accordance with SANS EN 10240 (1999). All new gaskets shall be 3 mm CAF/non-asbestos, and all bolts shall be grade 4.6 electro-galvanized, unless otherwise approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, & other documentation. The Contractor's margin/ profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	65 000.00	65 000.00
6.1.27		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		65 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 31						

BILL OF QUANTITIES PAGE NUMBER 30

□ □ □ □ □

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 6						
Phase 1 - Primary settling pond - No.3						
-Schedule continued from page 30						
6.1 Primary settling pond - No.3						
		WAS Pump No. 1				
6.1.28		Provisional Allowance – Supply and Installation of Valves <i>Supply, installation, and commissioning of valves required for the project. Valves shall comply with the specifications approved by the Engineer, including materials, coating, gaskets, bolts, and associated fittings. The full scope of work, including installation, alignment, testing, and commissioning, shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, profit is excluded & shall be accommodated in separate item.</i>	Prov	1	20 000.00	20 000.00
6.1.29		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		20 000.00	
6.1.30		Provisional Allowance – Civil Works for Pump Installation <i>A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes. Contractor's profit is excluded accommodated under a separate BoQ item.</i>	Prov	1	30 000.00	30 000.00
6.1.31		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		30 000.00	
6.1.32		Provisional Allowance – Electrical Components for Pump Installation <i>Provisional allowance is included for the supply, installation, integration, and commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.</i>	Prov	1	150 000.00	150 000.00
6.1.33		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 32						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS		Schedule 6				
		Phase 1 - Primary settling pond - No.3				
-Schedule continued from page 31						
6.1		Primary settling pond - No.3				
		Agitation Pump No. 1				
6.1.34		Provisional Allowance – Suction Pipe – for 4-inch Centrifugal Pump <i>A provisional sum is included for the supply, installation, & connection of the suction pipe for a 6-inch centrifugal pump, as shown on the drawings. The allowance covers the actual cost of materials, fittings, supports, joints, & associated works, including cutting, welding, testing, and alignment, as approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, other documentation. Contractor's profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	20 000.00	20 000.00
6.1.35		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		20 000.00	
		Installation of 1 x T4 - Gorman Rupp pump & motor <i>(item shall be inclusive of the supply, install, test and commissioning of the pump and motor. Motor to be 22 kW , 400/690 V , 50 Hz , 16.3/28.1 AMP or similar approved by the Engineer in charge of the Project.</i>				
6.1.36		Supply Pump	no	1		
6.1.37		Install pump	no	1		
6.1.38		Supply Motor	no	1		
6.1.39		Install Motor	no	1		
6.1.40		Provisional Allowance – Discharge Pipe – for 6-inch Centrifugal Pump <i>A provisional sum is included for the manufacture, supply, installation, and commissioning of discharge pipework. Pipework shall be coated with hot-dipped galvanizing in accordance with SANS EN 10240 (1999). All new gaskets shall be 3 mm CAF/non-asbestos, and all bolts shall be grade 4.6 electro-galvanized, unless otherwise approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, & other documentation. The Contractor's margin/ profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	20 000.00	20 000.00
6.1.41		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		20 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 33						

BILL OF QUANTITIES PAGE NUMBER 32

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Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 6						
Phase 1 - Primary settling pond - No.3						
-Schedule continued from page 32						
6.1 Primary settling pond - No.3						
		Agitation Pump No. 1				
6.1.42		Provisional Allowance – Supply and Installation of Valves	Prov	1	10 000.00	10 000.00
		<i>Supply, installation, and commissioning of valves required for the project.</i>				
		<i>Valves shall comply with the specifications approved by the Engineer, including materials, coating, gaskets, bolts, and associated fittings. The full scope of work, including installation, alignment, testing, and commissioning, shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, profit is excluded & shall be accommodated in separate item.</i>				
6.1.43		Contractor's Markup on Provisional Sum	%		10 000.00	
		<i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>				
6.1.44		Provisional Allowance – Civil Works for Pump Installation	Prov	1	30 000.00	30 000.00
		<i>A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes. Contractor's profit is excluded accommodated under a separate BoQ item.</i>				
6.1.45		Contractor's Markup on Provisional Sum	%		30 000.00	
		<i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>				
6.1.46		Provisional Allowance – Electrical Components for Pump Installation	Prov	1	100 000.00	100 000.00
		<i>Provisional allowance is included for the supply, installation, integration, and commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.</i>				
6.1.47		Contractor's Markup on Provisional Sum	%		100 000.00	
		<i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>				
SCHEDULE 6 CARRIED OVER TO SUMMARY OF PHASE 1						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 34

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Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 7 Phase 1 - Emergency Pond						
-Schedule continued from page 34						
7.1 Emergency Pond						
7.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved by the Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	302		
7.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %</i>	%			
7.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	100 000.00	100 000.00
7.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		100 000.00	
7.1.12		Provisional Sum – Repair of HDPE Liner <i>Provisional allowance is included for the repair of damages to the HDPE liner, which shall be carried out in full compliance with SANS 1526, GRI, & ASTM standards for geomembrane welding. All repair materials, including patches, strips, or welding rods, shall be of the same polymer type and thickness as the existing liner and cut from virgin HDPE geomembrane rolls, free from defects and contamination. Damaged areas shall be properly cleaned, dried, and prepared, including the removal of sharp edges and light abrasion of the welding surface to ensure proper bonding. Repairs may involve patching, where patches extend at least 150 mm beyond the damaged area in all directions, extrusion welding for cracks or cuts using compatible HDPE welding rod, or seam re-welding using wedge or extrusion welders overlaps of not less than 100 mm. Repairs shall be executed by trained & certified geomembrane welders, and records of all repair works and testing shall be submitted to the Engineer for approval. The Contractor shall be reimbursed for actual costs incurred, supported by invoices,delivery notes,& timesheets while margin/profit is excluded from this provisional allowance & shall be accommodated under a separate BoQ item.</i>	Prov	1	200 000.00	200 000.00
7.1.13		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		200 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 36						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 7 Phase 1 - Emergency Pond						
-Schedule continued from page 35						
7.1 Emergency Pond						
7.1.14		Provisional Allowance – Installation of Submersible Pump <i>Provisional allowance is included for the installation, connection, and commissioning of a submersible pump with a duty of 45 litres per second at a head of 10 metres. The item shall cover all works associated with the placement of the pump in position, alignment, securing, lifting arrangements, mechanical piping connections, testing, and commissioning in accordance with the manufacturer's requirements and as approved by the Engineer. All design drawings, specifications, & installation procedures shall be submitted for approval prior to execution. The Contractor shall be reimbursed for actual costs incurred, supported by invoices, delivery notes, and timesheets, while Contractor margin/profit is excluded from this pro. allowance & shall be accommodated under a separate BoQ item.</i>	Prov	1	150 000.00	150 000.00
7.1.15		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
7.1.16		Provisional Allowance – Electrical Components for Pump Installation <i>Provisional allowance is included for the supply, installation, integration, and commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.</i>	Prov	1	50 000.00	50 000.00
7.1.17		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE 7 CARRIED OVER TO SUMMARY OF PHASE 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 8						
Phase 1 - Gravity line to Emergency Pond						
8.1 Site clearance						
8.1.1	DB8.3.1a	General clearance, clearing of vegetation, rubble etc. <i>(including the spoiling and all haulage of material)</i> for the trench width along the trench lines	m	55		
8.1.2	DB8.3.1c	Remove 150 mm topsoil to the trench width, stock pile & replace it after completion of the pipe line <i>(rate includes the maintenance of the stock pile)</i>	m³	9		
8.1.3	DB8.3.1b	Remove trees with girth of 0.5 m up to 1.0 m that interfere with the pipe line route	no	1		
8.1.4	DB8.3.1b	Remove trees with girth greater than 1.0 m that interfere with the pipe line route <i>(rates shall cover the cost of clearing and grubbing the trees and stumps, backfilling the holes, and all transporation to/from the designated spoil area)</i>	no	1		
8.2 Trench excavations						
		Note : all excavations other than rock requiring blasting will be considered as soft excavation - all free haul = 10 km unless otherwise stated in the Tender Document				
8.2.1	DB8.3.2.a	Trench excavation for 250 mm Ø pipes, 800 mm wide x 1,300 mm deep Excavation rate shall cover the cost of the excavation, compaction of the excavation base to 93% Mod AASHTO density (record should be kept and presented to the Engineer upon request), the disposal of all surplus material and the clean up of any excavated rubble material NOTE: As stated in SANS 1200 Section D Paragraph 3.1.2 soft excavation is defined as material that can be removed by a bulldozer of approximately 22 ton and/or flywheel power of approximately 145 kW	m	55		
8.2.2	DB8.3.2.b2	Extra over for excavation of hard rock material Hard rock excavation rate shall cover the cost of breaking down the hard material, removal of it with all haulage involved, including the neat spreading of disposed material at the designated disposal site as well as the replacement of the removed material	m³	20		
8.2.3	DB8.3.2.b2	Extra over for excavation in boulder type A & B material Boulder type A and B excavation rate shall cover the cost of removal of material with all haulage involved, including the neat spreading of disposed materialat at the designated disposal site as well as the replacement of the removed material	m³	15		
8.2.4	DB8.3.2.c	Extra over for trench excavation items for additional deeper excavations Deeper excavation to remove unsuitable material only when requested by the Engineer in charge of the site - rate shall cover the cost of removal & replacement of all material with all haulage involved as well as the replacement of the removed material NOTE: All surplus or unsuitable material shall be spoiled at a site to be provided by the Contractor and approved by the Engineer.	m³	10		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 38						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 8						
Phase 1 - Gravity line to Emergency Pond						
-Schedule continued from page 37						
8.3 Protection of existing under ground services						
		Supply & install all material as required				
		Protection from damages during construction to existing services <u>crossing the new trenches (whether or not their presence is known before they're uncovered), The following items are applicable to SANS DB8.3.5a & b - /-i), -ii), -iii), -iv)</u>				
		<u>Note : Exposing services to be made by hand excavation</u>				
8.3.1	DB8.3.5a	Electrical cables, pipes, sleeves, ducts etc.	no	1		
8.3.2	DB8.3.5a	Communication cables, pipes, sleeves, ducts etc.	no	1		
8.3.3	DB8.3.5a	Large Ø water & sewer pipes (75 - 1200 mm Ø)	no	1		
8.4 Provision for bedding and covering						
		<u>Note : all supply & haulage are inclusive for the following items</u>				
		<u>Class B type using excavated material from trenches</u>				
8.4.1	LB8.2.1a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	12		Rate only
8.4.2	LB8.2.1b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	18		Rate only
		<u>Class B type using imported material from borrow pits</u>				
8.4.3	LB8.2.2.2a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	12		
8.4.4	LB8.2.2.2b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	18		
		<u>Class B type using material from commercial sources</u>				
8.4.5	LB8.2.2.3a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	12		Rate only
8.4.6	LB8.2.2.3b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	18		Rate only
		<u>Class B type using 19 mm crushed stone material</u>				
8.4.7	LB8.2.2.3a	Bedding cradle with crushed stone material	m³	2		
8.4.8	LB8.2.2.3b	Blanket with crushed stone material	m³	4		
8.5 Sewer pipes						
		<u>Supply, lay and bed the following sewer pipes complete with couplings on prepared bedding, joint, incl. cut pipes to length where required (bedding & blanket are measured elsewhere)</u>				
8.5.1	LD8.2.1	315 mm Ø Class 34-300 kPa heavy duty under ground sewer pipe as per SANS 1601 (one end socket end, other end integral joint)	m	55		Rate Only
8.5.2	LD8.2.1	250 mm Ø Class 34-300 kPa heavy duty under ground sewer pipe as per SANS 1601 (one end socket end, other end integral joint)	m	55		
8.5.3	LD8.2.1	200 mm Ø Class 34-300 kPa heavy duty under ground sewer pipe as per SANS 1601 (one end socket end, other end integral joint)	m	55		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 39						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 39

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

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Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 9 Phase 1 - Biological Filter Pumping Station						
9.1 Biological Filter Pumping Station						
9.1.1		Provisional Allowance – Refurbishment of Suction Pipes <i>Provisional sum is included for the refurbishment of the suction pipe. The detailed scope of works shall be determined on site by the Contractor & submitted to the Engineer for approval prior to execution. Allowance covers the actual cost of materials, fittings, supports, joints, & associated works, including cutting, welding, surface preparation, corrosion protection, testing, & alignment. Contractor shall be reimbursed for the actual costs incurred, supported by invoices and relevant documentation. Contractor's profit is excluded from this provisional allowance and shall be accommodated under a separate BoQ item.</i>	Prov	1	80 000.00	80 000.00
9.1.2		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		80 000.00	
9.1.3		Provisional Allowance – Renovation of End-Suction Centrifugal Pump <i>Provisional sum is included for the refurbishment of the end suction pump, including all major components of an end suction pump such as the rotating assembly, back plate, weir plate, flap valves, filler cap, and other associated fittings. The works shall include sandblasting & painting of components as required. The detailed scope of works shall be determined on site by the Contractor and submitted to the Engineer for approval prior to execution</i>	Prov	1	480 000.00	480 000.00
9.1.4		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		480 000.00	
9.1.5		Provisional Allowance – Discharge Pipe <i>A provisional sum is included for the manufacture, supply, installation, and commissioning of discharge pipework. Pipework shall be coated with hot-dipped galvanizing in accordance with SANS EN 10240 (1999). All new gaskets shall be 3 mm CAF/non-asbestos, and all bolts shall be grade 4.6 electro-galvanized, unless otherwise approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, & other documentation. The Contractor's margin/ profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	85 000.00	85 000.00
9.1.6		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		85 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 4 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 9 Phase 1 - Biological Filter Pumping Station						
-Schedule continued from page 40						
9.1 Biological Filter Pumping Station						
9.1.7		Provisional Allowance – Renovation of Valves Provisional sum is included for the renovation and refurbishment of valves required for the project. Valves shall comply with the specifications approved by the Engineer, including materials, coatings, gaskets, bolts, & fittings. The scope of work, including dismantling, repair or replacement of components, installation, alignment, testing, & commissioning, shall be determined on site and submitted for the Engineer's approval prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices and documentation. Contractor's profit is excluded & shall be accommodated under a separate BoQ item.	Prov	1	150 000.00	150 000.00
9.1.8		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		150 000.00	
9.1.9		Provisional Allowance – Civil Works for Pump Installation A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes. Contractor's profit is excluded accommodated under a separate BoQ item.	Prov	1	80 000.00	80 000.00
9.1.10		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		80 000.00	
9.1.11		Provisional Allowance – Electrical Components for Pump Installation Provisional allowance is included for the supply, installation, integration, & commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.	Prov	1	220 000.00	220 000.00
9.1.12		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		220 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 42						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 9						
Phase 1 - Biological Filter Pumping Station						
-Schedule continued from page 41						
9.1 Biological Filter Pumping Station						
9.1.13		Provisional Allowance – General Refurbishment Works <i>A provisional allowance is included for general refurbishment works including painting, cleaning, plastering repairs, minor masonry & steel works, electrical maintenance, and waterproofing. The allowance covers all labour, materials, equipment, and incidental works necessary to complete the refurbishment to the satisfaction of the Engineer. The detailed scope of works shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, receipts, and timesheets. Contractor's profit is excluded from the allowance and shall be accommodated under a separate BoQ item.</i>	Prov	1	100 000.00	100 000.00
9.1.14		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		100 000.00	
SCHEDULE 9 CARRIED OVER TO SUMMARY OF PHASE 1						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 43

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 10 Phase 1 - Pumpline from Biological Filter P/s						
-Schedule continued from page 43						
10.3 Protection of existing under ground services						
		Supply & install all material as required				
		Protection from damages during construction to existing services crossing the new trenches (whether or not their presence is known before they're uncovered), The following items are applicable to SANS DB8.3.5a & b - (-i), -ii), -iii), -iv)				
		Note : Exposing services to be made by hand excavation				
10.3.1	DB8.3.5a	Electrical cables, pipes, sleeves, ducts etc.	no	1		
10.3.2	DB8.3.5a	Communication cables, pipes, sleeves, ducts etc.	no	1		
10.3.3	DB8.3.5a	Large Ø water & sewer pipes (75 - 1200 mm Ø)	no	1		
10.4 Provision for bedding and covering						
		Note : all supply & haulage are inclusive for the following items				
		Class B type using excavated material from trenches				
10.4.1	LB8.2.1a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	37		Rate only
10.4.2	LB8.2.1b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	61		Rate only
		Class B type using imported material from borrow pits				
10.4.3	LB8.2.2.2a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	37		
10.4.4	LB8.2.2.2b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	61		
		Class B type using material from commercial sources				
10.4.5	LB8.2.2.3a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	37		Rate only
10.4.6	LB8.2.2.3b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	61		Rate only
		Class B type using 19 mm crushed stone material				
10.4.7	LB8.2.2.3a	Bedding cradle with crushed stone material	m³	7		
10.4.8	LB8.2.2.3b	Blanket with crushed stone material	m³	11		
10.5 Pipes						
		Supply, lay and bed the following water pipes complete with couplings on prepared bedding, joint, incl. cut pipes to length where required (bedding & blanket are measured elsewhere - testing & disinfection of pipes are to be included in the rates)				
10.5.1	L8.2.1	315 mm Ø Class 9 u-PVC Z - lok pipes	m	180		
10.5.2	L8.2.1	250 mm Ø Class 9 u-PVC Z - lok pipes	m	180		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 45						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 45

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 11 Phase 1 - Biological Filter						
11.1 Biological filter						
11.1.1		General clearance, clearing of vegetation, rubble etc. <i>(including the spoiling and all haulage of material)</i> as per instruction of the engineer	m²	1 000		
11.1.2		General cleaning of Interconnecting Pipes <i>(Item to include the isolation, draining, dredging, cleaning, carting away of inorganic / organic material. Additionally, the mentioned activities should allow for an inspection of the associated component.)</i>	days	4		
11.1.3		Washing of existing filter media <i>(Item includes the thorough washing & cleaning of the existing filter media in the treatment units. Works to involve careful removal of accumulated debris, biological growth, and fine particles by means of high-pressure water jets or other approved methods, ensuring the media is restored to its functional condition without causing damage. All wash water and waste material shall be collected and disposed of at an approved location. The site shall be left clean and ready for inspection by the Engineer upon completion.</i>	m³	2 334		
11.1.4		Provisional Allowance – Structural Repair Works to Bio Filter <i>Provisional sum is included for the structural repair works to the biofilter. Scope of work includes preparatory works such as clearing the area, protecting surrounding vegetation, piping, filters, and associated equipment, removing loose concrete, debris, and laitance. Structural concrete repairs shall involve removing unsound concrete to a sound substrate, cleaning & treating reinforcement, applying bonding agents, and patching with suitable structural repair mortar or concrete. Crack and joint repairs shall be carried out using flexible or polymeric sealants to ensure watertightness. Structural strapping and reinforcement shall be supplied and installed across degraded sections, using corrosion-resistant materials & anchored into concrete, with design and working drawings submitted for approval. Waterproofing, sealing, and surface finishes shall be applied as required to prevent water ingress and restore functional and aesthetic performance. After completion, inspections shall be carried out to confirm structural stability,water tightness, and the integrity of straps and supports. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes,ect. Contractor's profit is excluded to be accommodated under a separate item.</i>	Prov	1	750 000.00	750 000.00
11.1.5		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		750 000.00	
11.1.6		Installation of New Filter Media – Hewi-Africa CF-27 Cross-Fluted Film Fill <i>Supply, deliver, and install Hewitech CF-27 Cross-Fluted Film Fill media for bio-filter units (or similar approved by the Engineer). The CF-27 film fill shall have channel structure diagonal with 2 × 27 mm height, effective surface of 125 m²/m³, free volume greater than 97%, material options (PP) or (PVC), and shall conform to fire-safety ratings such as ASTM E-84, UL 94, or DIN 4102-B2. Installation shall include cutting and fitting of fill panels to suit media support structures, secure fixing to prevent movement.</i>	m³	2 334		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 47						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 11						
Phase 1 - Biological Filter						
-Schedule continued from page 46						
11.1 Biological filter						
11.1.7		Provisional Sum – Repair of Bio-Filter Distribution System <i>A provisional sum is included for the repair works to the bio-filter distribution system. The scope of work includes preparatory works such as isolating the bio-filter, providing safe access, and protecting the filter media from contamination. Cleaning and inspection of all distribution arms, nozzles, bearings, and supports shall be undertaken, including the removal of debris, blockages, and corrosion deposits. Distribution arms shall be straightened, welded, reinforced, or replaced where required, ensuring correct alignment and hydraulic balance. Defective or missing nozzles and orifices shall be replaced with durable, corrosion-resistant types, sized and spaced in accordance with the original design to ensure uniform distribution. Bearings, bushings, seals, and drive mechanisms shall be inspected, lubricated, and replaced as required to restore smooth rotation and reliable service. Pipework and supports shall be repaired or replaced where damaged or corroded, and protective coatings applied to all exposed metal components to prevent future deterioration. Hydraulic testing and adjustments shall be carried out to confirm correct flow rates, rotation speed, and even distribution across the entire filter surface. After completion, commissioning shall be undertaken under normal operating conditions, with inspection reports submitted to confirm functionality and compliance. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, and documentation. Contractor's profit is excluded and shall be accommodated under a separate BoQ item</i>	Prov	1	350 000.00	350 000.00
11.1.8		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		350 000.00	
11.1.9		Provisional Allowance – Drive Unit (Motor & Gearbox) <i>Provisional sum is included for the supply, installation, integration, and commissioning of the electric drive unit for the biofilter spreader arm, comprising motor, gearbox, coupling, baseplate, guards, flexible coupling, vibration isolation mounts, and associated mechanical ancillaries. Allowance covers motor and gearbox selected and sized for the spreader-arm torque and speed requirements, factory testing, delivery, installation, alignment, on-site commissioning (no-load and load run), and provision of FAT and commissioning certificates. The supplier shall submit full design calculations, motor and gearbox datasheets, dimensional and baseplate drawings, control interface details and lubrication schedule for approval by the Engineer prior to procurement. Protective devices, local start/stop controls and provision for VFD/soft-starter interface shall be included. Contractor shall be reimbursed for actual costs incurred, supported by invoices, delivery notes and timesheets. Contractor's profit/margin is excluded from this item.</i>	Prov	1	140 000.00	140 000.00
11.1.10		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		140 000.00	
SCHEDULE 11 CARRIED OVER TO SUMMARY OF PHASE 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 12 Phase 1 - Hummus Tank						
12.1 Hummus Tank						
12.1.1		Pumping of Liquid Substance from Basin - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train as directed. Item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	1 080		
12.1.2		Vegetation Removal in Basin - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer.	m²	30		
12.1.3		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
12.1.4		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	120		
12.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %	%			
12.1.6		Sludge Removal by Hand Removal of sludge from the pond by manual/labour-intensive methods, as approved by the Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	120		
12.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 49						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 12 Phase 1 - Hummus Tank						
-Schedule continued from page 48						
12.1 Hummus Tank						
12.1.8		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Profit excluded from Actual Cost Recovery & shall be accommodated separately</i>	Prov	1	50 000.00	50 000.00
12.1.9		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
12.1.10		Provisional Sum – Refurbishment of Bridge <i>Provisional sum is included for the refurbishment of the bridge.Scope of work and specifications shall be submitted to and approved by the Engineer prior to execution. The work shall include the disassembly of the bridge, transport to an approved workshop, comprehensive evaluation, execution of minor repairs as necessary, reassembly, transport back to site, reinstallation, & full commissioning to ensure proper functionality. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, and timesheets. Contractor's profit/margin is excluded from this provisional allowance and shall be accommodated under a separate BoQ.</i>	Prov	1	80 000.00	80 000.00
12.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		80 000.00	
12.1.12		Refurbishment of Bearing (Scope of work and specifications to be approved by the Engineer - Item to include the disassembly, transport to workshop, comprehensive evaluation, minor repairs, re-assemble, return to site, re-install & commissioning).	no	1		
12.1.13		Refurbishment of Scum Baffle (Scope of work and specifications to be approved by the Engineer)	sum	1		
12.1.14		Refurbishment of Weir Plate (Scope of work and specifications to be approved by the Engineer)	sum	1		
12.1.15		Refurbishment of Scum Box (Scope of work and specifications to be approved by the Engineer)	no	1		
12.1.16		Refurbishment of Scraper (Scope of work and specifications to be approved by the Engineer)	no	1		
12.1.17		Refurbishment of Motor & Drive unit (Scope of work and specifications to be approved by the Engineer)	no	1		
12.1.18		General cleaning of Interconnecting Pipes (Item to include the isolation, draining, dredging, cleaning, carting away of inorganic / organic material. Additionally, the mentioned activities should allow for an inspection)	days	1		
SCHEDULE 12 CARRIED OVER TO SUMMARY OF PHASE 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 13 Phase 1 - BNR Reactor						
13.1 BNR Reactor						
13.1.1		Pumping of Liquid Substance from Basin - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train as directed. Item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	2 125		
13.1.2		Vegetation Removal in Basin - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer.	m²	75		
13.1.3		Extra Over - Markup percentage on SMME Subcontractor Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
13.1.4		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	125		
13.1.5		Extra Over - Markup percentage on SMME Subcontractor Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %	%			
13.1.6		Sludge Removal by Hand Removal of sludge from the pond by manual/labour-intensive methods, as approved by the Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	254		
13.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 51						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 13 Phase 1 - BNR Reactor						
-Schedule continued from page 50						
13.1 BNR Reactor						
13.1.8		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Profit excluded from Actual Cost Recovery & shall be accommodated separately</i>	Prov	1	250 000.00	250 000.00
13.1.9		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		250 000.00	
13.1.10		New mixer unit <i>(Item to include removal of the existing mixer unit & supply, installation, alignment, testing & commissioning of a new 3 kW motor & gearbox assembly,complete with couplings, mountings, mixer blades, paddles, protective coatings, & accessories. Works include removal of old unit & upply of new equipment (3 kW IE3 efficiency motor, IP55 enclosure, Class F insulation, TEFC cooling; helical or bevel-helical gearbox - service factor ≥1.5, sealed housing),new shaft & blades manufactured from , corrosion-resistant material, flexible coupling material, flexible coupling, alignment and baseplate modifications as required, surface protection, handover with datasheets, O&M manuals & warranty. Mixer shall provide l ow-intensity mixing at a min. energy input of 5 W/m³, with blade & paddle sizing not less than the minimum required to achieve this standard. Final specifications, dimensions, & performance details shall be submitted to and approved by the Engineer prior to installation</i>	no	3.00		
13.1.11		New Aerator unit <i>(Item to include removal of the existing unit & supply the supply, installation, alignment, testing, and commissioning of a new 30 kW aerator unit complete with couplings, mountings, impeller/rotor, protective coatings, and accessories. The scope of works shall include preparatory isolation and lifting, removal and disposal of the old unit, and the supply of new equipment consisting of a 30 kW IE3 efficiency motor - IP65 enclosure, Class F insulation, TEFC cooling, and a helical or bevel-helical gearbox with a service factor of not less than 1.5, sealed lubrication, and corrosion-resistant housing. The new aerator rotor/impeller shall be manufactured from suitable corrosion-resistant material and provided with a flexible coupling, alignment and baseplate modifications as required, surface protection, & full testing under process load. Aerator shall be capable of providing an o² transfer rate of 2.2 kg O₂/kWh (Standard Oxygen Transfer Efficiency, clean water @ 20°C), with the actual SOTE achieved confirmed & validated on site during commissioning. Final specifications, dims, & performance details shall be submitted to and approved by the Engineer prior to installation.</i>	no	3.00		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 52						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 13 Phase 1 - BNR Reactor						
-Schedule continued from page 51						
13.1 BNR Reactor						
13.1.12		New Axial Pump & Motor – (Supply, installation, alignment, testing, and commissioning of a new 5.5 kW axial flow pump and motor assembly, complete with couplings, mountings, coatings, and accessories. Scope includes isolation, lifting, removal, and disposal of the old unit, & supply of new 5.5 kW IE3 motor (IP55, Class F, TEFC) coupled to an axial pump with corrosion-resistant housing and stainless steel impeller/propeller. Works include coupling, alignment, baseplate modifications, & protective coating. The pump shall be suitable for continuous wastewater service, providing low-head, high-flow operation. Final specifications shall be submitted to & approved by the Engineer prior to installation. Full process testing, O&M manuals, and warranty to be provided.	no	3.00		
13.1.13		New 4.8 m Tilting Weir (Supply, installation, testing, & commissioning of a new 4.8 m tilting weir assembly, complete with structural frame, weir plate, seals, pivot supports, lifting mechanism, mountings, protective coatings, & accessories. Scope includes isolation, removal, and disposal of the old unit, preparation of seating surfaces, installation of the new tilting weir, alignment, sealing to ensure watertight performance, and application of corrosion-resistant coatings. The weir shall be fabricated from stainless steel or other Engineer-approved materials suitable for wastewater service. Final specifications, shop drawings, & design details shall be submitted to and approved by the Engineer prior to installation. Full functional testing, O&M manuals, and warranty to be provided.	no	2.00		
13.1.14		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.	Prov	1	250 000.00	250 000.00
13.1.15		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		250 000.00	
13.1.16		Refurbishment of Handrails (Supply, disassembly, cleaning & refurbishment of existing handrails, including removal of corrosion, surface preparation, repair of minor damages, protective coating or repainting, reassembly, & secure reinstallation. Scope includes all necessary mountings, fasteners, & accessories to ensure structural integrity and safety. Materials, coatings, and workmanship standards shall be submitted to and approved - Engineer)	m	150		
SCHEDULE 13 CARRIED OVER TO SUMMARY OF PHASE 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 14						
Phase 1 - MCC Building at BNR						
14.1 MCC building at BNR Reactor						
14.1.1		Provisional Allowance – General Refurbishment Works <i>A provisional allowance is included for general refurbishment works including painting, cleaning, plastering repairs, minor masonry & steel works, electrical maintenance, and waterproofing. The allowance covers all labour, materials, equipment, and incidental works necessary to complete the refurbishment to the satisfaction of the Engineer. The detailed scope of works shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, receipts, and timesheets. Contractor's profit is excluded from the allowance and shall be accommodated under a separate BoQ item.</i>	Prov	1	25 000.00	25 000.00
14.1.2		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		25 000.00	
14.1.3		Provisional Allowance – General Building Works for Extension <i>Provisional sum is included for the general building works required for the extension of the existing building. The scope of work shall include, but is not limited to, excavation, foundations, masonry or concrete walls, roofing, flooring, plastering, painting, minor steelworks, doors and windows, electrical and plumbing allowances, and any other associated works necessary to complete the extension. All materials, workmanship, and methods shall comply with applicable SANS standards and be submitted to and approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, & timesheets. Contractor's profit/margin is excluded from this provisional sum and shall be accommodated under a separate BoQ item. Payment shall be made only on approved actual expenditure certified by the Engineer.</i>	Prov	1	150 000.00	150 000.00
14.1.4		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
SCHEDULE 14 CARRIED OVER TO SUMMARY OF PHASE 1						
BILL OF QUANTITIES PAGE NUMBER 53						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 15 Phase 1 - RAS/WAS Pumping station						
15.1 RAS/WAS Pumping station						
15.1.1		Provisional Allowance – Refurbishment of Suction Pipes <i>Provisional sum is included for the refurbishment of the suction pipe. The detailed scope of works shall be determined on site by the Contractor & submitted to the Engineer for approval prior to execution. Allowance covers the actual cost of materials, fittings, supports, joints, & associated works, including cutting, welding, surface preparation, corrosion protection, testing, & alignment. Contractor shall be reimbursed for the actual costs incurred, supported by invoices and other relevant documentation. Profit is excluded from this provisional allowance and shall be accommodated under a separate BoQ item.</i>	Prov	1	200 000.00	200 000.00
15.1.2		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		200 000.00	
15.1.3		Provisional Allowance – Renovation of End-Suction Pump - No.1 <i>Provisional sum is included for the refurbishment of the end suction pump, including all major components of an end suction pump such as the rotating assembly, back plate, weir plate, flap valves, filler cap, and other associated fittings. The works shall include sandblasting & painting of components as required. The detailed scope of works shall be determined on site by the Contractor and submitted to the Engineer for approval prior to execution</i>	Prov	1	155 000.00	155 000.00
15.1.4		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		155 000.00	
15.1.5		Provisional Allowance – Renovation of End-Suction Pump - No.2 <i>Provisional sum is included for the refurbishment of the end suction pump, including all major components of an end suction pump such as the rotating assembly, back plate, weir plate, flap valves, filler cap, and other associated fittings. The works shall include sandblasting & painting of components as required. The detailed scope of works shall be determined on site by the Contractor and submitted to the Engineer for approval prior to execution</i>	Prov	1	155 000.00	155 000.00
15.1.6		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		155 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 55						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 15 Phase 1 - RAS/WAS Pumping station						
-schedule continued from page 54						
15.1		RAS/WAS Pumping station				
15.1.7		Provisional Allowance – Renovation of End-Suction Pump - No.3 Provisional sum is included for the refurbishment of the end suction pump, including all major components of an end suction pump such as the rotating assembly, back plate, weir plate, flap valves, filler cap, and other associated fittings. The works shall include sandblasting & painting of components as required. The detailed scope of works shall be determined on site by the Contractor and submitted to the Engineer for approval prior to execution	Prov	1	155 000.00	155 000.00
15.1.8		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		155 000.00	
15.1.9		Provisional Allowance – Renovation of End-Suction Pump - No.4 Provisional sum is included for the refurbishment of the end suction pump, including all major components of an end suction pump such as the rotating assembly, back plate, weir plate, flap valves, filler cap, and other associated fittings. The works shall include sandblasting & painting of components as required. The detailed scope of works shall be determined on site by the Contractor and submitted to the Engineer for approval prior to execution	Prov	1	155 000.00	155 000.00
15.1.10		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		155 000.00	
15.1.11		Provisional Allowance – Renovation of End-Suction Pump - No.5 Provisional sum is included for the refurbishment of the end suction pump, including all major components of an end suction pump such as the rotating assembly, back plate, weir plate, flap valves, filler cap, and other associated fittings. The works shall include sandblasting & painting of components as required. The detailed scope of works shall be determined on site by the Contractor and submitted to the Engineer for approval prior to execution	Prov	1	155 000.00	155 000.00
15.1.12		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		155 000.00	
15.1.13		Provisional Allowance – Renovation of End-Suction Pump - No.6 Provisional sum is included for the refurbishment of the end suction pump, including all major components of an end suction pump such as the rotating assembly, back plate, weir plate, flap valves, filler cap, and other associated fittings. The works shall include sandblasting & painting of components as required. The detailed scope of works shall be determined on site by the Contractor and submitted to the Engineer for approval prior to execution	Prov	1	155 000.00	155 000.00
15.1.14		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		155 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 56						

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 15						
Phase 1 - RAS/WAS Pumping station						
-Schedule continued from page 55						
15.1		RAS/WAS Pumping station				
15.1.23		Provisional Allowance – Discharge Pipe	Prov	1	250 000.00	250 000.00
		A provisional sum is included for the manufacture, supply, installation, and commissioning of discharge pipework. Pipework shall be coated with hot-dipped galvanizing in accordance with SANS EN 10240 (1999). All new gaskets shall be 3 mm CAF/non-asbestos, and all bolts shall be grade 4.6 electro-galvanized, unless otherwise approved by the Engineer.				
		Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, & other documentation. The Contractor's margin/ profit is excluded and shall be accommodated under a separate BoQ item.				
15.1.24		Contractor's Markup on Provisional Sum	%		250 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum.				
		Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
15.1.25		Provisional Allowance – Renovation of Valves	Prov	1	350 000.00	350 000.00
		Provisional sum is included for the renovation and refurbishment of valves required for the project. Valves shall comply with the specifications approved by the Engineer, including materials, coatings, gaskets, bolts, & fittings.				
		The scope of work, including dismantling, repair or replacement of components, installation, alignment, testing, & commissioning, shall be determined on site and submitted for the Engineer's approval prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices and documentation. Contractor's profit is excluded & shall be accommodated under a separate BoQ item.				
15.1.26		Contractor's Markup on Provisional Sum	%		350 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum.				
		Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
15.1.27		Provisional Allowance – Civil Works for Pump Installation	Prov	1	100 000.00	100 000.00
		A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes.				
		Contractor's profit is excluded accommodated under a separate BoQ item.				
15.1.28		Contractor's Markup on Provisional Sum	%		100 000.00	
		Contractor's percentage markup on the actual cost of the provisional sum.				
		Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 57						

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 15 Phase 1 - RAS/WAS Pumping station						
-Schedule continued from page 56						
15.1 RAS/WAS Pumping station						
15.1.29		Provisional Allowance – General Refurbishment Works <i>A provisional allowance is included for general refurbishment works including painting, cleaning, plastering repairs, minor masonry & steel works, electrical maintenance, and waterproofing. The allowance covers all labour, materials, equipment, and incidental works necessary to complete the refurbishment to the satisfaction of the Engineer. The detailed scope of works shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, receipts, and timesheets. Contractor's profit is excluded from the allowance and shall be accommodated under a separate BoQ item.</i>	Prov	1	130 000.00	130 000.00
15.1.30		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		130 000.00	
15.1.31		Provisional Allowance – Flow Meter Instrumentation <i>Provisional sum is included for the supply, installation, integration, and commissioning of flow meter instrumentation as required for the project. The allowance covers the removal of any existing meter, modifications to he pipework if required, installation of the new flow meter, including sensors, transmitters, cabling, mounting accessories, protective enclosures, and calibration. All design drawings, specifications, and equipment schedules shall be submitted to and approved by the Engineer prior to procurement & installation. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, and timesheets. Contractor's profit is excluded from this provisional allowance & shall be accommodated under a separate BoQ item.</i>	Prov	1	250 000.00	250 000.00
15.1.32		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		250 000.00	
15.1.33		Provisional Allowance – Installation of Dewatering <i>Provisional sum is included for the supply, installation, and commissioning of a dewatering (sump) pump and control system. Works include removal of any existing pump, installation of the new pump and control panel, connection to sump piping, wiring, mounting accessories, protective enclosures, and commissioning. All design drawings, specifications, & equipment schedules shall be submitted to and approved by the Engineer prior to installation. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation. Contractor's profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	40 000.00	250 000.00
15.1.34		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		250 000.00	
SCHEDULE 15 CARRIED OVER TO SUMMARY OF PHASE 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 16 Phase 1 - Clarifier						
16.1 Clarifier						
16.1.1		Pumping of Liquid Substance from Basin - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train as directed. Item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	824		
16.1.2		Vegetation Removal in Basin - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer.	m²	21		
16.1.3		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
16.1.4		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	206		
16.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %	%			
16.1.6		Sludge Removal by Hand Removal of sludge from the pond by manual/labour-intensive methods, as approved by the Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	123		
16.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 59						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 16 Phase 1 - Clarifier						
-Schedule continued from page 58						
16.1 Clarifier						
16.1.8		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Profit excluded from Actual Cost Recovery & shall be accommodated separately</i>	Prov	1	50 000.00	50 000.00
16.1.9		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
16.1.10		Provisional Sum – Refurbishment of Bridge <i>Provisional sum is included for the refurbishment of the bridge.Scope of work and specifications shall be submitted to and approved by the Engineer prior to execution. The work shall include the disassembly of the bridge, transport to an approved workshop, comprehensive evaluation, execution of minor repairs as necessary, reassembly, transport back to site, reinstallation, & full commissioning to ensure proper functionality. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, and timesheets. Contractor's profit/margin is excluded from this provisional allowance and shall be accommodated under a separate BoQ.</i>	Prov	1	80 000.00	80 000.00
16.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		80 000.00	
16.1.12		Refurbishment of Bearing (Scope of work and specifications to be approved by the Engineer - Item to include the disassembly, transport to workshop, comprehensive evaluation, minor repairs, re-assemble, return to site, re-install & commissioning).	no	1		
16.1.13		Refurbishment of Scum Baffle (Scope of work and specifications to be approved by the Engineer)	sum	1		
16.1.14		Refurbishment of Weir Plate (Scope of work and specifications to be approved by the Engineer)	sum	1		
16.1.15		Refurbishment of Scum Box (Scope of work and specifications to be approved by the Engineer)	no	1		
16.1.16		Refurbishment of Scraper (Scope of work and specifications to be approved by the Engineer)	no	1		
16.1.17		Refurbishment of Motor & Drive unit (Scope of work and specifications to be approved by the Engineer)	no	1		
16.1.18		General cleaning of Interconnecting Pipes (Item to include the isolation, draining, dredging, cleaning, carting away of inorganic / organic material. Additionally, the mentioned activities should allow for an inspection)	days	1		
SCHEDULE 16 CARRIED OVER TO SUMMARY OF PHASE 1						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 60

J:\4048 Jan Kempdorp WWTW\QS\Estims\2st-Tender-Oct 2025\1.JK -WWTW -R9 - Blank.xlsx 2025/09/16

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 17						
Phase 1 - Contact tank & Chlorine Dozing facility						
-Schedule continued from page 60						
17.1 Contact tank						
17.1.8		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Profit excluded from Actual Cost Recovery & shall be accommodated separately</i>	Prov	1	30 000.00	30 000.00
17.1.9		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		30 000.00	
17.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	200 000.00	200 000.00
17.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		200 000.00	
17.1.12		Refurbishment of Handrails (Supply, disassembly, cleaning, & refurbishment of existing handrails, including removal of corrosion, surface preparation, repair of minor damages, protective coating or repainting, reassembly, & secure installation. Scope includes all necessary mountings, fasteners, & accessories to ensure structural integrity and safety. Materials, coatings, and workmanship standards shall be submitted to and approved - Engineer)	Prov	1	50 000.00	50 000.00
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 62						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 17						
Phase 1 - Contact tank & Chlorine Dozing facility						
-Schedule continued from page 61						
17.1 Contact tank						
17.1.13		Installation, testing, and calibration, of New flow meter (<i>Pulsar Greyline OCF 6.1 Ultrasonic Level & Flow Monitor, OCF 6.1-A-1-A-1-D-1-B-1-A, or similar approved by the Engineer. The item shall include supply, delivery, installation, commissioning, and calibration certificate, complete with white backlit matrix display, 4.57 m range, 4–20 mA output, two SPDT 5A relays, NEMA 4X / IP66 enclosure rating, accuracy of ±0.25% of range or 2 mm (whichever is greater), built-in 5-key calibrator, 26 million point data logger with free software, PVC and Teflon sensor, 15 m sensor cable, and 100–240 VAC power supply. The works shall also include supply and installation of a WaMSS Smart Flow, Level and Pressure Logger, Model FLP4-2A-3WAMSS, or similar approved by the Engineer,with inputs of 1 × pulse & 2 × 4–20 mA, modem technology with automatic switching between 3G/EDGE/GPRS via UDP/IP, alkaline batteries or external 12 VDC power supply, Bluetooth configuration, IP67 housing, and selectable logging intervals of 1 minute to 24 hours.System shall include 3 years WaMSS annual license & data fee The installation shall cover pipe sections, complete wiring, configuration, integration into the existing system, and issue of a calibration certificate. All works to be completed to the satisfaction of the Engineer.</i>)				
17.1.14		Supply of Ultrasonic Flowmeter	no	1		
17.1.15		Install Ultrasonic Flowmeter	no	1		
17.2 Safety Equipment						
17.2.1		Chlorination alarms	sum	1		
17.2.2		Safety shower	sum	1		
17.2.3		Extractor fan	no	1		
17.2.4		Respirator masks (<i>BA kit</i>)	sum	1		
17.2.5		Galvanized We-cro-lok (<i>or similar approved by the Engineer</i>) handrailing on existing structure	m	40		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 63						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 17						
Phase 1 - Contact tank & Chlorine Dozing facility						
-Schedule continued from page 62						
17.3 Chlorine Dozing facility						
17.3.1		Provisional Allowance – General Refurbishment Works <i>A provisional allowance is included for general refurbishment works incl. painting, cleaning, plastering repairs, minor masonry & steel works, electrical maintenance, and waterproofing. The allowance covers all labour, materials, equipment, and incidental works necessary to complete the refurbishment to the satisfaction of the Engineer. The detailed scope of works shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, receipts, and timesheets. Contractor's profit is excluded from the allowance and shall be accommodated under a separate BoQ item.</i>	Prov	1	50 000.00	50 000.00
17.3.2		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
17.3.3		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Profit excluded from Actual Cost Recovery & shall be accommodated separately</i>	Prov	1	50 000.00	50 000.00
17.3.4		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
17.3.5		Chlorine dozing facility Installation of new granular Chlorine disinfection system <i>(Allowance is made for the design, manufacture, transport, & commissioning as well as a thirty-six-month guarantee by specialist sub-contractor "Klomag Fluid Engineering" or similar approved by the Engineer. Item inclusive of booster pump)</i>	Prov	1	100 000.00	100 000.00
17.3.6		Install Chlorine disinfection system	no	1		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 64						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 17						
Phase 1 - Contact tank & Chlorine Dozing facility						
-Schedule continued from page 63						
17.3 Chlorine Dozing facility						
17.3.7		Provisional Allowance – Installation of Feed water pump <i>Provisional sum is included for the supply, installation, and commissioning of a feed water pump and control system. Works include removal of any existing pump, installation of the new pump and control panel, connection to sump piping, wiring, mounting accessories, protective enclosures, and commissioning. All design drawings, specifications, & equipment schedules shall be submitted to and approved by the Engineer prior to installation. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation. Contractor's profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	100 000.00	100 000.00
17.3.8		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		100 000.00	
SCHEDULE 17 CARRIED OVER TO SUMMARY OF PHASE 1						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 18						
Phase 1 - Recycling Pumping Station						
18.1 Oxidation Pond - Recycling Pumping Station						
18.1.1		General clearance, clearing of vegetation, rubble etc. <i>(including the spoiling and all haulage of material)</i> as per instruction of the engineer	m²	30		
18.1.2		General cleaning of Pump line <i>(Item to include the isolation, draining, dredging, cleaning, carting away of inorganic / organic material. Additionally, the mentioned activities should allow for an inspection of the associated component.)</i>	sum	1		
18.1.3		General cleaning of Pump Sump <i>(Item to include the isolation, draining, dredging, cleaning, carting away of inorganic / organic material. Additionally, the mentioned activities should allow for an inspection of the associated component.)</i>	m³	24		
18.1.4		Replacement of Pump <i>(item shall be inclusive of supply ,installation and commissioning of - Gorman Rupp T6 with a 15 kW motor complete with ball float level or similar approved by the Engineer)</i>				
18.1.5		Supply of Pump	no	2		
18.1.6		Install Pump	no	2		
18.1.7		Replacement of Conductors <i>(item shall be inclusive of the removal of existing and installation of new conductors. Material to be 600/1000V Grade PVC insulated stranded copper conductors (SANS 1507-2) or BCEW: 600/1000V Grade PVC Insulated & Bare stranded Copper Earth Conductors (SANS 1411). Scope of work and specifications to be approved by the Engineer)</i>	Prov	1	80 000.00	80 000.00
		<i>Isolators and Emergency stops for motors - complete station mounted on stainless steel pillars 1.2m close to motors</i>				
18.1.8		Supply : Stations	no	2		
18.1.9		Supply : Pillars	no	2		
18.1.10		Install : Stations	no	2		
18.1.11		Install : Pillars	no	2		
		<i>Supply & install the following pipe items :</i>				
		<i>The rates for the pipe items to include complete installation kit, i.e. bolts, nuts, washers, gaskets etc. (pipe protection as indicated on the drawing and/or in the Tender Document) Pipe thickness to be 4.5 mm or as stated on the drawing</i>				
18.1.12	L8.2.5	200 mm Ø x 150 mm Ø flanged mild steel reducer - item 1	no	2		
18.1.13	L8.2.5	150 mm Ø flanged AVK swing check valve - item 2	no	2		
18.1.14	L8.2.5	150 mm Ø flanged PN16 AVK gate valve with stem cap - item 3	no	3		
18.1.15	L8.2.5	150 mm Ø flanged Thomas unifit dismantling joint - item 4	no	3		
18.1.16	L8.2.5	150 mm Ø flanged mild steel pipe , 295 mm long - item 5	no	1		
18.1.17	L8.2.5	150 mm Ø x 90° flanged mild steel medium radius bend - item 6	no	2		
18.1.18	L8.2.5	150 mm Ø flanged mild steel pipe , 950 mm long - item 7	no	2		
18.1.19	L8.2.5	150 mm Ø x 150 mm Ø flanged mild steel gusseted sweep tee - item 8	no	1		
18.1.20	L8.2.5	150 mm flanged mild steel puddle pipe , 2110 mm long - item 9	no	1		
18.1.21		Paint of steel Crawl beam -Two coat "Red oxide"	no	1		
18.1.22		One coat alkyd based zinc phosphate primer, one coat alkyd based universal undercoat and two coats of superior quality universal enamel <i>(To be applied on doors, windows and vent covers)</i>	m²	5.00		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 66						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 18						
Phase 1 - Recycling Pumping Station						
-Schedule continued from page 65						
18.2 Site clearance						
18.2.1	DB8.3.1a	General clearance, clearing of vegetation, rubble etc. (including the spoiling and all haulage of material) for the trench width along the trench lines	m	540		
18.2.2	DB8.3.1c	Remove 150 mm topsoil to the trench width, stock pile & replace it after completion of the pipe line (rate includes the maintenance of the stock pile)	m³	81		
18.2.3	DB8.3.1b	Remove trees with girth of 0.5 m up to 1.0 m that interfere with the pipe line route	no	1		
18.2.4	DB8.3.1b	Remove trees with girth greater than 1.0 m that interfere with the pipe line route (rates shall cover the cost of clearing and grubbing the trees and stumps, backfilling the holes, and all transporation to/from the designated spoil area)	no	1		
18.3 Trench excavations						
		Note : all excavations other than rock requiring blasting will be considered as soft excavation - all free haul = 10 km unless otherwise stated in the Tender Document				
18.3.1	DB8.3.2.a	Trench excavation for 200 mm Ø pipes, 800 mm wide x 1,300 mm deep Excavation rate shall cover the cost of the excavation, compaction of the excavation base to 93% Mod AASHTO density (record should be kept and presented to the Engineer upon request), the disposal of all surplus material and the clean up of any excavated rubble material NOTE: As stated in SANS 1200 Section D Paragraph 3.1.2 soft excavation is defined as material that can be removed by a bulldozer of approximately 22 ton and/or flywheel power of approximately 145 kW	m	540		
18.3.2	DB8.3.2.b2	Extra over for excavation of hard rock material Hard rock excavation rate shall cover the cost of breaking down the hard material, removal of it with all haulage involved, including the neat spreading of disposed material at the designated disposal site as well as the replacement of the removed material	m³	85		
18.3.3	DB8.3.2.b2	Extra over for excavation in boulder type A & B material Boulder type A and B excavation rate shall cover the cost of removal of material with all haulage involved, including the neat spreading of disposed materialat at the designated disposal site as well as the replacement of the removed material	m³	141		
18.3.4	DB8.3.2.c	Extra over for trench excavation items for additional deeper excavations Deeper excavation to remove unsuitable material only when requested by the Engineer in charge of the site - rate shall cover the cost of removal & replacement of all material with all haulage involved as well as the replacement of the removed material NOTE: All surplus or unsuitable material shall be spoiled at a site to be provided by the Contractor and approved by the Engineer.	m³	6		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 67						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 18 Phase 1 - Recycling Pumping Station						
-Schedule continued from page 66						
18.4 Protection of existing under ground services						
		<i>Supply & install all material as required</i>				
		<i>Protection from damages during construction to existing services crossing the new trenches (whether or not their presence is known before they're uncovered), The following items are applicable to SANS DB8.3.5a & b - (-i), -ii), -iii), -iv)</i>				
		<i>Note : Exposing services to be made by hand excavation</i>				
18.4.1	DB8.3.5a	Electrical cables, pipes, sleeves, ducts etc.	no	1		
18.4.2	DB8.3.5a	Communication cables, pipes, sleeves, ducts etc.	no	1		
18.4.3	DB8.3.5a	Large Ø water & sewer pipes (75 - 1200 mm Ø)	no	1		
18.5 Provision for bedding and covering						
		<i>Note : all supply & haulage are inclusive for the following items</i>				
		<i>Class B type using <u>excavated material from trenches</u></i>				
18.5.1	LB8.2.1a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	123		Rate only
18.5.2	LB8.2.1b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	205		Rate only
		<i>Class B type using <u>imported material from borrow pits</u></i>				
18.5.3	LB8.2.2.2a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	123		
18.5.4	LB8.2.2.2b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	205		
		<i>Class B type using <u>material from commercial sources</u></i>				
18.5.5	LB8.2.2.3a	Bedding cradle with granular material compacted to 90% Mod AASHTO density	m³	123		Rate only
18.5.6	LB8.2.2.3b	Blanket with selected fill material, hand compacted to 90% Mod AASHTO density over & around the pipes	m³	205		Rate only
		<i>Class B type using <u>19 mm crushed stone material</u></i>				
18.5.7	LB8.2.2.3a	Bedding cradle with crushed stone material	m³	7		
18.5.8	LB8.2.2.3b	Blanket with crushed stone material	m³	11		
18.6 Pipes						
		<i>Supply, lay and bed the following water pipes complete with couplings on prepared bedding, joint, incl. cut pipes to length where required (bedding & blanket are measured elsewhere - testing & disinfection of pipes are to be included in the rates)</i>				
18.6.1	L8.2.1	200 mm Ø Class 9 u-PVC Z - lok pipes	m	540		
18.6.2	L8.2.1	250 mm Ø Class 9 u-PVC Z - lok pipes	m	540		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 68						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS		Schedule 18				
		Phase 1 - Recycling Pumping Station				
-Schedule continued from page 67						
18.7 Pipe specials and fittings						
		<i>Supply & install the following pipe accessories as required, with connections as described by the manufacturer's specification (all parts & jointing materials are to be included in the rates)</i>				
		In network				
18.7.1	L8.2.5	200 mm Ø pipe x 90° socket end PVC bend (PVC Class 9 fittings)	no	4		
18.7.2	L8.2.5	200 mm Ø pipe x 45° socket end PVC bend (PVC Class 9 fittings)	no	2		
18.7.3	L8.2.5	200 mm Ø pipe x 22.5° socket end PVC bend (PVC Class 9 fittings)	no	2		
18.7.4	L8.2.5	200 mm Ø pipe x 11.25° socket end PVC bend (PVC Class 9 fittings)	no	2		
18.7.5	L8.2.5	200 mm Ø x 200 mm Ø socket end cast iron equal tee	no	2		
18.7.6	L8.2.5	250 mm Ø pipe x 90° socket end PVC bend (PVC Class 9 fittings)	no	4		Rate Only
18.7.7	L8.2.5	250 mm Ø pipe x 45° socket end PVC bend (PVC Class 9 fittings)	no	2		Rate Only
18.7.8	L8.2.5	250 mm Ø pipe x 22.5° socket end PVC bend (PVC Class 9 fittings)	no	2		Rate Only
18.7.9	L8.2.5	250 mm Ø pipe x 11.25° socket end PVC bend (PVC Class 9 fittings)	no	2		Rate Only
18.7.10	L8.2.5	250 mm Ø x 250 mm Ø socket end cast iron equal tee	no	2		Rate Only
18.8 Ancillary items						
		<i>Supply, install/construct the following items :</i>				
		Connection to existing, functioning system				
18.8.1		Connection to existing systems as indicated on the relevant drawing	no	3		
		<i>(item shall be inclusive of searching out the connection point, all excavation to allow adequate working space, the cutting into the existing pipe, placing the required connection items & fittings with the required couplings, the compaction & backfill of excavated material , making good any shortfall in filling material or disposal of any excess material if necessary and the placing of a marker to indicate the position of the connection)</i>				
		Thrust block construction for pipe works				
		<i>This item works in conjunction with items 13.7.1-13.7.5</i>				
18.8.2	L8.2.11a	Construct anchor thrust blocks and pedestals from 15 Map concrete	no	12		
		<i>(rate shall cover the cost of all additional excavation, trimming, formwork, reinforcement and finishing of top surfaces as required)</i>				
SCHEDULE 18 CARRIED OVER TO SUMMARY OF PHASE 1						

BILL OF QUANTITIES PAGE NUMBER 68

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 19 Phase 1 - Sludge Drying Beds						
19.1 Sludge Drying Beds						
19.1.1		Vegetation Removal Surrounding Beds - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer.	m²	7 154		
19.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup %	%			
19.1.3		Pumping of Liquid Substance from Beds - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module in construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	250		
19.1.4		Vegetation Removal in Beds - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer.	m²	150		
19.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
19.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	325		
19.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup % sludge removed, as certified by the Engineer.	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 70						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 19						
Phase 1 - Sludge Drying Beds						
-Schedule continued from page 69						
19.1 Sludge Drying Beds						
19.1.8		Provisional Allowance – General Building Works for Extension <i>Provisional sum is included for the general building works required for the extension of the existing building. The scope of work shall include, but is not limited to, excavation, foundations, masonry or concrete walls, roofing, flooring, plastering, painting, minor steelworks, doors and windows, electrical and plumbing allowances, and any other associated works necessary to complete the extension. All materials, workmanship, and methods shall comply with applicable SANS standards and be submitted to and approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, & timesheets. Contractor's profit/margin is excluded from this provisional sum and shall be accommodated under a separate BoQ item. Payment shall be made only on approved actual expenditure certified by the Engineer.</i>	Prov	1	30 000.00	30 000.00
19.1.9		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		30 000.00	
19.1.10		Provisional Allowance – Installation of Supernatant Drainage Valve <i>Provisional sum is included for the supply, installation, and commissioning of new drainage valves required to drain supernatant water. The works shall include installation of the valves with associated piping, fittings, supports, gaskets, and accessories, and testing to ensure full functionality & watertight performance. All design drawings, specifications, and valve schedules shall be submitted to and approved by the Engineer prior to procurement & installation. The Contractor shall be reimbursed for actual costs incurred, supported by invoices, delivery notes, and documentation. Contractor's profit is excluded from this provisional allowance and shall be accommodated under a separate BoQ item.</i>	Prov	1	100 000.00	100 000.00
19.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		100 000.00	
SCHEDULE 19 CARRIED OVER TO SUMMARY OF PHASE 1						

UPGRADING & REFURBISHMENT OF THE ACTIVATED SLUDGE TREATMENT TRAINS

SUMMARY OF PHASE 1		
Schedule 3	Phase 1 - Inlet Works	
Schedule 4	Phase 1 - Primary settling pond - No.1	
Schedule 5	Phase 1 - Primary settling pond - No.2	
Schedule 6	Phase 1 - Primary settling pond - No.3	
Schedule 7	Phase 1 - Emergency Pond	
Schedule 8	Phase 1 - Gravity line to Emergency Pond	
Schedule 9	Phase 1 - Biological Filter Pumping Station	
Schedule 10	Phase 1 - Pumpline from Biological Filter P/s	
Schedule 11	Phase 1 - Biological Filter	
Schedule 12	Phase 1 - Hummus Tank	
Schedule 13	Phase 1 - BNR Reactor	
Schedule 14	Phase 1 - MCC Building at BNR	
Schedule 15	Phase 1 - RAS/WAS Pumping station	
Schedule 16	Phase 1 - Clarifier	
Schedule 17	Phase 1 - Contact tank & Chlorine Dosing facility	
Schedule 18	Phase 1 - Recycling Pumping Station	
Schedule 19	Phase 1 - Sludge Drying Beds	

Sub - total of **Phase 1** to be carried to summary :

ContractorWitness 1Witness 2EmployerWitness 1Witness 2

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Upgrading & Refurbishment of the Oxidation Treatment Train

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 20 Phase 2 - Oxidation Pond No.1						
20.1 Oxidation Pond - No.1						
20.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	3 191		
20.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
20.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train -directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Eng.	m³	3 257		
20.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	4 714		
20.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
20.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item incl. labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	4 714		
20.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 74						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 20 Phase 2 - Oxidation Pond No.1						
-Schedule continued from page 73						
20.1 Oxidation Pond - No.1						
20.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment /disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	4 168		
20.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
20.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
20.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
20.1.12		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	50 000.00	50 000.00
20.1.13		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE 20 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 21 Phase 2 - Oxidation Pond No.2						
21.1 Oxidation Pond - No.2						
21.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	1 087		
21.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
21.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train -directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Eng.	m³	1 076		
21.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	1 884		
21.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
21.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item incl. labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	2 153		
21.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 76						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 21						
Phase 2 - Oxidation Pond No.2						
-Schedule continued from page 75						
21.1 Oxidation Pond - No.2						
21.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment /disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	2 214		
21.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%	.		
21.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
21.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
21.1.12		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	50 000.00	50 000.00
21.1.13		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE 21 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 22 Phase 2 - Oxidation Pond No.3						
22.1 Oxidation Pond - No.3						
22.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	1 378		
22.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
22.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train -directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Eng.	m³	7 082		
22.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	295		
22.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
22.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item incl. labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	1 180		
22.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 78						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 22 Phase 2 - Oxidation Pond No.3						
-Schedule continued from page 77						
22.1 Oxidation Pond - No.3						
22.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment /disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	3 541		
22.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
22.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
22.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
22.1.12		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	50 000.00	50 000.00
22.1.13		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE 22 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 23 Phase 2 - Oxidation Pond No.4						
23.1 Oxidation Pond - No.4						
23.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	793		
23.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
23.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train -directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Eng.	m³	4 812		
23.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	516		
23.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
23.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item incl. labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	687		
23.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 80						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 23						
Phase 2 - Oxidation Pond No.4						
-Schedule continued from page 79						
23.1 Oxidation Pond - No.4						
23.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment /disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	1 375		
23.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
23.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
23.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
23.1.12		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	50 000.00	50 000.00
23.1.13		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE 23 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 24 Phase 2 - Oxidation Pond No.5						
24.1 Oxidation Pond - No.5						
24.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	2 693		
24.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
24.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train -directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Eng.	m³	5 234		
24.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	720		
24.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
24.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item incl. labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	2 617		
24.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 82						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 24 Phase 2 - Oxidation Pond No.5						
-Schedule continued from page 81						
24.1 Oxidation Pond - No.5						
24.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment /disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	5 634		
24.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
24.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
24.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
24.1.12		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	50 000.00	50 000.00
24.1.13		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE 24 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 25 Phase 2 -Venturi aeration pump						
25.1 Pump						
		Venturi aeration pumps				
25.1.1		Provisional Allowance – Suction Pipe – 6-inch Centrifugal Pump <i>A provisional sum is included for the supply, installation, & connection of the suction pipe for a 6-inch centrifugal pump, as shown on the drawings. The allowance covers the actual cost of materials, fittings, supports, joints, & associated works, including cutting, welding, testing, and alignment, as approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported invoices, delivery notes, & other documentation. The Contractor's margin/profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	205 000.00	205 000.00
25.1.2		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		205 000.00	
		Installation of 4 x T6 - Gorman Rupp pump <i>(item shall be inclusive of the supply, install, test and commissioning of the pump and motor. Motor to be 30 kW , 400/690 V , 50 Hz , 16.3/28.1 AMP or similar approved by the Engineer in charge of the Project.</i>				
25.1.3		Supply Pump	no	4		
25.1.4		Install pump	no	4		
25.1.5		Supply Motor	no	4		
25.1.6		Install Motor	no	4		
25.1.7		Installation of Venturi Aeration System <i>Item inclusive of the supply, installation, and commissioning of the Gorman-Rupp Ech2oStorm VA6 Venturi Aerator Self-Priming Pump, or a similar approved by the Engineer. The item shall include all materials, fittings, supports, connections, and associated works required for full operational commissioning as per the project requirements. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, and other documentation. The Contractor's margin/profit is excluded and shall be accommodated under a separate BoQ item.</i>	no	4		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 84						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 25 Phase 2 -Venturi aeration pump						
-Schedule continued from page 83						
25.1 Pump						
25.1.9		Provisional Allowance – Installation of Discharge Pipework <i>A provisional sum is included for the manufacture, supply, installation, and commissioning of discharge pipework. Pipework shall be coated with hot-dipped galvanizing in accordance with SANS EN 10240 (1999). All new gaskets shall be 3 mm CAF/non-asbestos, and all bolts shall be grade 4.6 electro-galvanized, unless otherwise approved by the Engineer. Contractor shall be reimbursed for the actual costs incurred, supported by invoices, delivery notes, & other documentation. The Contractor's margin/ profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	205 000.00	205 000.00
25.1.10		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		205 000.00	
25.1.11		Provisional Allowance – Supply and Installation of Valves <i>supply, installation, and commissioning of valves required for the project. Valves shall comply with the specifications approved by the Engineer, including materials, coating, gaskets, bolts, and associated fittings. The full scope of work, including installation, alignment, testing, and commissioning, shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, supported by invoices, profit is excluded & shall be accommodated in separate item.</i>	Prov	1	25 000.00	25 000.00
25.1.12		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		25 000.00	
25.1.13		Provisional Allowance – Civil Works for Pump Installation <i>A provisional sum is included for the civil works required for the pump installation, including concrete plinths, pump house construction, pump line connections, supports, access, and any other associated works as shown on the drawings or approved by the Engineer. The full scope of work shall be submitted to and approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual costs incurred, including labor, materials, plant, and all supporting documentation such as invoices, delivery notes. The Contractor's margin/profit is excluded and shall be accommodated under a separate BoQ item.</i>	Prov	1	220 000.00	220 000.00
25.1.14		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		220 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 85						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 25						
Phase 2 -Venturi aeration pump						
-Schedule continued from page 84						
25.1 Pump						
25.1.14		Provisional Allowance – Electrical Components for Pump Installation <i>Provisional allowance is included for the supply, installation, integration, and commissioning of electrical components required for the new pump installation. Includes an MCC/control panel with motor starter(s), overload protection, breakers, push buttons, relays, and metering modules; LV power and control cabling; starter assemblies (DOL, soft starter, or VFD) with associated protective devices; enclosures, cabling accessories, and fittings to the required IP/NEMA rating; & full commissioning /certification. All design drawings & specifications shall be submitted to and approved by the Engineer prior to procurement. The Contractor shall be reimbursed for actual costs incurred, supported by invoices and documentation, with margin/profit excluded under this allowance.</i>	Prov	1	450 000.00	450 000.00
25.1.15		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		450 000.00	
SCHEDULE 25 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 26 Phase 2 - Converting Oxidation Pond No.6 to Artificial wetland						
26.1 Oxidation Pond - No.6						
26.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	955		
26.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
26.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train as directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	3 520		
26.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	377		
26.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
26.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	1 006		
26.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 87						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 26 Phase 2 - Converting Oxidation Pond No.6 to Artificial wetland						
-Schedule continued from page 86						
26.1 Oxidation Pond - No.6						
26.1.8		Sludge Removal by Hand Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	503		
26.1.9		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
26.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior - execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.	Prov	1	150 000.00	150 000.00
26.1.11		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		150 000.00	
26.1.12		Provisional Sum – Repair of Concrete Works Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.	Prov	1	50 000.00	50 000.00
26.1.13		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		50 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 88						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 26						
Phase 2 - Converting Oxidation Pond No.6 to Artificial wetland						
-schedule continued from page 87						
26.1 Oxidation Pond - No.6						
		Wetland				
		High-Density Polyethylene (HDPE) liner, (700 micrometers (0.7 mm) thick, black in color, manufactured with 2.0–3.0% carbon black & antioxidant stabilizers to enhance UV resistance and durability.)				
26.1.14		Supply	m²	3 156		Rate Only
26.1.15		Install	m²	3 156		Rate Only
26.1.16		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			Rate Only
		100 mm thick growth layer of fertilizer compost (compliant SANS 10400 the Fertilizer Act 36 of 1947 (RSA), over the specified area as shown on the drawings. The compost shall consist of well-matured, pathogen-reduced organic compost derived from wastewater sludge, blended with suitable bulking agents. The material shall have a moisture content of 30–50% (wet basis), a pH between 6.0 and 8.5, and a minimum organic matter content of 20% by dry weight. The nutrient content to meet agricultural-grade compost standards with declared NPK values. Heavy metals, pathogens, & foreign matter shall comply fully with the requirements of RSA fertilizer regulations. The tendered rate shall be deemed to include the cost of supply, transport, spreading, leveling, moisture adjustment.)				
26.1.17		Supply	m³	251.00		
26.1.18		Placement	m²	2 514.0		
26.1.19		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
26.1.20		150 mm thick layer of 19 mm crushed stone (material from approved sources, consisting of hard, durable, angular aggregate free of clay, organic matter, and deleterious substances, complying with SANS gradings)				
26.1.21		Supply	m³	377.00		
26.1.22		Placement	m²	2 514.0		
26.1.23		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 89						

Internal project no.: 4048

Phokwane Local Municipality

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 26 1 200 Phase 2 - Converting Oxidation Pond No.6 to Artificial wetland						
-schedule continued from page 88						
26.1		Oxidation Pond - No.6				
		300 mm thick filter layer constructed of river sand or equivalent material approved by the Engineer, <i>(Accordance with SANS 1200-M & SANS 1090 (Aggregates from natural sources). The sand shall be clean, hard, durable, organic matter, salts, or other substances. Fines content shall not exceed 5% by mass passing the 0.075 mm sieve, & the PI of the fraction passing the 0.425 mm sieve shall be zero.</i>				
26.1.24		Supply	m ³	754.00		
26.1.25		Placement	m ²	2 514.00		
26.1.26		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
		70% shading cloth <i>(HDPE or polypropylene fibers, as a separation layer between soil and tailing layers. The cloth shall have a shade factor of 70%, material to have a tensile strength of 15 kN/m)</i> a weight of 120–200 g/m ²				
26.1.27		Supply <i>(Top layer)</i>	m ²	2 514.00		
26.1.28		Install <i>(Top layer)</i>	m ²	2 514.00		
26.1.29		Supply <i>(Bottom layer)</i>	m ²	2 514.00		
26.1.30		Install <i>(Bottom layer)</i>	m ²	2 514.00		
26.1.31		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process,supervision,quality assurance, & shall be entitled to a markup %</i>	%			
26.1.32		Provisional Allowance – Procurement of aquatic plant <i>Provisional allowance is included for the procurement of aquatic plants including Berula erecta,Cyperus prolifer,Cyperus textilis,Juncus effesus, Juncus inflexus, and Schoenoplectus corymbosus, planting coverage of one plant per 0.75 m². This allowance covers the supply, delivery, and handling of the plants only. The detailed scope of procurement shall be submitted to and approved by the Engineer prior to execution.Contractors shall be reimbursed for the actual cost of purchasing & delivering plants, including all supporting documentation to the Engineer as part of the Actual Cost Recovery process. Contractor's margin/profit is excluded from this allowance & shall be accommodated in a separate BoQ item.</i>	Prov	1	250 000.00	250 000.00
26.1.33		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the prov.sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		250 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 90						

BILL OF QUANTITIES PAGE NUMBER 89

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 26						
Phase 2 - Converting Oxidation Pond No.6 to Artificial wetland						
-Schedule continued from page 89						
26.1 Oxidation Pond - No.6						
		Planting of Aquatic Plants (Work shall include preparation of planting holes, placement of plants, watering, & all incidental works necessary to ensure establishment and growth to the satisfaction of the Engineer. Measurement & payment shall be per plant (unit), and the rate shall include all labor, materials, tools, and works required for planting and establishment.				
26.1.34		Berula erecta	No	550		Rate Only
26.1.35		Cyperus prolifer	No	550		Rate Only
26.1.36		Cyperus textilis	No	550		Rate Only
26.1.37		Juncus effesus	No	550		Rate Only
26.1.38		Juncus inflexus	No	550		Rate Only
26.1.39		Schoenoplectus corymbosus	No	550		Rate Only
26.1.40		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup	%			Rate Only
26.1.41		Monthly maintenance of aquatic plants (The work shall include watering, weeding, removal of dead or damaged plants, replacement of failed plants, pruning, fertilization, pest and disease control, and all other activities necessary to ensure healthy establishment and growth, as directed by the Engineer. Measurement and payment shall be per month, & the rate shall include all labor, materials, tools, plant care products, transport, & any incidental costs required to maintain the aquatic plants in a healthy & satisfactory condition	Month	12		
26.1.42		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup	%			
SCHEDULE 26 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 27 Phase 2 - Converting Oxidation Pond No.7 to Artificial wetland						
27.1 Oxidation Pond - No.7						
27.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	885		
27.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
27.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train as directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	810		
27.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	253		
27.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
27.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	405		
27.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 92						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 27						
Phase 2 - Converting Oxidation Pond No.7 to Artificial wetland						
-Schedule continued from page 91						
27.1 Oxidation Pond - No.7						
27.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	810		
27.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
27.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior - execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
27.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
27.1.11		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	50 000.00	50 000.00
27.1.12		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 93						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 27						
Phase 2 - Converting Oxidation Pond No.7 to Artificial wetland						
-Schedule continued from page 92						
27.1 Oxidation Pond - No.7						
		Wetland				
		High-Density Polyethylene (HDPE) liner, (700 micrometers (0.7 mm) thick, black in color, manufactured with 2.0–3.0% carbon black & antioxidant stabilizers to enhance UV resistance and durability.)				
27.1.13		Supply	m²	1 587		Rate Only
27.1.14		Install	m²	1 587		Rate Only
27.1.15		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			Rate Only
		100 mm thick growth layer of fertilizer compost (compliant SANS 10400 the Fertilizer Act 36 of 1947 (RSA), over the specified area as shown on the drawings. The compost shall consist of well-matured, pathogen-reduced organic compost derived from wastewater sludge, blended with suitable bulking agents. The material shall have a moisture content of 30–50% (wet basis), a pH between 6.0 and 8.5, and a minimum organic matter content of 20% by dry weight. The nutrient content to meet agricultural-grade compost standards with declared NPK values. Heavy metals, pathogens, & foreign matter shall comply fully with the requirements of RSA fertilizer regulations. The tendered rate shall be deemed to include the cost of supply, transport, spreading, leveling, moisture adjustment.)				
27.1.16		Supply	m³	116.00		
27.1.17		Placement	m²	1 167.0		
27.1.18		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
27.1.19		150 mm thick layer of 19 mm crushed stone (material from approved sources, consisting of hard, durable, angular aggregate free of clay, organic matter, and deleterious substances, complying with SANS gradings)				
27.1.20		Supply	m³	175.00		
27.1.21		Placement	m²	1 167.0		
27.1.22		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 94						

Internal project no.: 4048

Phokwane Local Municipality

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 27						
1 200 Phase 2 - Converting Oxidation Pond No.7 to Artificial wetland						
-Schedule continued from page 93						
27.1		Oxidation Pond - No.7				
		300 mm thick filter layer constructed of river sand or equivalent material approved by the Engineer, (Accordance with SANS 1200-M & SANS 1090 (Aggregates from natural sources). The sand shall be clean, hard, durable, organic matter, salts, or other substances. Fines content shall not exceed 5% by mass passing the 0.075 mm sieve, & the PI of the fraction passing the 0.425 mm sieve shall be zero.				
27.1.23		Supply	m ³	350.00		
27.1.24		Placement	m ²	1 167.00		
27.1.25		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
		70% shading cloth (HDPE or polypropylene fibers, as a separation layer between soil and tailing layers. The cloth shall have a shade factor of 70%, material to have a tensile strength of 15 kN/m) a weight of 120–200 g/m ²				
27.1.26		Supply (Top layer)	m ²	1 167.00		
27.1.27		Install (Top layer)	m ²	1 167.00		
27.1.28		Supply (Bottom layer)	m ²	1 167.00		
27.1.29		Install (Bottom layer)	m ²	1 167.00		
27.1.30		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process,supervision,quality assurance, & shall be entitled to a markup %	%			
27.1.31		Provisional Allowance – Procurement of aquatic plant Provisional allowance is included for the procurement of aquatic plants including Berula erecta,Cyperus prolifer,Cyperus textilis,Juncus effesus, Juncus inflexus, and Schoenoplectus corymbosus, planting coverage of one plant per 0.75 m ² . This allowance covers the supply, delivery, and handling of the plants only. The detailed scope of procurement shall be submitted to and approved by the Engineer prior to execution.Contractors shall be reimbursed for the actual cost of purchasing & delivering plants, including all supporting documentation to the Engineer as part of the Actual Cost Recovery process. Contractor's margin/profit is excluded from this allowance & shall be accommodated in a separate BoQ item.	Prov	1	200 000.00	200 000.00
27.1.32		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the prov.sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 95						

BILL OF QUANTITIES PAGE NUMBER 94

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 27						
Phase 2 - Converting Oxidation Pond No.7 to Artificial wetland						
-Schedule continued from page 94						
27.1 Oxidation Pond - No.7						
		Planting of Aquatic Plants (Work shall include preparation of planting holes, placement of plants, watering, & all incidental works necessary to ensure establishment and growth to the satisfaction of the Engineer. Measurement & payment shall be per plant (unit), and the rate shall include all labor, materials, tools, and works required for planting and establishment.				
27.1.33		Berula erecta	No	230		Rate Only
27.1.34		Cyperus prolifer	No	230		Rate Only
27.1.35		Cyperus textilis	No	230		Rate Only
27.1.36		Juncus effesus	No	230		Rate Only
27.1.37		Juncus inflexus	No	230		Rate Only
27.1.38		Schoenoplectus corymbosus	No	230		Rate Only
27.1.39		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup	%			Rate Only
27.1.40		Monthly maintenance of aquatic plants (The work shall include watering, weeding, removal of dead or damaged plants, replacement of failed plants, pruning, fertilization, pest and disease control, and all other activities necessary to ensure healthy establishment and growth, as directed by the Engineer. Measurement and payment shall be per month, & the rate shall include all labor, materials, tools, plant care products, transport, & any incidental costs required to maintain the aquatic plants in a healthy & satisfactory condition	Month	12		
27.1.41		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup	%			
SCHEDULE 27 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 28 Phase 2 - Converting Oxidation Pond No.8 to Artificial wetland						
28.1 Oxidation Pond - No.8						
28.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	605		
28.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
28.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train -directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	668		
28.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	250		
28.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
28.1.6		Sludge Removal by Mechanical Means Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.	m³	334		
28.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 97						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 28 Phase 2 - Converting Oxidation Pond No.8 to Artificial wetland						
-Schedule continued from page 96						
28.1 Oxidation Pond - No.8						
28.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	668		
28.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
28.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior - execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
28.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		150 000.00	
28.1.12		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	50 000.00	50 000.00
28.1.13		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 98						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 28						
Phase 2 - Converting Oxidation Pond No.8 to Artificial wetland						
-Schedule continued from page 97						
28.1 Oxidation Pond - No.8						
		Wetland				
		High-Density Polyethylene (HDPE) liner, (700 micrometers (0.7 mm) thick, black in color, manufactured with 2.0–3.0% carbon black & antioxidant stabilizers to enhance UV resistance and durability.)				
28.1.14		Supply	m²	1 225	350.00	Rate Only
28.1.15		Install	m²	1 225	55.00	Rate Only
28.1.16		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			Rate Only
		100 mm thick growth layer of fertilizer compost (compliant SANS 10400 the Fertilizer Act 36 of 1947 (RSA), over the specified area as shown on the drawings. The compost shall consist of well-matured, pathogen-reduced organic compost derived from wastewater sludge, blended with suitable bulking agents. The material shall have a moisture content of 30–50% (wet basis), a pH between 6.0 and 8.5, and a minimum organic matter content of 20% by dry weight. The nutrient content to meet agricultural-grade compost standards with declared NPK values. Heavy metals, pathogens, & foreign matter shall comply fully with the requirements of RSA fertilizer regulations. The tendered rate shall be deemed to include the cost of supply, transport, spreading, leveling, moisture adjustment.)				
28.1.17		Supply	m³	83.00		
28.1.18		Placement	m²	835.0		
28.1.19		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
28.1.20		150 mm thick layer of 19 mm crushed stone (material from approved sources, consisting of hard, durable, angular aggregate free of clay, organic matter, and deleterious substances, complying with SANS gradings)				
28.1.21		Supply	m³	125.00		
28.1.22		Placement	m²	835.0		
28.1.23		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 99						

Internal project no.: 4048

Phokwane Local Municipality

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 28						
1 200 Phase 2 - Converting Oxidation Pond No.8 to Artificial wetland						
-Schedule continued from page 98						
28.1		Oxidation Pond - No.8				
		300 mm thick filter layer constructed of river sand or equivalent material approved by the Engineer, (Accordance with SANS 1200-M & SANS 1090 (Aggregates from natural sources). The sand shall be clean, hard, durable, organic matter, salts, or other substances. Fines content shall not exceed 5% by mass passing the 0.075 mm sieve, & the PI of the fraction passing the 0.425 mm sieve shall be zero.				
28.1.24		Supply	m ³	250.00		
28.1.25		Placement	m ²	835.00		
28.1.26		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
		70% shading cloth (HDPE or polypropylene fibers, as a separation layer between soil and tailing layers. The cloth shall have a shade factor of 70%, material to have a tensile strength of 15 kN/m) a weight of 120–200 g/m ²				
28.1.27		Supply (Top layer)	m ²	835.00		
28.1.28		Install (Top layer)	m ²	835.00		
28.1.29		Supply (Bottom layer)	m ²	835.00		
28.1.30		Install (Bottom layer)	m ²	835.00		
28.1.31		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process,supervision,quality assurance, & shall be entitled to a markup %	%			
28.1.32		Provisional Allowance – Procurement of aquatic plant Provisional allowance is included for the procurement of aquatic plants including Berula erecta,Cyperus prolifer,Cyperus textilis,Juncus effesus, Juncus inflexus, and Schoenoplectus corymbosus, planting coverage of one plant per 0.75 m ² . This allowance covers the supply, delivery, and handling of the plants only. The detailed scope of procurement shall be submitted to and approved by the Engineer prior to execution.Contractors shall be reimbursed for the actual cost of purchasing & delivering plants, including all supporting documentation to the Engineer as part of the Actual Cost Recovery process. Contractor's margin/profit is excluded from this allowance & shall be accommodated in a separate BoQ item.	Prov	1	180 000.00	180 000.00
28.1.33		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the prov.sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%		180 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 100						

BILL OF QUANTITIES PAGE NUMBER 99

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 28						
Phase 2 - Converting Oxidation Pond No.8 to Artificial wetland						
-Schedule continued from page 99						
28.1 Oxidation Pond - No.8						
		Planting of Aquatic Plants (Work shall include preparation of planting holes, placement of plants, watering, & all incidental works necessary to ensure establishment and growth to the satisfaction of the Engineer. Measurement & payment shall be per plant (unit), and the rate shall include all labor, materials, tools, and works required for planting and establishment.				
28.1.34		Berula erecta	No	190		Rate Only
28.1.35		Cyperus prolifer	No	190		Rate Only
28.1.36		Cyperus textilis	No	190		Rate Only
28.1.37		Juncus effesus	No	190		Rate Only
28.1.38		Juncus inflexus	No	190		Rate Only
28.1.39		Schoenoplectus corymbosus	No	190		Rate Only
28.1.40		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup	%			Rate Only
28.1.41		Monthly maintenance of aquatic plants (The work shall include watering, weeding, removal of dead or damaged plants, replacement of failed plants, pruning, fertilization, pest and disease control, and all other activities necessary to ensure healthy establishment and growth, as directed by the Engineer. Measurement and payment shall be per month, & the rate shall include all labor, materials, tools, plant care products, transport, & any incidental costs required to maintain the aquatic plants in a healthy & satisfactory condition	Month	12		
28.1.42		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup	%			
SCHEDULE 28 CARRIED OVER TO SUMMARY OF PHASE 2						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 29 Phase 2 - Converting Oxidation Pond No.9 to Artificial wetland						
29.1 Oxidation Pond - No.9						
29.1.1		Vegetation Removal Surrounding Pond - Removal of vegetation & debris surrounding the perimeter of the pond to a width of 5 metres. The method of execution shall be either by means of a tractor-loader-backhoe or by labour-intensive methods, whichever is most suitable as determined by the Contractor, subject to approval by the Engineer. All cleared material to be collected, removed from site, and disposed of at a designated spoil area.	m²	655		
29.1.2		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
29.1.3		Pumping of Liquid Substance from Pond - Pumping of liquid substance, defined as material that can be pumped with the need for agitation, from the pond for the purpose of isolating a treatment module during construction. The work shall include the supply, operation, and maintenance of a trailer-mounted 6-inch pump, powered by a diesel generator or similar plant approved by the Engineer. The pumped liquid shall be discharged into the designated treatment train as directed. The item is inclusive of all labour, fuel, supervision, hoses, fittings, ect. required to complete the Measurement & payment based on volume of liquid pumped (m³) as certified by the Engineer.	m³	618		
29.1.4		Vegetation Removal in Pond - Removal of aquatic vegetation & debris within the pond area. Execution may be by tractor-loader-backhoe or by labour-intensive methods, as determined by the Contractor and approved by the Engineer. All removed material shall be collected, taken out of the pond, and disposed of at an approved spoil area.	m²	250		
29.1.5		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
29.1.6		Sludge Removal by Mechanical Means <i>Removal of sludge from the pond using mechanical equipment, such as excavators, loaders, or dredging plant, as approved by the Engineer. Item includes all labour, plant, fuel, supervision, and handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement and payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	374		
29.1.7		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 102						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 29 Phase 2 - Converting Oxidation Pond No.9 to Artificial wetland						
-Schedule continued from page 101						
29.1 Oxidation Pond - No.9						
29.1.8		Sludge Removal by Hand <i>Removal of sludge from the pond by manual/labour-intensive methods, as approved - Engineer. The item includes all labour, tools, supervision, & handling required to excavate and remove sludge to the designated drying, treatment, or disposal area. Measurement & payment shall be based on the in-situ volume (m³) of sludge removed, as certified by the Engineer.</i>	m³	668		
29.1.9		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%	.		
29.1.10		Provisional Allowance – Isolation, Cleaning, Fault - Finding, & Repair of Valves or Sluices & Pipe fittings <i>Provisional allowance for the above-mentioned work. The detailed scope of works shall be submitted to & approved by the Engineer prior - execution. Contractor shall be reimbursed for the actual cost of carrying out the work, including labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery and shall be accommodated under a separate BOQ item.</i>	Prov	1	150 000.00	150 000.00
29.1.11		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%			
29.1.12		Provisional Sum – Repair of Concrete Works <i>Provisional allowance for the repair of concrete works, including necessary prep, demolition, patching, reinforcement repair, & finishing as required. The detailed scope of works shall be submitted to & approved by the Engineer prior to execution. The Contractor shall be reimbursed for the actual cost of carrying out the work,cluding labour, materials, plant, & any other directly related expenses. All supporting documentation, including invoices, receipts, timesheets, & delivery notes, must be submitted to the Engineer as part of the Actual Cost Recovery process. Contractor's Margin / Profit is excluded from Actual Cost Recovery & shall be accommodated under a separate BOQ item.</i>	Prov	1	50 000.00	50 000.00
29.1.13		Contractor's Markup on Provisional Sum <i>Contractor's percentage markup on the actual cost of the provisional sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.</i>	%		50 000.00	
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 103						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 29 Phase 2 - Converting Oxidation Pond No.9 to Artificial wetland						
-Schedule continued from page 102						
29.1 Oxidation Pond - No.9						
		Wetland				
		High-Density Polyethylene (HDPE) liner, (700 micrometers (0.7 mm) thick, black in color, manufactured with 2.0–3.0% carbon black & antioxidant stabilizers to enhance UV resistance and durability.)				
29.1.14		Supply	m²	1 325		Rate Only
29.1.15		Install	m²	1 325		Rate Only
29.1.16		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			Rate Only
		100 mm thick growth layer of fertilizer compost (compliant SANS 10400 the Fertilizer Act 36 of 1947 (RSA), over the specified area as shown on the drawings. The compost shall consist of well-matured, pathogen-reduced organic compost derived from wastewater sludge, blended with suitable bulking agents. The material shall have a moisture content of 30–50% (wet basis), a pH between 6.0 and 8.5, and a minimum organic matter content of 20% by dry weight. The nutrient content to meet agricultural-grade compost standards with declared NPK values. Heavy metals, pathogens, & foreign matter shall comply fully with the requirements of RSA fertilizer regulations. The tendered rate shall be deemed to include the cost of supply, transport, spreading, leveling, moisture adjustment.)				
29.1.17		Supply	m³	89.00		
29.1.18		Placement	m²	855.0		
29.1.19		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
29.1.20		150 mm thick layer of 19 mm crushed stone (material from approved sources, consisting of hard, durable, angular aggregate free of clay, organic matter, and deleterious substances, complying with SANS gradings)				
29.1.21		Supply	m³	135.00		
29.1.22		Placement	m²	855.0		
29.1.23		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)</i>	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 104						

Internal project no.: 4048

Phokwane Local Municipality

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 29						
1 200 Phase 2 - Converting Oxidation Pond No.9 to Artificial wetland						
-Schedule continued from page 103						
29.1		Oxidation Pond - No.9				
		300 mm thick filter layer constructed of river sand or equivalent material approved by the Engineer, (Accordance with SANS 1200-M & SANS 1090 (Aggregates from natural sources). The sand shall be clean, hard, durable, organic matter, salts, or other substances. Fines content shall not exceed 5% by mass passing the 0.075 mm sieve, & the PI of the fraction passing the 0.425 mm sieve shall be zero.				
29.1.24		Supply	m ³	350.00		
29.1.25		Placement	m ²	1 167.00		
29.1.26		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup percentage (%)	%			
		70% shading cloth (HDPE or polypropylene fibers, as a separation layer between soil and tailing layers. The cloth shall have a shade factor of 70%, material to have a tensile strength of 15 kN/m) a weight of 120–200 g/m ²				
29.1.27		Supply (Top layer)	m ²	1 167.00		
29.1.28		Install (Top layer)	m ²	1 167.00		
29.1.29		Supply (Bottom layer)	m ²	1 167.00		
29.1.30		Install (Bottom layer)	m ²	1 167.00		
29.1.31		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process,supervision,quality assurance, & shall be entitled to a markup %	%			
29.1.32		Provisional Allowance – Procurement of aquatic plant Provisional allowance is included for the procurement of aquatic plants including Berula erecta,Cyperus prolifer,Cyperus textilis,Juncus effesus, Juncus inflexus, and Schoenoplectus corymbosus, planting coverage of one plant per 0.75 m ² . This allowance covers the supply, delivery, and handling of the plants only. The detailed scope of procurement shall be submitted to and approved by the Engineer prior to execution.Contractors shall be reimbursed for the actual cost of purchasing & delivering plants, including all supporting documentation to the Engineer as part of the Actual Cost Recovery process. Contractor's margin/profit is excluded from this allowance & shall be accommodated in a separate BoQ item.	Prov	1	180 000.00	180 000.00
29.1.33		Contractor's Markup on Provisional Sum Contractor's percentage markup on the actual cost of the prov.sum. Payment shall be made only on the approved actual expenditure incurred under the associated provisional sum item, as certified by the Engineer.	%			
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 105						

BILL OF QUANTITIES PAGE NUMBER 104

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 29						
Phase 2 - Converting Oxidation Pond No.9 to Artificial wetland						
-Schedule continued from page 104						
29.1 Oxidation Pond - No.9						
		Planting of Aquatic Plants <i>(Work shall include preparation of planting holes, placement of plants, watering, & all incidental works necessary to ensure establishment and growth to the satisfaction of the Engineer. Measurement & payment shall be per plant (unit), and the rate shall include all labor, materials, tools, and works required for planting and establishment.</i>				
29.1.34		Berula erecta	No	190		Rate Only
29.1.35		Cyperus prolifer	No	190		Rate Only
29.1.36		Cyperus textilis	No	190		Rate Only
29.1.37		Juncus effesus	No	190		Rate Only
29.1.38		Juncus inflexus	No	190		Rate Only
29.1.39		Schoenoplectus corymbosus	No	190		Rate Only
29.1.40		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup</i>	%			Rate Only
29.1.41		Monthly maintenance of aquatic plants <i>(The work shall include watering, weeding, removal of dead or damaged plants, replacement of failed plants, pruning, fertilization, pest and disease control, and all other activities necessary to ensure healthy establishment and growth, as directed by the Engineer. Measurement and payment shall be per month, & the rate shall include all labor, materials, tools, plant care products, transport, & any incidental costs required to maintain the aquatic plants in a healthy & satisfactory condition</i>	Month	12		
29.1.42		Extra Over - Markup percentage on SMME Subcontractor - <i>Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup</i>	%			
SCHEDULE 29 CARRIED OVER TO SUMMARY OF PHASE 2						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 106

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Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 107

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

Upgrading & Refurbishment of the Jan Kempdorp WWTW

SUMMARY OF PHASE 2

[illegible]

Sub - total of **Phase 2** to be carried to summary :

2025/09/16

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 31 Phase 3 - Boundary Wall						
31.1 Boundary Wall						
31.1.1		General clearance, clearing of vegetation, rubble etc. (including the spoiling and all haulage of material) as per instruction of the engineer	m²	1 842.00		
31.2 Site clearance & earthworks						
		Supply, install/construct the following items :				
31.2.1	D8.3.1.1	Clear and strip site, remove all vegetation, trees, bushes etc. in 2 m wide strip	m²	1 600		Rate Only
31.2.2	D8.3.2a	Excavate for brick wall foundation 600 mm wide x 470 mm deep, including backfill after completion of brick wall (spoil excess material)	m³	260		
31.3 Miscellaneous items						
		Supply, install/construct the following items :				
31.3.1		One brick perimeter wall constructed from face brick, complete with brick reinforcement as required	m²	1 981		
31.3.2		Extra over brick work to lay brick on edge on top of wall	m	921		
31.3.3		Straight joint in brick wall, complete with 5.6 mm Ø x 600 mm long doveI bars	m	231		
31.3.4		1.8 m high x 3 m wide sliding access gate with all parts & labour	no	3		
31.3.5	G8.4.3	600 mm x 450 mm strip brick wall footing from 25 mPa concrete	m³	138.2		
31.3.6	G8.3.1	High tensile steel reinforcement in brick wall foundations	kg	2 274		
31.3.7	G8.1.2.2	Mild steel reinforcement in brick wall foundations	kg	983		
31.4 Markup percentage on SMME Subcontractor						
31.4.1		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup Markup shall be applicable to all items in the 'Boundary Wall' section of the BOQ – (Boundary Wall , Site clearance & earthworks, Miscellaneous items).	%			
SCHEDULE 31 CARRIED OVER TO SUMMARY OF PHASE 3						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 32 Phase 3 - Perimeter Fence						
32.1 Security perimeter fence						
		Concrete palisade fence				
		Supply, install/construct the following items :				
32.1.1		2.4 m high CONCRETE PALISADE fencing with fence posts, corner posts, complete as per manufacturer's specifications, all steel works to be painted with one layer of red oxide primer and two layers of silver aluminium paint, rate shall cover all materials and labour	m	1 385		
32.1.2		500 mm high Razor wire coil system attached to the top of the concrete palisade fencing in compliance with the manufacturer's specifications (rate shall include all parts and labour)	m	1 385		
		Sliding gate				
32.1.3		5 m wide sliding steel gate, complete as per manufacturer's specifications, rate shall cover all material and labour	no	3.00		
32.1.4	D8.3.2a	Excavate by hand, trim and compact all areas to receive concrete slab with 3 passes of pedestrian roller BOMAG 65 after all loose material has been removed	m²	7.00		
32.1.5	G8.4.3	10 m long x 0.6 m wide x 150 mm thick slab for entrance gate from 25 Mpa concrete	m³	0.90		
32.1.6	G8.3.2	Type 395 fabric reinforcement in concrete slab placed centrally	m²	6.60		
32.1.7	G8.4.4	Uniform wood float finish on concrete surfaces	m²	6.00		
32.1.8	G8.5	Construct straight joints in concrete floor slab with nosing tool finish	m	2.00		
32.1.9	H8.3.1,3,5	Sliding rail for new gate to be cast into the concrete slab	m	10.00		
32.1 Markup percentage on SMME Subcontractor						
32.1.1		Extra Over - Markup percentage on SMME Subcontractor - Extra over the above item where works are executed by a SMME subcontractor in line with project .The main Contractor shall facilitate the process, supervision, quality assurance, & shall be entitled to a markup Markup shall be applicable to all items in the 'Perimeter Fence' section of the BOQ – (Concrete palisade fence & Sliding gate)	%			
SCHEDULE 32 CARRIED OVER TO SUMMARY OF PHASE 3						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

SUMMARY OF PHASE 3

[illegible]

Sub - total of **Phase 3** to be carried to summary :

2025/09/16

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 33 Electrical works 01 - Preliminary & General						
33.1	A	Overview of Works				
33.1.1	i	Provision for he establishment of construction site, for the planning and management of the project, quality and health and safety aspects, providing guarantees, training and as-build documentation and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;				
33.2	B	Client's objectives				
33.2.1	i	Upgrading of Existing Water Works;				
33.2.2	ii	New Return Water Pump Station;				
33.3	C	Extent of works				
33.3.1	i	Site Establishment;				
33.3.2	ii	Administration of Team & Works;				
33.3.3	iii	Health & Safety Management;				
33.3.4	iv	Construction Management;				
33.3.5	v	As-Builds & Guarantees;				
33.3.6	vi	Site Clean-Up;				
33.3.7	vii	Training;				
33.4	D	Contractor offering:				
33.4.1	i	Site Establish Required :				
33.4.2	ii	Site Services Required :				
33.4.3	iii	Team Compliment :				
33.4.4	iv	Site Supervisor / Clerk of Works :				
33.4.5	v	Health & Safety Officer :				
33.4.6	vi	Sub-Contractors :				
33.5	1.1	Site establishment, administrative costs				
		Provision to be made by Contractor for the establishment of construction site, for the planning and management of the project, quality and health and safety aspects, providing guarantees, training and as-build documentation and all associated work, these will include but is not limited to:				
33.5.1	1.1.1	Site Office (Camp and Fencing);	sum	1		
33.5.2	1.1.2	Site Office equipment;	sum	1		
33.5.3	1.1.3	Store;	sum	1		
33.5.4	1.1.4	Site Personnel (including security);	sum	1		
33.5.5	1.1.5	Supervisory Staff;	sum	1		
33.5.6	1.1.6	Transport (staff);	sum	1		
33.5.7	1.1.7	Insurances;	sum	1		
33.5.8	1.1.8	Surety/Bank guarantee;	sum	1		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 1 1 4						

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 33 continued Electrical works 01 - Preliminary & General						
-Schedule continued from page 113						
33.5.9	1.1.9	Running costs e.g. electricity, water, telephone, printing, stationary, etc.;	sum	1		
33.6 1.2 Safety, health & environment (SHE)						
		The Contractor shall allow for ensuring complete and strict Safety, Health & Environmental (SHE) compliance with all the requirements of the Occupational Health and Safety Act (Act 85 of 1993) , these will include but is not limited to:				
33.6.1	1.2.1	Appointment of SHE Representative;	sum	1		
33.6.2	1.2.2	Conducting required risk assessments;	sum	1		
33.6.3	1.2.3	SHE File, Preparation & keeping up to date;	sum	1		
33.6.4	1.2.4	Implementation of Weekly & Monthly SHE meetings;	sum	1		
33.6.5	1.2.5	Reporting on Monthly Project Progress Meetings and Weekly Co-Ordination Meetings;	sum	1		
33.7 1.3 Procurement, Construction & Management						
		The Contractor shall allow for ensuring complete and strict Procurement, Construction & Management compliance with all the requirements of the Construction Industry Development Board (CIDB) , these will include but is not limited to:				
33.7.1	1.3.1	Execution of work under the supervision of a skilled & competent representative, who must be able and authorized to receive and execute instructions;	sum	1		
33.7.2	1.3.2	Planning - Setting out of works;	sum	1		
33.7.3	1.3.3	Programming - Compilation of Project Programme and the updating there off throughout the project;	sum	1		
33.7.4	1.3.4	Attending - Monthly Project Progress Meetings and Weekly Co-Ordination Meetings;	sum	1		
33.7.5	1.3.5	Reporting - Submission of monthly progress reports;	sum	1		
33.7.6	1.3.6	Allowance for the close co-ordination and management of all stakeholders, sub-contractors & suppliers involved or affected in all relevant installation work;	sum	1		
33.7.7	1.3.7	Liaison with Supply Authority throughout works for verification and approvals	sum	1		
33.7.8	1.3.8	Identification of existing civil, communications and electricity services and Arrangement of way leaves;	sum	1		
33.8 1.5 As-built & Guarantees						
		Handing over of commissioned works and a comprehensive "As-built" Data Pack : Three (3) hard copies in A4-sized binders and one (1) soft copy.				
33.8.1	1.5.1	12 Month guarantee on complete installation;	sum	1		
33.8.2	1.5.2	Operations & Maintenance manuals for all equipment supplied;	sum	1		
33.8.3	1.5.3	Marked-Up As-Built Schedules & Drawings as prepared by the Engineer;	sum	1		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 115						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 115

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Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 34						
Electrical works 02 - Medium Voltage Ddistribution (MVdx)						
A Medium voltage distribution (MVdx)						
i		Design, Manufacture, Supply & Installation of Medium Voltage Equipment, Miniature Substation (SANS 1029/NRS 004) , Ring Main Unit (SANS 1874/ NRS 006) , Transformer (SANS 780 / NRS 054) , IP65, Switchgear (IEC 62271) Factory Build & Wired, Installed on Installed Outdoor on a Plinth in the Field and/or Inside a Outdoor Yard or Indoor Substation Building, c/w, Earthing (SANS 1063 / 10199) , Steelwork, Frames, Sub-frames, Chassis, Covers, Lockable Doors, Busbars, Internal Wiring, Auxiliary Equipment, Fixing Accessories, Labelling and Signage, Testing and Commissioning and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;				
B Client's objectives						
i		Testing, commissioning & certification of POC 01;				
ii		Refurbishment of POC 02;				
C Extent of works						
i		Design, manufacture, supply & install MV distribution equipment;				
ii		Civil, OHL structure, plinth, yard, building, etc. preparation;				
iii		Connection of MV & LV cables;				
iv		Associated configuration and earthing works;				
v		Testing & commissioning of works;				
D Contractor offering						
i		Specialized Manufacturer / Builder Offered :				
ii		MV Switchgear Offered :				
iii		TRF & Equipment Offered :				
iv		LV Switchgear & Equipment Offered :				
v		Material Delivery Period :				
34.1	2.1	Poc 01 Bulk Supply Option 01				
a		OHL Yard Substation (YSS) Assembly	Type	Info		
b		11/0.42kV * 200kVA * 300A * 10kA	Rating	Info		
c		Factory Build * MV / TRF / LV Compartment * n/a Access * n/a Cable Entry	Spec.	Info		
		Green * 2CR12 Corrosion Resistant Metal (2mm) * Outdoor * Water Proof * IP 65 * n/a Busbars * TNC Earthing System * 1 Form * ONAN				
		Ventilation * Plinth Mounted Installation				
d		Actom / Schneider / ABB;	Mfc.	Info		
e		Technical Drawings & Schedules Issued.	Ref	Info		
f		BOQ 02-1-a	BOQ	Info		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 1 17						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 34						
Electrical works 02 - Medium Voltage Ddistribution (MVdx)						
-Schedule continued from page 116						
34.1.1	2.1.1	Tracing & testing of existing Incomer and Feeders;	sum	1		
34.1.2	2.1.2	MV & LV Cable Disconnection, De-Commissioning and moving into secure location of an existing 11/0.42kV 200kVA Outdoor Floor Standing Transformer;	sum	1		
34.1.3	2.1.3	Building of a new concrete platform, under roof to house outdoor RMU, Transformer and Generator Unit (done by civil contractor)	sum	1		Rate Only
34.1.4	2.1.4	Supply of a New 1 Way 11kV RMU for Transformer Isolation & Protection (Amount calculated from or brought forward from BOQ 02-1-a);	sum	1		
34.1.5	2.1.5	Installation of a New 1 Way 11kV RMU for Transformer Isolation & Protection;	sum	1		
34.1.6	2.1.6	Placing in position on site, rigging if required of an existing 11/0.42kV 200kVA Outdoor Floor Standing Transformer;	sum	1		
34.1.7	2.1.7	MV & LV Cable Connection, Re-Commissioning of an existing 11/0.42kV 200kVA Outdoor Floor Standing Transformer;	sum	1		
34.1.8	2.1.8	Testing, commissioning & handing-over in line with associated sequence of works;	sum	1		
	2.1.9	Miscellaneous Works				
34.1.9	a	Provisional amount for items not covered above and as yet to be confirmed.	prov			
34.1.10	b	Any other items the Tenderer deems necessary for the successful completion of the works.	sum			
34.2	2.2	Poc 01 Bulk Supply Option 02				
	a	Miniature Substation (MSS) Assembly	Type	Info		
	b	11/0.42kV * 500kVA * 500A * 15kA	Rating	Info		
	c	Factory Build * MV / TRF / LV Compartment * Front Access * Bottom Cable Entry * Electric Orange * 2CR12 Corrosion Resistant Metal (2mm) * Outdoor * Water / Dust Proof * IP 65 * Back Busbars * TNS Earthing System * 2B Form * ONAN Ventilation * Plinth Mounted Installation	Spec.	Info		
	d	Actom / Schneider / ABB;	Mfc.	Info		
	e	Technical Drawings & Schedules Issued.	Ref	Info		
	f	BOQ 02-1-b	BOQ	Info		
34.2.1	2.2.1	Tracing & testing of existing Incomer and Feeders;	sum	1		Rate Only
34.2.2	2.2.1	MV & LV Cable Disconnection, De-Commissioning and moving into secure location of an existing 11/0.42kV 200kVA Outdoor Floor Standing Transformer;	sum	1		Rate Only
34.2.3	2.2.1	Building of a new concrete platform, under roof to house outdoor RMU, Transformer and Generator Unit (done by civil contractor)	sum	1		Rate Only
34.2.4	2.2.1	Supply of a New 11/0.42kV 500 kVA MSS (Amount calculated from or brought forward from BOQ 02-1-b);	sum	1		Rate Only
34.2.5	2.2.1	Installation of a New 11/0.42kV 200kVA MSS;	sum	1		Rate Only
34.2.6	2.2.1	MV & LV Cable Connection, Re-Commissioning of an existing 11/0.42kV 200kVA Outdoor Floor Standing Transformer;	sum	1		Rate Only
34.2.7	2.2.1	Testing, commissioning & handing-over in line with associated sequence of works;	sum	1		Rate Only
	2.1.9	Miscellaneous Works				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 118						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 34 Electrical works 02 - Medium Voltage Ddistribution (MVdx)						
-lschedule continued from page 117						
34.2.8	a	Provisional amount for items not covered above and as yet to be confirmed.	prov			
34.2.9	b	Any other items the Tenderer deems necessary for the successful completion of the works.	sum			
34.3 2.3 Poc 02 Electrical Bulk Supply						
	a	OHL Yard Substation (YSS) Assembly	Type	Info		
	b	11/0.42kV * 75kVA * 100A * 6kA	Rating	Info		
	c	Factory Build * MV / TRF / LV Compartment * n/a Access * n/a Cable Entry Green * 2CR12 Corrosion Resistant Metal (2mm) * Outdoor * Water Proof IP65 * n/a Busbars * TNC Earthing System * 1 Form * ONAN Ventilation * Pole Mounted Installation	Spec.	Info		
	d	Actom / Schneider / ABB;	Mfc.	Info		
	e	Technical Drawings & Schedules Issued.	Ref	Info		
	f	BOQ 02-1-c	BOQ	Info		
34.3.1	2.3.1	Tracing & testing of existing Incomer and Feeders;	sum	1		
34.3.2	2.3.2	MV & LV Cable Disconnection, De-Commissioning and moving into secure location of an existing OHL POC Assembly material;	sum	1		
34.3.3	2.3.3	Supply & Installation of a New 11/0.42kV 75kV OHL POC Assembly (Amount calculated from or brought forward from BOQ 02-1-c);	sum	1		
34.3.4	2.3.4	Testing, commissioning & handing-over in line with associated sequence of works;	sum	1		
	2.3.5	Miscellaneous Works				
34.3.5	a	Provisional amount for items not covered above and as yet to be confirmed.	prov			
34.3.6	b	Any other items the Tenderer deems necessary for the successful completion of the works.	sum			
34.4 2.4 OHL Civil works						
	2.4.1	TRF Pole Mounted Assembly : Specification : Std Eskom / Munic / SABS 753 & 754; Note : Supply & Install all Pole Material c/w Excavation, Installation & Compaction;				
34.4.1	a	2 Pole (H-Pole) TRF Mounted Platform Assembly;	sum	1		
34.4.2	b	2 Pole (In-Line) TRF Mounted Platform Assembly;	sum	1		Rate Only
34.4.3	c	5 Pole (H-Pole) TRF Mounted Platform Assembly;	sum	1		Rate Only
	2.4.2	TRF Equipment Mounting Platform : Specification : Eskom / Munic Specification / NRS 033; Note : Supply & Install all Steel Work Material c/w Fixing Accessories;				
34.4.4	a	2 x Steel I-Beam for TRF Mounting;	sum	1		
34.4.5	b	4 x Steel Support Beams for I-Beam Mounting;	sum	1		Rate Only
	2.4.3	OHL Pole Primary Structure : Specification : Eskom / Munic Specification / NRS 022; Note : Supply & Install all Material c/w Excavation, Installation & Compaction;				
34.4.6	a	Wooden Poles	ea	1		Rate Only
34.4.7	b	Steel Poles	ea	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 1 1 9						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 34 Electrical works 02 - Medium Voltage Ddistribution (MVdx)						
-\schedule continued from page 112						
34.4.8	c	Concrete Poles	no	1		Rate Only
	2.4.4	OHL Pole Supporting Structure :				
		Specification : Eskom / Munic Specification / NRS 022;				
		Note : Supply & Install all Material c/w Excavation, Installation & Compaction;				
34.4.9	a	Stay Assembly c/w Stay Bracket, Thible, Guygrip, Stay Wire Galvanised, Insulator Strain-Stay, Stayrod, Anchor & Fixing Accessories;	sum	3		
34.4.10	b	Strut Assembly c/w Bracket Swivel Strut, Barbed Wire, Treated Wooden Pole, Anker & Fixing Accessories;	sum	3		
34.4.11	c	Anti Climbing Device - Mounted Against Pole for Theft;	sum	8		
34.5 2.5 Associated civil works						
	2.5.1	Plinth :				
		Note : Allow for the supply and installation of a suitable concrete base, c/w soil survey, plinth design verification, excavation, supply & install of material and plinth compaction test certificate <i>(position to be confirmed on site);</i>				
34.5.1	2.5.1.1	Plinth (Pre-Cast) :	sum	1		Rate Only
34.5.2	2.5.1.2	Plinth (Cast on Site) :	sum	1		Rate Only
34.5.3	a	Soil survey to confirm plinth design;	sum	1		Rate Only
34.5.4	b	Plinth shall be 150mm above finished ground level;	sum	1		Rate Only
34.5.5	c	25 Mpa concrete to be used and vibrated;	sum	1		Rate Only
34.5.6	d	Bottom of foundation to be compacted after excavation to 95% MOD AASHTO;	sum	1		Rate Only
34.5.7	e	Reinforcing & Countersunk lifting eyes to be designed and detailed by manufacturer <i>(Pre-Cast);</i>	sum	1		Rate Only
34.5.8	f	All the steel components (except the reinforcing) are to be stainless steel;	sum	1		Rate Only
34.5.9	g	Concrete to be cured for 7 days with approved curing method;	sum	1		Rate Only
34.5.10	h	Steel mesh placed 50mm from bottom of slab <i>(Cast on Site);</i>	sum	1		Rate Only
34.5.11	i	Foundation to have a 30mm chamfer all around;	sum	1		Rate Only
34.5.12	j	MV & LV Cable Entry to have removable pre-cast concrete slab <i>(Pre-Cast);</i>	sum	1		Rate Only
34.5.13	k	MV & LV Cable Entry to be bricked-Up <i>(Cast on Site);</i>	sum	1		Rate Only
	2.5.2	Trenching & Concrete Covers & Floor :				
		Note : Excavate for cable and sleeve trenches including temporary support of sides, keeping excavations dry, concrete work including concrete covers and floor.				
		Note: Contractor to make own assessment of % pickable/soft rock/hard rock. <i>(Rate per running meter)</i>				
	2.5.2.1	Excavations (Cable Trenches) :				
34.5.14	a	Cable Trench <i>(450mm wide, 600mm deep)</i>	m	1		Rate Only
34.5.15	b	Cable Trench <i>(750mm wide, 600mm deep)</i>	m	1		Rate Only
	2.5.2.2	Concrete Covers and Floor :				
34.5.16	a	Concrete covers and floor <i>(450mm wide, 600mm deep);</i>	m	1		Rate Only
34.5.17	b	Concrete covers and floor <i>(750mm wide, 600mm deep);</i>	m	1		Rate Only
	2.5.2.3	Levelling of Concrete Floor :				
34.5.18	a	Levelling of Floor with Concrete/Screed;	sum	1		Rate Only
34.5.19	b	Levelling of Floor with Steel Beams;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 120						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 34						
Electrical works 02 - Medium Voltage Ddistribution (MVdx)						
-Schedule continued from page 119						
34.5.20	c	Foot piece;	sum	1		Rate Only
	2.5.3	Neutralize Site :				
		Note : 10m (L) x 6.6m (W)				
34.5.21	a	Herbicide/Insecticide Application;	sum	1		Rate Only
34.5.22	b	Certificate & guarantee for Herbicide/Insecticide Application;	sum	1		Rate Only
	2.5.4	Site Clearance				
		Note : Clearing & preparation of area;				
		Note : 10m (L) x 6.6m (W);				
34.5.23	a	Clear and Grub;	m²	1		Rate Only
34.5.24	b	Remove & grub all trees and tree stumps regardless of girth;	sum	1		Rate Only
34.5.25	c	Remove topsoil to nominal depth of 150mm and stockpile;	sum	1		Rate Only
34.5.26	d	Reclear surfaces (only on instruction of the engineer);	sum	1		Rate Only
34.5.27	e	Transport materials & debris to unspecified sites and dump;	sum	1		Rate Only
	2.5.5	Yard Stoning :				
		Note : 10m (L) x 6.6m (W);				
34.5.28	a	25-35mm dia Yard stone 100mm thick layer minimum;	m²	1		Rate Only
	2.5.6	Access Road :				
34.5.29	a	Access road 5m wide and 200mm thick minimum.	sum	1		Rate Only
34.5.30	b	Gate Ramps, including sliding rail for gates.	sum	1		Rate Only
	2.5.7	Perimeter Fencing :				
		Note : Perimeter Fence, c/w all panels, posts, gates etc;				
		Note : Civil contractor will supply & install perimeter fencing;				
34.5.31	a	Steel Palisade Fence, 2200mm Above normal ground level on outside of yard, c/w barbed wire on top, anti tunnelling etc.;	m	1		Rate Only
34.5.32	b	Steel Palisade Fence, 1800mm Above normal ground level on outside of yard, c/w barbed wire on top, anti tunnelling etc.;	m	1		Rate Only
34.5.33	c	Removable Panels - 2200 X 4000mm;	no	1		Rate Only
34.5.34	d	Pedestrian Gate - 2200 X 1000mm;	no	1		Rate Only
34.5.35	e	Kerbing around Perimeter;	m	1		Rate Only
	2.5.8	Construction / Brick Work :				
34.5.36	a	Bund Wall - 8x8m * 300mm High & Face brick	sum	1		Rate Only
34.5.37	b	Fire Wall - 3x3m * Double Wall * Face brick	sum	1		Rate Only
	2.5.9	Area Lighting :				
		Note : Supply and installation of area lighting, complete with mounting brackets, poles, instrumentation, wiring & testing;				
34.5.38	a	LED Floodlight (HPS 200W Flood Light equivalent)	no	1		Rate Only
34.5.39	b	LED Floodlight (HPS 400W Flood Light equivalent)	no	1		Rate Only
	2.5.10	Labelling				
		Note : Supply and Installation of Labelling c/w all mounting brackets, screws, nuts etc., complete as per Specification.				
34.5.40	a	Distribution Equipment Labels;	sum	2		
34.5.41	b	SIGN, ABC - UNAUTHORISED ENTRY	sum	1		Rate Only
34.5.42	c	SIGN, DE - FIRE/FIRST AID	sum	1		Rate Only
34.5.43	d	SIGN, F - PROHIBITIVE FENCE AND GATE	sum	1		Rate Only
34.5.44	e	SIGN, G - HARD HAT AREA	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 121						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 34						
Electrical works 02 - Medium Voltage Ddistribution (MVdx)						
-Schedule continued from page 120						
34.6	2.6	Electrical earthing works				
		Note : Allow for the supply and installation of a suitable earthing system, c/w resistivity test, confirmation of design, excavation, supply & installation of material and earth resistivity test certificate (position to be confirmed on site);				
34.6.1	2.6.1	Earthing (Continuous Earth MV System) :	sum	1		
34.6.2	2.6.2	Earthing (Without Continuous Earth MV System) :	sum	1		
34.6.3	2.6.3	Earthing (Connected to OHL) :	sum	2		
34.6.4	a	16mm² BCEW buried at 0.5m below natural ground level to serve as equipotential earth electrode (123) ;	sum	1		Rate Only
34.6.5	b	Earth electrode to be installed 0.5m from foundation and to encircle entire MSS (123) ;	sum	1		Rate Only
34.6.6	c	Each end of the earth electrode is to be bonded to the MSS earth bar (123) ;	sum	1		Rate Only
34.6.7	d	Maximum MV electrode resistance is 30 Ohm (23) ;	sum	1		Rate Only
34.6.8	e	Maximum LV electrode resistance is dependant on feeder main earth fault protection settings (23) ;	sum	1		Rate Only
34.6.9	f	Design of earth electrode determined by soil resistivity (23) ;	sum	1		Rate Only
34.6.10	g	Equipotential and MV earth electrodes shall be bonded (23) ;	sum	1		Rate Only
34.6.11	h	5m Separation between MV/Equipotential and LV electrode in the soil (23) ;	sum	1		Rate Only
34.6.12	i	If the separation between the terminal pole and the MCC is > 10m a separate earth electrode for the surge arrestors shall be installed at the pole (3) ;	sum	1		Rate Only
34.6.13	j	MV cable armouring and sheath bonded to earth bar and continuous back to stepdown station (123) ;	sum	1		Rate Only
34.6.14	k	LV neutral bonded to earth bar (1) ;	sum	1		Rate Only
34.6.15	l	LV neutral bonded to earth bar (with neutral surge arrestor) (23) ;	sum	1		Rate Only
34.6.16	m	LV cable armouring bonded to insulated gland plate & gland plate bonded to neutral (123) ;	sum	1		Rate Only
	2.6.4	Suitable earthing system (Equipotential & LV Earth Electrode System)				
34.6.17	a	Allow for 3 x 16 mm ø 1,6 m earth rods;	sum	1		Rate Only
34.6.18	b	Allow for 15 m x 70mm² bare copper earth wire;	sum	1		Rate Only
34.6.19	c	Allow for 5 m x 16mm² insulated copper earth wire;	sum	1		Rate Only
34.6.20	d	Trenching (500mm wide, 1.15m deep) ;	sum	1		Rate Only
34.6.21	e	Horizontal Grid (10mm Solid Round Copper) ;	sum	1		Rate Only
34.6.22	f	Earth Tails (50x3mm) ;	sum	1		Rate Only
34.6.23	g	Fence Tails (Gates) ;	sum	1		Rate Only
34.6.24	h	Vertical Rods (1.5m Copper Plated Steel) ;	sum	1		Rate Only
34.6.25	i	Back Filling and Compaction;	sum	1		Rate Only
34.6.26	j	Import Soil;	sum	1		Rate Only
34.6.27	k	Welding and Bonding	sum	1		Rate Only
34.6.28	l	Conductive aggregate cement (Resistivity mixture <0.2 Ωm) ;	sum	1		Rate Only
34.6.29	m	Soil resistivity survey & confirmation of earth design;	sum	1		Rate Only
34.6.30	n	Earth resistivity Test Certificate;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 122						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 34 Electrical works 02 - Medium Voltage Ddistribution (MVdx)						
-Schedule continued from page 121						
34.7	2.7	Associated sequence of works				
34.7.1	2.7.1	Allowance for design, testing, commissioning and handing-over in line with associated sequence of works;	sum	1		
34.7.2	a	Confirmation of specialised Medium Voltage Assembly Unit manufacturer and / or supplier;	sum	1		Rate Only
34.7.3	c	Confirmation of material and equipment ratings, range and manufacturer;	sum	1		Rate Only
34.7.4	d	Detail design of Medium Voltage Assembly Unit by specialised builder in accordance with Specifications;	sum	1		Rate Only
34.7.5	e	Submit detail design drawings and documentation to Engineer for review and approval;	sum	1		Rate Only
34.7.6	f	Ordering of material and manufacture of Medium Voltage Assembly Unit and/or ordering and delivery of unit by specialised manufacture and / or supplier;	sum	1		Rate Only
34.7.7	g	Perform inspection and factory acceptance test (FAT) between specialist builder and / or supplier and contractor.;	sum	1		Rate Only
34.7.8	h	Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
34.7.9	i	Confirmation of equipment / unit position and cable lengths on site;	sum	1		Rate Only
34.7.10	j	Perform soil survey and confirm plinth design;	sum	1		Rate Only
34.7.11	k	Excavation and installation of plinth on site (either pre-cast or cast on site), complete with trenching, bedding, etc. and issuing of compaction and plinth test certificates;	sum	1		Rate Only
34.7.12	l	Transport / Delivery of Medium Voltage Assembly Unit to site;	sum	1		Rate Only
34.7.13	m	Rigging of Medium Voltage Assembly Unit and placing in position on site;	sum	1		Rate Only
34.7.14	n	Soil resistivity survey and confirmation of electric earth design;	sum	1		Rate Only
34.7.15	o	Earthing of Installation and issuing of Earthing Soil Resistivity Test Certificates;	sum	1		Rate Only
34.7.16	p	Connection of all MV & LV cables as well as making good for commissioning;	sum	1		Rate Only
34.7.17	q	Labelling of equipment / circuits / warning signs and installation of operational information and SLD;	sum	1		Rate Only
34.7.18	r	Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions;	sum	1		Rate Only
34.7.19	s	Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;	sum	1		Rate Only
34.7.20	t	Completion of test schedules and certificates for approval by the Engineer before handing-over;	sum	1		Rate Only
34.7.21	u	Technical data pack in A4 size binder - 3 hard copies and 1 soft copy on CD/memory stick (Including operating / maintenance manuals, drawings, technical information, guarantees and warranties);	sum	1		Rate Only
34.8	2.8	Miscellaneous Works				
34.8.1	a	Provisional amount for items not covered above and as yet to be confirmed.	prov	1		Rate Only
34.8.2	b	Any other items the Tenderer deems necessary for the successful completion of the works.	sum	1		Rate Only
SCHEDULE 34 CARRIED OVER TO SUMMARY OF PHASE 4						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 35						
Electrical works 03 - Medium Voltage Reticulation Works (MVRT)						
A OVERVIEW OF WORKS						
i		Supply Medium Voltage PILC (SANS 97) / XLPE (SANS 1339) 3/4 Core, Single Core Power Cables, Copper Earth Wire (SANS 1411-1) and Install in ground, wire channels, sleeves, racking (SANS 10142-2 & SANS 10198 & SANS 61386), c/w with joints, terminations, end capps, glands, shrouds, termination lugs and fixing accessories (NRS 028) in combination with stringing OHL structures with Aluminium Conductor & Earth Wire c/w OHL equipment (NRS 033), Links, Transformer (SANS 780 / NRS 054), Surge Arrestors (NRS 039), Theft Protection, Supporting Stay Assemblies & Strut Assemblies (NRS 022), Pole Structures, Earthing (SANS 1063 / 10199), Auxiliary Equipment, Fixing Accessories, Labelling and Signage, and all associated works, Complete to Achieve Project Objective and as per Project Specification;				
B CLIENTS OBJECTIVES						
i		Testing and certification of existing POC 01 installation;				
ii		Allowance made for MV cable from POC 01, if required;				
C EXTENT OF WORKS						
i		Confirmation of route and positions;				
ii		MV OHL installation for MV distribution equipment;				
iii		MV cable installation for MV distribution equipment;				
iv		Associated, ohl structures, trenching, cable management & termination works;				
v		Testing & commissioning of works;				
D CONTRACTOR OFFERING:						
i		MV Cable & Conductor Offered :				
ii		MV Joint & Termination Offered :				
iii		OHL Equipment Offered :				
iv		Cable Management Offered :				
v		Material Delivery Period :				
vi		Installation Period :				
35.1	3.1	MAINS CABLES - MEDIUM VOLTAGE				
		Type : 6.35 to 33kV, 3 Core, Cu/Al, XLPE Insulated, Copper Tape Screened PVC Bedded, Galvanised Steel Wire Armoured & PVC Sheathed;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Note : Rate to allow for cable off-cuts;				
	3.1.1	50mm², 3 Core, XLPE , Cu, MV Cable				
35.1.1	a	Supply	m	1		Rate Only
35.1.2	b	Install	m	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 124						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 35 continued						
Electrical works 03 - Medium Voltage Reticulation Works (MVrt)						
-Schedule continued from page 123						
35.1.3	c	Cable Terminations (Supply & Install)	no	1		Rate Only
35.1.4	d	Cable Joint (Supply & Install)	no	1		Rate Only
	3.1.2	35mm², 3 Core, XLPE , Cu, MV Cable				
35.1.5	a	Supply	m	1		Rate Only
35.1.6	b	Install	m	1		Rate Only
35.1.7	c	Cable Terminations (Supply & Install)	ea	1		Rate Only
35.1.8	d	Cable Joint (Supply & Install)	ea	1		Rate Only
	3.1.3	25mm², 3 Core, XLPE , Cu, MV Cable				
35.1.9	a	Supply	m	1		Rate Only
35.1.10	b	Install	m	1		Rate Only
35.1.11	c	Cable Terminations (Supply & Install)	no	1		Rate Only
35.1.12	d	Cable Joint (Supply & Install)	no	1		Rate Only
	3.1.4	16mm², 3 Core, XLPE , Cu, MV Cable				
35.1.13	a	Supply	m	75		
35.1.14	b	Install	m	75		
35.1.15	c	Cable Terminations (Supply & Install)	no	2		
35.1.16	d	Cable Joint (Supply & Install)	no	1		Rate Only
		Type : 6.35 to 33kV, Cu/Al, PILC, Belted/Screened, PVC/SWA/PVC, SANS 97;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Note : Rate to allow for cable off-cuts;				
	3.1.5	35mm², 3 Core, PILC , Cu, MV Cable				
35.1.17	a	Supply	m	1		Rate Only
35.1.18	b	Install	m	1		Rate Only
35.1.19	c	Cable Terminations (Supply & Install)	no	1		Rate Only
35.1.20	d	Cable Joint (Supply & Install)	no	1		Rate Only
	3.1.6	25mm², 3 Core, PILC , Cu, MV Cable				
35.1.21	a	Supply	m	1		Rate Only
35.1.22	b	Install	m	1		Rate Only
35.1.23	c	Cable Terminations (Supply & Install)	no	1		Rate Only
35.1.24	d	Cable Joint (Supply & Install)	no	1		Rate Only
	3.1.7	16mm², 3 Core, PILC , Cu, MV Cable				
35.1.25	a	Supply	m	1		Rate Only
35.1.26	b	Install	m	1		Rate Only
35.1.27	c	Cable Terminations (Supply & Install)	no	1		Rate Only
35.1.28	d	Cable Joint (Supply & Install)	no	1		Rate Only
35.2	3.2	EXCAVATION & CROSSINGS				
	3.2.1	Cable Trench Excavations :				
		Note : For cable and sleeve trenches including temporary support of sides, keeping excavations dry, backfilling and compaction;				
		Note : Bedding under & fill around cable & sleeves comprising of 300mm sifted sand or approved material;				
		Note : Contractor to make own assessment of % pickable/soft rock/hard rock. (Rate per running meter)				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 125						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 35 continued						
Electrical works 03 - Medium Voltage Reticulation Works (MVrt)						
-Schedule continued from page 124						
		Note : Rate to include complete work for the specified length, equipment hire, material and labour;				
		Note : Rate to include complete breakage & repair work to original condition for the length;				
	3.2.3	Excavations (for cable and sleeve trenches) :				
35.2.1	a	650mm wide (w) & 1150mm deep (d)	m	65		
35.2.2	b	850mm wide (w) & 1150mm deep (d)	m	1		Rate Only
35.2.3	c	1000mm wide (w) & 1150mm deep (d)	m	1		Rate Only
35.2.4	d	1250mm wide (w) & 1150mm deep (d)	m	1		Rate Only
	3.2.4	Road Crossing (for cable and sleeve) :				
35.2.5	a	650mm wide (w) & 1600mm deep (d) - Rail/Road Crossing	m	1		Rate Only
35.2.6	b	850mm wide (w) & 1600mm deep (d) - Rail/Road Crossing	m	1		Rate Only
35.2.7	c	1250mm wide (w) & 1600mm deep (d) - Rail/Road Crossing	m	1		Rate Only
	3.2.5	Tar Surface: (Break & Repair)				
35.2.8	a	Tar Surface: 650mm wide (w)	m	1		Rate Only
35.2.9	b	Tar Surface: 1200mm wide (w)	m	1		Rate Only
	3.2.6	Concrete Surface: (Break & Repair)				
35.2.10	a	Concrete Surface: 650mm wide (w)	m	1		Rate Only
35.2.11	b	Concrete Surface: 1200mm wide (w)	m	1		Rate Only
	3.2.7	Paved Surface: (Break & Repair)				
35.2.12	a	Paved Surface: 650mm wide (w)	m	1		Rate Only
35.2.13	b	Paved Surface: 1200mm wide (w)	m	1		Rate Only
	3.2.8	Bush Clearing (for excavation) :				
35.2.14	a	Bush Clearance: 650mm wide (w)	m	1		Rate Only
35.2.15	b	Bush Clearance: 1200mm wide (w)	m	1		Rate Only
	3.2.9	Specialised Crossings & Civil Work :				
		Note : Horizontal drilled road crossing c/w with pit excavations, drilling, and backfilling of trenched holes for the length of the crossing.				
35.2.16	a	Jacking establishment - fixed charges	sum	1		Rate Only
35.2.17	b	Supply of 160 mm Ø HDPE pipes	m	1		Rate Only
35.2.18	c	Horizontal drilling of pipes (10 no x 12.20 m)	m	1		Rate Only
35.2.19	d	Excavation for jacking launching pits	no	1		Rate Only
35.2.20	e	Provisional sum for Supervisory attendance	Prov	1		Rate Only
35.3	3.3	PROTECTION & MARKING				
	3.3.1	Concrete Cable Route Markers; at each change in direction;				
35.3.1	a	Supply	no	1		Rate Only
35.3.2	b	Install	no	1		Rate Only
	3.3.2	Concrete Cable Joint Markers; at each joint:				
35.3.3	a	Supply	no	1		Rate Only
35.3.4	b	Install	no	1		Rate Only
	3.3.3	Cable Warning PVC Chevron Tape; laid in cable trenches at a minimum depth of 300mm above the buried electrical cables:				
35.3.5	a	Supply	m	65		
35.3.6	b	Install	m	65		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 126						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 35 continued						
Electrical works 03 - Medium Voltage Reticulation Works (MVRT)						
-Schedule continued from page 125						
	3.3.4	Cable Marking; Marking of cables:				
35.3.7	a	Supply	no	1		Rate Only
35.3.8	b	Install	no	1		Rate Only
	3.3.5	Concrete Cable Protection Slabs; installed in ground at 300mm above cable 760mm [l] x 200mm [w] x 50mm [d]:				
35.3.9	a	Supply	no	1		Rate Only
35.3.10	b	Install	no	1		Rate Only
35.4	3.4	SLEEVE & ACCESSORIES				
		HDPE Corrugated Flexible Cable Conduit: Manufactured to SANS 61386 and Installed in ground or placed in position for casting into concrete / screed / brickwork complete with slow bends, couplings, draw wire and sealing.				
	3.4.1	160mm Ø, HDPE Corrugated Flexible Conduit (6m Lengths)				
35.4.1	a	Supply	m	1		Rate Only
35.4.2	b	Install	m	1		Rate Only
35.4.3	c	Couplings (Supply & Install)	no	1		Rate Only
35.4.4	d	End Plug (Supply & Install)	no	1		Rate Only
	3.4.2	110mm Ø, HDPE Corrugated Flexible Conduit (6m Lengths)				
35.4.5	a	Supply	m	1		Rate Only
35.4.6	b	Install	m	1		Rate Only
35.4.7	c	Couplings (Supply & Install)	no	1		Rate Only
35.4.8	d	End Plug (Supply & Install)	no	1		Rate Only
		PVC Tubular Sleeve Pipe: Manufactured to SANS 966 and Installed in ground or placed in position for casting into concrete / screed / brickwork complete with slow bends, couplings, draw wire and sealing of PVC sleeves with sealing compound.				
	3.4.3	160mm Ø, PVC, Tubular Pipe (6m Lengths)				
35.4.9	a	Supply	m	1		Rate Only
35.4.10	b	Install	m	1		Rate Only
35.4.11	c	Couplings (Supply & Install)	no	1		Rate Only
35.4.12	d	End Plug (Supply & Install)	no	1		Rate Only
	3.4.4	110mm Ø, PVC, Tubular Pipe (6m Lengths)				
35.4.13	a	Supply	m	10		
35.4.14	b	Install	m	10		
35.4.15	c	Couplings (Supply & Install)	no	1		Rate Only
35.4.16	d	End Plug (Supply & Install)	no	1		Rate Only
	3.4.5	Sealing Compound				
35.4.17	a	Supply	no	1		Rate Only
35.4.18	b	Install	no	1		Rate Only
	3.4.6	1,6mm Ø (16swg) Non-corrodible galvanised draw wire:				
35.4.19	a	Supply	m	1		Rate Only
35.4.20	b	Install	m	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 127						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 35 continued						
Electrical works 03 - Medium Voltage Reticulation Works (MVRT)						
-Schedule continued from page 126						
35.5	3.5	CABLE MANAGEMENT & ACCESSORIES				
		Type : Pre-Galvanized Cable Racks and Trays, surface and/or suspended mounted supported every 1.5m (min) ; c/w all covers, splices, end caps, channel supports, hangers, mounting and fixing accessories:				
		Note : Rate to allow for Supply & Install.				
		M & Heavy Duty Cable Trays (PT38/76 range) :				
	3.5.1	300mm Wide (w) Trays:				
35.5.1	a	Straight	m	10		
35.5.2	b	Internal Bend	no	1		Rate Only
35.5.3	c	External Bend	no	1		Rate Only
35.5.4	d	Horizontal Bend	no	1		Rate Only
35.5.5	e	Tee	no	1		Rate Only
35.5.6	f	Covers	m	1		Rate Only
35.5.7	g	Mounting Support Accessories	no	1		Rate Only
35.5.8	h	Hanging Support Accessories	no	1		Rate Only
	3.5.2	600mm Wide (w) Trays:				
35.5.9	a	Straight	m	1		Rate Only
35.5.10	b	Internal Bend	no	1		Rate Only
35.5.11	c	External Bend	no	1		Rate Only
35.5.12	d	Horizontal Bend	no	1		Rate Only
35.5.13	e	Tee	no	1		Rate Only
35.5.14	f	Covers	m	1		Rate Only
35.5.15	g	Mounting Support Accessories	no	1		Rate Only
35.5.16	h	Hanging Support Accessories	no	1		Rate Only
		Cable Ladder (OL55/76 range) :				
	3.5.3	600mm Wide (w) Trays:				
35.5.17	a	Straight	m	1		Rate Only
35.5.18	b	Internal Bend	no	1		Rate Only
35.5.19	c	External Bend	no	1		Rate Only
35.5.20	d	Horizontal Bend	no	1		Rate Only
35.5.21	e	Tee	no	1		Rate Only
35.5.22	f	Covers	m	1		Rate Only
35.5.23	g	Mounting Support Accessories	no	1		Rate Only
35.5.24	h	Hanging Support Accessories	no	1		Rate Only
	3.5.4	1000mm Wide (w) Trays:				
35.5.25	a	Straight	m	1		Rate Only
35.5.26	b	Internal Bend	no	1		Rate Only
35.5.27	c	External Bend	no	1		Rate Only
35.5.28	d	Horizontal Bend	no	1		Rate Only
35.5.29	e	Tee	no	1		Rate Only
35.5.30	f	Covers	m	1		Rate Only
35.5.31	g	Mounting Support Accessories	no	1		Rate Only
35.5.32	h	Hanging Support Accessories	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 128						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 35 continued						
Electrical works 03 - Medium Voltage Reticulation Works (MVrt)						
-Schedule continued from page 127						
35.6	3.6	OVERHEAD LINE (OHL) STRUCTURES				
	3.6.1	OHL Aluminium Conductors :				
		Specification : Eskom / Munic Specification / NRS 022;				
		Note : Supply & Install all c/w stringing, tensioning, joining and all related work;				
35.6.1	a	All Aluminium Conductors (AAC)	m	1		Rate Only
35.6.2	b	All Aluminium Alloy Conductors (AAAC) - FIR	m	1		Rate Only
35.6.3	c	All Aluminium Alloy Conductors (AAAC) - Pine	m	1		Rate Only
35.6.4	d	All Aluminium Alloy Conductors (AAAC) - Oak	m	1		Rate Only
35.6.5	e	Alloy Reinforced Aluminium Conductors (ACAR)	m	1		Rate Only
35.6.6	f	Steel Reinforced Aluminium Conductors (ACSR) - Fox	m	1		Rate Only
35.6.7	g	Steel Reinforced Aluminium Conductors (ACSR) - Mink	m	1		Rate Only
35.6.8	h	Steel Reinforced Aluminium Conductors (ACSR) - Hare	m	1		Rate Only
35.6.9	i	Earth Wire	m	1		Rate Only
	3.6.2	OHL Poles :				
		Specification : Eskom / Munic Specification / NRS 022;				
		Note : Supply & Install all Material c/w Excavation, Installation & Compaction;				
35.6.10	a	Wooden Poles (9m * 140mmØ);	no	1		Rate Only
35.6.11	b	Wooden Poles (10m * 140mmØ);	no	1		Rate Only
35.6.12	c	Wooden Poles (11m * 160mmØ);	no	7		
35.6.13	d	Steel Poles	no	1		Rate Only
35.6.14	e	Concrete Poles	no	1		Rate Only
35.6.15	f	Wooden Poles (9m * 140mmØ);	no	1		Rate Only
35.6.16	g	Wooden Poles (10m * 140mmØ);	no	1		Rate Only
35.6.17	h	Wooden Poles (11m * 160mmØ);	no	1		Rate Only
	3.6.3	OHL Pole Supporting Structure :				
		Specification : Eskom / Munic Specification / NRS 022;				
		Note : Supply & Install all Material c/w Excavation, Installation & Compaction;				
35.6.18	a	Stay Assembly c/w Stay Bracket, Thible, Guygrip, Stay Wire Galvanised, Insulator Strain-Stay, Stayrod, Anchor & Fixing Accessories;	no	5		
35.6.19	b	Strut Assembly c/w Bracket Swivel Strut, Barbed Wire, Treated Wooden Pole, Anker & Fixing Accessories;	no	5		
35.6.20	c	Anti Climbing Device - Mounted Againts Pole for Theft;	no	5		
	3.6.4	OHL Equipment :				
		Specification : Eskom / Munic Specification / NRS 022;				
		Note : Supply & Install all Material c/w Excavation, Installation & Compaction;				
35.6.21	a	Pin Insulators;	no	1		Rate Only
35.6.22	b	Tension Insulators;	no	1		Rate Only
35.6.23	c	Suspension Insulators;	no	1		Rate Only
35.6.24	d	Conuductor Clamps & Fittings;	no	1		Rate Only
35.6.25	e	Cross Arms	no	1		Rate Only
35.6.26	f	Dampers	no	1		Rate Only
35.6.27	g	Switch Isolator;	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 129						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 35 continued Electrical works 03 - Medium Voltage Reticulation Works (MVrt)						
-schedule continued from page 128						
35.6.28	h	Switch Fused Isolator;	no	1		Rate Only
35.6.29	i	Lighting Arrestor;	no	1		Rate Only
35.6.30	j	Lightning Finial;	no	1		Rate Only
35.6.31	k	Earthing Down Conductor;	no	1		Rate Only
	3.6.5	OHL Pole Primary Structure :				
		Specification : Eskom / Munic Specification / NRS 022;				
		Note : Supply & Install all Material c/w all required material to form the specified structure, including, but not limited to, Eye Nuts, Eye Bolts, Threaded rods, insulators, thimble clevis, formed dead-end, compression connector or PG clamps, woodeden & steel cross arms;				
35.6.32	a	Intermediate wooden pole structure, vertical, no deviation (NRS034, Figure C.1)	no	1		Rate Only
35.6.33	b	Intermediate wooden pole structure, vertical, small angle deviation (NRS034, Figure C.2)	no	1		Rate Only
35.6.34	c	Road crossing intermediate wooden pole structure, vertical, no deviation (NRS034, Figure C.3)	no	1		Rate Only
35.6.35	d	Suspension wooden pole structure, vertical, medium angle deviation (NRS034, Figure C.4)	no	1		Rate Only
35.6.36	e	Strain wooden pole structure, vertical 30 to 90 angle deviation (NRS034, Figure C.5)	no	1		Rate Only
35.6.37	f	Strain wooden pole structure, delta, up to 20 degree deviation (NRS034, Figure C.6)	no	1		Rate Only
35.6.38	g	H-pole strain wooden pole structure, horizontal, 60 to 90 degree deviation (NRS034, Figure C.7)	no	1		Rate Only
35.6.39	h	Long span H-pole strain wooden pole structure, delta, no deviation (NRS034, Figure C.8)	no	1		Rate Only
35.6.40	i	Long span H-pole strain wooden pole structure, delta, no deviation (NRS034, Figure C.9)	no	1		Rate Only
35.6.41	j	Long span triple-pole strain wooden pole structure, delta, no deviation (NRS034, Figure C.10)	no	1		Rate Only
35.6.42	k	Terminal wooden pole structure, vertical (NRS034, Figure C.11)	no	1		Rate Only
35.6.43	l	Terminal wooden pole structure, delta (NRS034, Figure C.12)	no	1		Rate Only
35.6.44	m	Tee-off wooden pole structure, vertical intermediate to vertical tee-off, no deviation (NRS034, Figure C.13)	no	1		Rate Only
35.6.45	n	Tee-off wooden pole structure, vertical intermediate to delta tee-off, no deviation (NRS034, Figure C.14)	no	1		Rate Only
35.6.46	o	Recloser or sectionalizer wooden pole structure, horizontal, no deviation (NRS034, Figure C.15)	no	1		Rate Only
35.6.47	p	In-line isolating strain wooden pole structure, delta, no deviation (NRS034, Figure C.16)	no	1		Rate Only
35.6.48	q	Pole-mounted CSP transformer, mass less than 760kg, terminal wooden pole structure, delta (NRS034, Figure C.17)	no	1		Rate Only
35.6.49	r	Pole-mounted transformer, mass less than 760kg, terminal wooden pole structure, vertical, no deviation (NRS034, Figure C.18)	no	1		Rate Only
35.6.50	s	Platform-mounted transformer, mass between 760kg and 2000kg terminal wooden pole structure, horizontal (NRS034, Figure C.19)	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 130						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 35 continued Electrical works 03 - Medium Voltage Reticulation Works (MVrt)						
-Schedule continued from page 129						
35.6.51	t	Platform-mounted transformer, mass between 760kg and 2000kg terminal wooden pole structure, vertical <i>(NRS034, Figure C.20)</i>	no	1		Rate Only
35.7 3.7 ROUTE SURVEY & MANAGEMENT						
35.7.1	a	Cross Section Excavation pits to determine existing services and ground type in the area;	no	1		Rate Only
35.7.2	b	Management of Traffic, blocking off and diverting traffic;	sum	1		Rate Only
35.7.3	c	Route survey, pegging of route and distance confirmation;	sum	1		Rate Only
35.7.4	d	Identification of services & arrangement of way leaves;	sum	1		Rate Only
35.8 3.8 TESTING & COMMISSIONING						
35.8.1	a	Megger / Insulation Test on MV cables.	sum	1		Rate Only
35.8.2	b	Pressure test on MV cables.	sum	1		Rate Only
35.8.3	c	Phasing test on MV cables.	sum	1		Rate Only
35.8.4	d	Joint test on MV Cable joints.	sum	1		Rate Only
35.8.5	e	Completion of test schedules and certificates.	sum	1		Rate Only
35.9 3.9 ASSOCIATED SEQUENCE OF WORKS						
35.9.1	3.9.1	Allowance for associated sequence of works;	sum	1		
35.9.2	a	Confirmation of manufacturer and range of equipment and material;	sum	1		Rate Only
35.9.3	c	Confirmation of route, length & quantities, route survey, pegging of route and distance confirmation. Excavation of cross sections to determine existing services and ground type;	sum	1		Rate Only
35.9.4	d	Excavation of underground MV cable routes as per Design Schedule and Drawings, complete with trenching, bedding;	sum	1		Rate Only
35.9.5	e	Construction, horizontal drilling, pipe jacking or concrete culvert installation of special crossing;	sum	1		Rate Only
35.9.6	f	Supply & installation of MV cable feeders as per Design Schedule and Drawings, complete with joints, termination, lugs, etc;	sum	1		Rate Only
35.9.7	g	Supply & installation of accompanying earth continuity BCEW cables complete with joints, termination, lugs, etc;	sum	1		Rate Only
35.9.8	h	Marking of MV cables by installing danger tape along the complete excavated routes and cable route markers at every joint position, road crossings, where the cable turns and on straight sections longer than 200m;	sum	1		Rate Only
35.9.9	i	Protection of MV cables by supplying and installing concrete protection slabs along the complete excavated routes where other services are crossed;	sum	1		Rate Only
35.9.10	j	Labelling of MV cables using source equipment being fed to or fed from, cable size and type;	sum	1		Rate Only
35.9.11	k	Complete testing and commissioning of all MV cable work and issuing of test and compliance certificate;	sum	1		Rate Only
35.9.12	l	As-Built Documentation;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 131						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 36						
Electrical works 04 - Low Voltage Distribution (LVdx)						
A OVERVIEW OF WORKS						
i		Design, Manufacture and Supply of Low Voltage (LV) Distribution Boards (DB) , Distribution Kiosks (DK) , Motor Control Centre (MCC) , Indoor & Outdoor IP Rated Enclosures, Plinth Mounted, Floor Standing, Flushed or Recessed Mounted (c/w Steel Works, Frames, Sub-Frames, Chassis, Covers, Lockable Doors, Busbars) , Factory Build, Wired & Fully / Partially Type Tested (IEC 60439) by Specialised Panel Builder; c/w SABS approved Surge Protection, Switchgear (IEC 60947) , Motor Starter / Drives, Metering, Wiring, Indication, Control & Auxiliary Circuits & Equipment, Fixing Accessories, Labelling and Signage, Installed in accordance with SANS10142 c/w Earthing, Testing and Commissioning and All Associated Work, Complete to Achieve Client / Project Objective and as per Project Specification;				
B CLIENTS OBJECTIVES						
i		Address all MCC / control buildings within plant;				
ii		-				
C EXTENT OF WORKS						
i		Design, manufacture & supply LV distribution equipment;				
ii		Install LV distribution equipment;				
iii		Connection of LV cables;				
iv		Associated configuration and earthing works;				
v		Testing & commissioning of works;				
D CONTRACTOR OFFERING:						
i		Specialized Manufacturer / Builder Offered :				
ii		LV Switchgear Offered :				
iii		SPD Offered :				
iv		Motor Drive Equipment Offered :				
v		Material Delivery Period :				
vi		Installation Period :				
36.1	4.1	MCC - Main & Reactor & DX Works				
	a	Motor Control Centre (MCC)	Type	Info		
	b	0.42kV * 400A * 15kA	Rating	Info		
	c	Factory Build & Wired * Inc / DX / DB / Control / Drives Compartment * Front Access * Bottom Cable Entry * Electric Orange * 2CR12 Corrosion Resistant Metal (2mm) * Indoor * Water / Dust / Vermin Proof * IP54 * Top Busbars * TNS Earthing System * 3B Form * Forced Air Ventilation * Floor Standing Installation	Spec.	Info		
	d	SWB, EBM, DBSA, Electron-SA, Similar and Approved.	Mfc.	Info		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 133						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 36 continued						
Electrical works 04 - Low Voltage Distribution (LVdx)						
-Schedule continued from page 132						
	e	Technical Drawings & Schedules Issued.	Ref	Info		
	f	BOQ 04-a	BOQ	Info		
	4.1.1	Supply & Installation of New Electrical Panel:				
36.1.1	a	Supply (New as per Specification);	sum	1		
36.1.2	b	Install (Transport, delivery, rigging & placing into position);	sum	1		
36.1.3	c	Decommissioning & Removal of Existing Board;	sum	1		
36.1.4	d	Allowance for design, testing, commissioning and handing-over in line with associated sequence of works;	sum	1		
36.1.5	i	Confirmation of specialised LV Board builder / supplier;	sum	1		Rate Only
36.1.6	ii	Confirmation of equipment ratings, range & manufacturer;	sum	1		Rate Only
36.1.7	iii	Detail design of LV Board by specialised builder;	sum	1		Rate Only
36.1.8	iv	Submission of Detail Design for review & approval;	sum	1		Rate Only
36.1.9	v	Ordering of material & manufacture of LV Board by specialised builder / supplier;	sum	1		Rate Only
36.1.10	vi	Perform inspection and factory acceptance test (FAT) with specialised LV Board builder / supplier;	sum	1		Rate Only
36.1.11	vii	Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
36.1.12	viii	Verification of equipment positions, cable routes & lengths on site;	sum	1		Rate Only
36.1.13	ix	Transport / Delivery of LV Board to site;	sum	1		Rate Only
36.1.14	x	Rigging of LV Board and placing in position on site;	sum	1		Rate Only
36.1.15	xi	Earthing of Installation & issuing of Test Certificates;	sum	1		Rate Only
36.1.16	xii	Connection of LV cables & preparation for commissioning;	sum	1		Rate Only
36.1.17	xiii	Labelling of equipment / circuits / warning signs and installation of operational information and SLD;	sum	1		Rate Only
36.1.18	xiv	Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions;	sum	1		Rate Only
36.1.19	xv	Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;	sum	1		Rate Only
36.1.20	xvi	Completion of test schedules and certificates for approval by the Engineer before handing-over;	sum	1		Rate Only
36.1.21	xvii	Technical data pack in A4 size binder - 3 hard copies and 1 soft copy (Including operating / maintenance manuals, drawings, technical information, guarantees & warranties);	sum	1		Rate Only
	4.1.2	Re-Commissioning of Existing Electrical Panel:				
36.1.22	a	Tracing & testing of existing Incomer and Feeders;	sum	1		Rate Only
36.1.23	b	Tracing & testing of existing SP&L Circuits;	sum	1		Rate Only
36.1.24	c	Tracing & testing of existing Motor Power Circuits;	sum	1		Rate Only
36.1.25	d	Tracing & testing of existing Motor Control Circuits;	sum	1		Rate Only
36.1.26	e	Tracing & testing of existing PLC and Telemetry Circuits;	sum	1		Rate Only
36.1.27	f	Drafting of a new set of drawings;	sum	1		Rate Only
36.1.28	g	Testing, commissioning and handing-over;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 134						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 36 continued						
Electrical works 04 - Low Voltage Distribution (LVdx)						
-schedule continued from page 133						
36.2	4.2	MCC - Main PS & DX Works				
	a	Motor Control Centre (MCC)	Type	Info		
	b	0.42kV * 80A * 10kA	Rating	Info		
	c	Factory Build & Wired * Incomer / DX / DB / Control / Drive Tiers	Spec.	Info		
		Compartment * Front Access * Bottom Cable Entry * Electric Orange *				
		2CR12 Corrosion Resistant Metal (2mm) * Indoor * Water / Dust / Vermin				
		Proof * IP54 * Top Busbars * TNS Earthing System * 3B Form * Forced Air				
		Ventilation * Floor Standing Installation				
	d	SWB, EBM, DBSA, Electron-SA, Similar and Approved.	Mfc.	Info		
	e	Technical Drawings & Schedules Issued.	Ref	Info		
	f	BOQ 04-b	BOQ	Info		
	4.2.1	Supply & Installation of New Electrical Panel:				
36.2.1	a	Supply (New as per Specification);	sum	1		
36.2.2	b	Install (Transport, delivery, rigging & placing into position);	sum	1		
36.2.3	c	Decommissioning & Removal of Existing Board;	sum	1		
36.2.4	d	Allowance for design, testing, commissioning and handing-over in line with associated sequence of works;	sum	1		
36.2.5	i	Confirmation of specialised LV Board builder / supplier;	sum	1		Rate Only
36.2.6	ii	Confirmation of equipment ratings, range & manufacturer;	sum	1		Rate Only
36.2.7	iii	Detail design of LV Board by specialised builder;	sum	1		Rate Only
36.2.8	iv	Submission of Detail Design for review & approval;	sum	1		Rate Only
36.2.9	v	Ordering of material & manufacture of LV Board by specialised builder / supplier;	sum	1		Rate Only
36.2.10	vi	Perform inspection and factory acceptance test (FAT) with specialised LV Board builder / supplier;	sum	1		Rate Only
36.2.11	vii	Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
36.2.12	viii	Verification of equipment positions, cable routes & lengths on site;	sum	1		Rate Only
36.2.13	ix	Transport / Delivery of LV Board to site;	sum	1		Rate Only
36.2.14	x	Rigging of LV Board and placing in position on site;	sum	1		Rate Only
36.2.15	xi	Earthing of Installation & issuing of Test Certificates;	sum	1		Rate Only
36.2.16	xii	Connection of LV cables & preparation for commissioning;	sum	1		Rate Only
36.2.17	xiii	Labelling of equipment / circuits / warning signs and installation of operational information and SLD;	sum	1		Rate Only
36.2.18	xiv	Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions;	sum	1		Rate Only
36.2.19	xv	Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;	sum	1		Rate Only
36.2.20	xvi	Completion of test schedules and certificates for approval by the Engineer before handing-over;	sum	1		Rate Only
36.2.21	xvii	Technical data pack in A4 size binder - 3 hard copies and 1 soft copy (Including operating / maintenance manuals, drawings, technical information, guarantees & warranties);	sum	1		Rate Only
	4.2.2	Re-Commissioning of Existing Electrical Panel:				
36.2.22	a	Tracing & testing of existing Incomer and Feeders;	sum	1		Rate Only
36.2.23	b	Tracing & testing of existing SP&L Circuits;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 135						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 36 continued						
Electrical works 04 - Low Voltage Distribution (LVdx)						
-Schedule continued from page 134						
36.2.24	c	Tracing & testing of existing Motor Power Circuits;	sum	1		Rate Only
36.2.25	d	Tracing & testing of existing Motor Control Circuits;	sum	1		Rate Only
36.2.26	e	Tracing & testing of existing PLC and Telemetry Circuits;	sum	1		Rate Only
36.2.27	f	Drafting of a new set of drawings;	sum	1		Rate Only
36.2.28	g	Testing, commissioning and handing-over;	sum	1		Rate Only
36.3	4.3	MCC - Biofilter PS & DX Works				
	a	Motor Control Centre (MCC)	Type	Info		
	b	0.42kV * 50A * 6kA	Rating	Info		
	c	Factory Build & Wired * Incomer / DX / DB / Control / Drive Tiers	Spec.	Info		
		Compartment * Front Access * Bottom Cable Entry * Electric Orange *				
		2CR12 Corrosion Resistant Metal (2mm) * Indoor * Water / Dust / Vermin				
		Proof * IP54 * Top Busbars * TNS Earthing System * 3B Form * Forced Air				
		Ventilation * Floor Standing Installation				
	d	SWB, EBM, DBSA, Electron-SA, Similar and Approved.	Mfc.	Info		
	e	Technical Drawings & Schedules Issued.	Ref	Info		
	f	BOQ 04-c	BOQ	Info		
	4.3.1	Supply & Installation of New Electrical Panel:				
36.3.1	a	Supply (New as per Specification);	sum	1		
36.3.2	b	Install (Transport, delivery, rigging & placing into position);	sum	1		
36.3.3	c	Decommissioning & Removal of Existing Board;	sum	1		
36.3.4	d	Allowance for design, testing, commissioning and handing-over in line with associated sequence of works;	sum	1		
36.3.5	i	Confirmation of specialised LV Board builder / supplier;	sum	1		Rate Only
36.3.6	ii	Confirmation of equipment ratings, range & manufacturer;	sum	1		Rate Only
36.3.7	iii	Detail design of LV Board by specialised builder;	sum	1		Rate Only
36.3.8	iv	Submission of Detail Design for review & approval;	sum	1		Rate Only
36.3.9	v	Ordering of material & manufacture of LV Board by specialised builder / supplier;	sum	1		Rate Only
36.3.10	vi	Perform inspection and factory acceptance test (FAT) with specialised LV Board builder / supplier;	sum	1		Rate Only
36.3.11	vii	Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
36.3.12	viii	Verification of equipment positions, cable routes & lengths on site;	sum	1		Rate Only
36.3.13	ix	Transport / Delivery of LV Board to site;	sum	1		Rate Only
36.3.14	x	Rigging of LV Board and placing in position on site;	sum	1		Rate Only
36.3.15	xi	Earthing of Installation & issuing of Test Certificates;	sum	1		Rate Only
36.3.16	xii	Connection of LV cables & preparation for commissioning;	sum	1		Rate Only
36.3.17	xiii	Labelling of equipment / circuits / warning signs and installation of operational information and SLD;	sum	1		Rate Only
36.3.18	xiv	Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions;	sum	1		Rate Only
36.3.19	xv	Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;	sum	1		Rate Only
36.3.20	xvi	Completion of test schedules and certificates for approval by the Engineer before handing-over;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 136						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 36 continued Electrical works 04 - Low Voltage Distribution (LVdx)						
-lschedule continued from page 135						
36.3.21	xvii	Technical data pack in A4 size binder - 3 hard copies and 1 soft copy <i>(Including operating / maintenance manuals, drawings, technical information, guarantees & warranties);</i>	sum	1		Rate Only
	4.3.2	Re-Commissioning of Existing Electrical Panel:				
36.3.22	a	Tracing & testing of existing Incomer and Feeders;	sum	1		Rate Only
36.3.23	b	Tracing & testing of existing SP&L Circuits;	sum	1		Rate Only
36.3.24	c	Tracing & testing of existing Motor Power Circuits;	sum	1		Rate Only
36.3.25	d	Tracing & testing of existing Motor Control Circuits;	sum	1		Rate Only
36.3.26	e	Tracing & testing of existing PLC and Telemetry Circuits;	sum	1		Rate Only
36.3.27	f	Drafting of a new set of drawings;	sum	1		Rate Only
36.3.28	g	Testing, commissioning and handing-over;	sum	1		Rate Only
36.4	4.4	MCC - Dredger & DX Works				
	a	Motor Control Centre (MCC)	Type	Info		
	b	0.42kV * 30A * 6kA	Rating	Info		
	c	Factory Build & Wired * Incomer / DX / DB / Control / Drive Tiers Compartment * Front Access * Bottom Cable Entry * Electric Orange * 2CR12 Corrosion Resistant Metal (2mm) * Outdoor * Water / Dust / Vermin Proof * IP66 * Top Busbars * TNS Earthing System * 2B Form * Forced Air Ventilation * On Drifting Barge Installation	Spec.	Info		
	d	SWB, EBM, DBSA, Electron-SA, Similar and Approved.	Mfc.	Info		
	e	Technical Drawings & Schedules Issued.	Ref	Info		
	f	BOQ 04-d	BOQ	Info		
	4.4.1	Supply & Installation of New Electrical Panel:				
36.4.1	a	Supply (New as per Specification);	sum	1		Rate Only
36.4.2	b	Install (Transport, delivery, rigging & placing into position);	sum	1		Rate Only
36.4.3	c	Decommissioning & Removal of Existing Board;	sum	1		Rate Only
36.4.4	d	Allowance for design, testing, commissioning and handing-over in line with associated sequence of works;	sum	1		Rate Only
36.4.5	i	Confirmation of specialised LV Board builder / supplier;	sum	1		Rate Only
36.4.6	ii	Confirmation of equipment ratings, range & manufacturer;	sum	1		Rate Only
36.4.7	iii	Detail design of LV Board by specialised builder;	sum	1		Rate Only
36.4.8	iv	Submission of Detail Design for review & approval;	sum	1		Rate Only
36.4.9	v	Ordering of material & manufacture of LV Board by specialised builder / supplier;	sum	1		Rate Only
36.4.10	vi	Perform inspection and factory acceptance test (FAT) with specialised LV Board builder / supplier;	sum	1		Rate Only
36.4.11	vii	Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
36.4.12	viii	Verification of equipment positions, cable routes & lengths on site;	sum	1		Rate Only
36.4.13	ix	Transport / Delivery of LV Board to site;	sum	1		Rate Only
36.4.14	x	Rigging of LV Board and placing in position on site;	sum	1		Rate Only
36.4.15	xi	Earthing of Installation & issuing of Test Certificates;	sum	1		Rate Only
36.4.16	xii	Connection of LV cables & preparation for commissioning;	sum	1		Rate Only
36.4.17	xiii	Labelling of equipment / circuits / warning signs and installation of operational information and SLD;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 137						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 36 continued Electrical works 04 - Low Voltage Distribution (LVdx)						
-lschedule continued from page 136						
36.4.18	xiv	Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions;	sum	1		Rate Only
36.4.19	xv	Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;	sum	1		Rate Only
36.4.20	xvi	Completion of test schedules and certificates for approval by the Engineer before handing-over;	sum	1		Rate Only
36.4.21	xvii	Technical data pack in A4 size binder - 3 hard copies and 1 soft copy (Including operating / maintenance manuals, drawings, technical information, guarantees & warranties);	sum	1		Rate Only
	4.4.2	Re-Commissioning of Existing Electrical Panel:				
36.4.22	a	Tracing & testing of existing Incomer and Feeders;	sum	1		
36.4.23	b	Tracing & testing of existing SP&L Circuits;	sum	1		Rate Only
36.4.24	c	Tracing & testing of existing Motor Power Circuits;	sum	1		
36.4.25	d	Tracing & testing of existing Motor Control Circuits;	sum	1		
36.4.26	e	Tracing & testing of existing PLC and Telemetry Circuits;	sum	1		Rate Only
36.4.27	f	Drafting of a new set of drawings;	sum	1		
36.4.28	g	Testing, commissioning and handing-over;	sum	1		
36.5	4.5	MCC - Recycle PS & DX Works				
	a	Motor Control Centre (MCC)	Type	Info		
	b	0.42kV * 80A * 6kA	Rating	Info		
	c	Factory Build & Wired * Incomer / DX / DB / Control / Drive Tiers	Spec.	Info		
		Compartment * Front Access * Bottom Cable Entry * Electric Orange * 2CR12 Corrosion Resistant Metal (2mm) * Indoor * Water / Dust / Vermin Proof * IP54 * Top Busbars * TNS Earthing System * 3B Form * Forced Air Ventilation * Floor Standing Installation				
	d	SWB, EBM, DBSA, Electron-SA, Similar and Approved.	Mfc.	Info		
	e	Technical Drawings & Schedules Issued.	Ref	Info		
	f	BOQ 04-e	BOQ	Info		
	4.5.1	Supply & Installation of New Electrical Panel:				
36.5.1	a	Supply (New as per Specification);	sum	1		
36.5.2	b	Install (Transport, delivery, rigging & placing into position);	sum	1		
36.5.3	c	Decommissioning & Removal of Existing Board;	sum	1		
36.5.4	d	Allowance for design, testing, commissioning and handing-over in line with associated sequence of works;	sum	1		
36.5.5	i	Confirmation of specialised LV Board builder / supplier;	sum	1		Rate Only
36.5.6	ii	Confirmation of equipment ratings, range & manufacturer;	sum	1		Rate Only
36.5.7	iii	Detail design of LV Board by specialised builder;	sum	1		Rate Only
36.5.8	iv	Submission of Detail Design for review & approval;	sum	1		Rate Only
36.5.9	v	Ordering of material & manufacture of LV Board by specialised builder / supplier;	sum	1		Rate Only
36.5.10	vi	Perform inspection and factory acceptance test (FAT) with specialised LV Board builder / supplier;	sum	1		Rate Only
36.5.11	vii	Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
36.5.12	viii	Verification of equipment positions, cable routes & lengths on site;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 138						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 36 continued Electrical works 04 - Low Voltage Distribution (LVdx)						
-Schedule continued from page 137						
36.5.13	ix	Transport / Delivery of LV Board to site;	sum	1		Rate Only
36.5.14	x	Rigging of LV Board and placing in position on site;	sum	1		Rate Only
36.5.15	xi	Earthing of Installation & issuing of Test Certificates;	sum	1		Rate Only
36.5.16	xii	Connection of LV cables & preparation for commissioning;	sum	1		Rate Only
36.5.17	xiii	Labelling of equipment / circuits / warning signs and installation of operational information and SLD;	sum	1		Rate Only
36.5.18	xiv	Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions;	sum	1		Rate Only
36.5.19	xv	Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;	sum	1		Rate Only
36.5.20	xvi	Completion of test schedules and certificates for approval by the Engineer before handing-over;	sum	1		Rate Only
36.5.21	xvii	Technical data pack in A4 size binder - 3 hard copies and 1 soft copy (Including operating / maintenance manuals, drawings, technical information, guarantees & warranties);	sum	1		Rate Only
	4.5.2	Re-Commissioning of Existing Electrical Panel:				
36.5.22	a	Tracing & testing of existing Incomer and Feeders;	sum	1		Rate Only
36.5.23	b	Tracing & testing of existing SP&L Circuits;	sum	1		Rate Only
36.5.24	c	Tracing & testing of existing Motor Power Circuits;	sum	1		Rate Only
36.5.25	d	Tracing & testing of existing Motor Control Circuits;	sum	1		Rate Only
36.5.26	e	Tracing & testing of existing PLC and Telemetry Circuits;	sum	1		Rate Only
36.5.27	f	Drafting of a new set of drawings;	sum	1		Rate Only
36.5.28	g	Testing, commissioning and handing-over;	sum	1		Rate Only
36.6	4.6	DB - Office				
	a	Distribution Board (DB)	Type	Info		
	b	0.42kV * 30A * 6kA	Rating	Info		
	c	Factory Build & Wired * Incomer / Feeders Compartment * Front Access * Top / Bottom Cable Entry * White * Galvanized Steel (2mm) * Indoor * n/a * IP22 * n/a Busbars * TNS Earthing System * 2B Form * n/a Ventilation * Surface Mounted Installation	Spec.	Info		
	d	SWB, EBM, DBSA, Electron-SA, Similar and Approved.	Mnfc.	Info		
	e	Technical Drawings & Schedules Issued.	Ref	Info		
	f	BOQ 04-f	BOQ	Info		
	4.6.1	Supply & Installation of New Electrical Panel:				
36.6.1	a	Supply (New as per Specification);	sum	1		
36.6.2	b	Install (Transport, delivery, rigging & placing into position);	sum	1		
36.6.3	c	Decommissioning & Removal of Existing Board;	sum	1		
36.6.4	d	Allowance for design, testing, commissioning and handing-over in line with associated sequence of works;	sum	1		
36.6.5	i	Confirmation of specialised LV Board builder / supplier;	sum	1		Rate Only
36.6.6	ii	Confirmation of equipment ratings, range & manufacturer;	sum	1		Rate Only
36.6.7	iii	Detail design of LV Board by specialised builder;	sum	1		Rate Only
36.6.8	iv	Submission of Detail Design for review & approval;	sum	1		Rate Only
36.6.9	v	Ordering of material & manufacture of LV Board by specialised builder / supplier;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 139						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 36 continued Electrical works 04 - Low Voltage Distribution (LVdx)						
-lschedule continued from page 138						
36.6.10	vi	Perform inspection and factory acceptance test <i>(FAT)</i> with specialised LV Board builder / supplier;	sum	1		Rate Only
36.6.11	vii	Issue of factory acceptance test <i>(FAT)</i> certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
36.6.12	viii	Verification of equipment positions, cable routes & lengths on site;	sum	1		Rate Only
36.6.13	ix	Transport / Delivery of LV Board to site;	sum	1		Rate Only
36.6.14	x	Rigging of LV Board and placing in position on site;	sum	1		Rate Only
36.6.15	xi	Earthing of Installation & issuing of Test Certificates;	sum	1		Rate Only
36.6.16	xii	Connection of LV cables & preparation for commissioning;	sum	1		Rate Only
36.6.17	xiii	Labelling of equipment / circuits / warning signs and installation of operational information and SLD;	sum	1		Rate Only
36.6.18	xiv	Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions;	sum	1		Rate Only
36.6.19	xv	Complete testing and commissioning of all work and issuing of site acceptance test <i>(SAT)</i> certificate;	sum	1		Rate Only
36.6.20	xvi	Completion of test schedules and certificates for approval by the Engineer before handing-over;	sum	1		Rate Only
36.6.21	xvii	Technical data pack in A4 size binder - 3 hard copies and 1 soft copy <i>(Including operating / maintenance manuals, drawings, technical information, guarantees & warranties);</i>	sum	1		Rate Only
	4.6.2	Re-Commissioning of Existing Electrical Panel:				
36.6.22	a	Tracing & testing of existing Incomer and Feeders;	sum	1		Rate Only
36.6.23	b	Tracing & testing of existing SP&L Circuits;	sum	1		Rate Only
36.6.24	c	Tracing & testing of existing Motor Power Circuits;	sum	1		Rate Only
36.6.25	d	Tracing & testing of existing Motor Control Circuits;	sum	1		Rate Only
36.6.26	e	Tracing & testing of existing PLC and Telemetry Circuits;	sum	1		Rate Only
36.6.27	f	Drafting of a new set of drawings;	sum	1		Rate Only
36.6.28	g	Testing, commissioning and handing-over;	sum	1		Rate Only
36.7	4.7	CIVIL WORK				
	a	Included in Civil BOQ;				
36.8	4.8	ASSOCIATED SEQUENCE OF WORKS				
36.8.1	4.8.1	Allowance for design, testing, commissioning and handing-over in line with associated sequence of works;	sum	1		Rate Only
36.8.2	i	Confirmation of specialised LV Board builder / supplier;	sum	1		Rate Only
36.8.3	ii	Confirmation of equipment ratings, range & manufacturer;	sum	1		Rate Only
36.8.4	iii	Detail design of LV Board by specialised builder;	sum	1		Rate Only
36.8.5	iv	Submission of Detail Design for review & approval;	sum	1		Rate Only
36.8.6	v	Ordering of material & manufacture of LV Board by specialised builder / supplier;	sum	1		Rate Only
36.8.7	vi	Perform inspection and factory acceptance test <i>(FAT)</i> with specialised LV Board builder / supplier;	sum	1		Rate Only
36.8.8	vii	Issue of factory acceptance test <i>(FAT)</i> certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 140						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 140

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
A OVERVIEW OF WORKS						
	i	Supply Low Voltage Bells & Mains, Multicore, Single Core Power Cables (SANS 1507-3) , Airdac (SANS 1507-6) , Arial Bundle Conductor (1418) , Aluminium Conductor and Copper earth Wire (SANS 1411-1) and Install in ground, wire channels, sleeves, on racking, on pole structures and in configurations as indicated on site (SANS 10142-1 & SANS 10198 & SANS 61386) , c/w with joints, terminations, end capps, glands, shrouds, termination lugs and fixing accessories and all associated works, Complete to Achieve Project Objective and as per Project Specification;				
B CLIENTS OBJECTIVES						
	i	Complete primary & secondary supply cable installation;				
	ii	Address all MCC / control buildings within plant;				
C EXTENT OF WORKS						
	i	Confirmation of route and positions;				
	ii	LV Cable supply installation for distribution boards;				
	iii	LV Cable supply installation for industrial equipment;				
	iv	Associated, trenching, cable management & termination works;				
	v	Testing & commissioning of works;				
D CONTRACTOR OFFERING:						
	i	LV Cable Offered :				
	ii	LV Joint & Termination Offered :				
	iii	Cable Management Offered :				
	iv	General Equipment Offered :				
	v	Material Delivery Period :				
	vi	Installation Period :				
37.1 5.1 BELLS & MAINS CABLES - LOW VOLTAGE						
		Type : 600/1000V * PVC/PVC/SWA/PVC * 3/4C, CU/AL * SANS 1507-3: Plain Copper Conductor to SANS 1411-1, Class 2. Two, Three or Four Cores Insulated with PVC, PVC Bedded, Steel Wire Armoured and Sheathed with General Purpose Fire Retardant PVC;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Purpose : Primary & Secondary power distribution;				
		Note : Rate to allow for cable off-cuts;				
		Type : 600/1000V * PVC * 3/4C, Cu				
	5.1.1	95mm², 4C, PVC, Cu, LV Cable				
37.1.1	a	Supply	m	46		
37.1.2	b	Install	m	46		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 142						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 continued						
Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
-Schedule continued from page 141						
37.1.3	c	Cable Terminations (Supply & Install)	no	4		
37.1.4	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.2	70mm², 4C, PVC, Cu, LV Cable				
37.1.5	a	Supply	m	1		Rate Only
37.1.6	b	Install	m	1		Rate Only
37.1.7	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.8	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.3	50mm², 4C, PVC, Cu, LV Cable				
37.1.9	a	Supply	m	208		
37.1.10	b	Install	m	208		
37.1.11	c	Cable Terminations (Supply & Install)	no	6		
37.1.12	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.4	35mm², 4C, PVC, Cu, LV Cable				
37.1.13	a	Supply	m	190		
37.1.14	b	Install	m	190		
37.1.15	c	Cable Terminations (Supply & Install)	no	4		
37.1.16	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.5	25mm², 4C, PVC, Cu, LV Cable				
37.1.17	a	Supply	m	175		
37.1.18	b	Install	m	175		
37.1.19	c	Cable Terminations (Supply & Install)	no	4		
37.1.20	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.6	16mm², 4C, PVC, Cu, LV Cable				
37.1.21	a	Supply	m	144		
37.1.22	b	Install	m	144		
37.1.23	c	Cable Terminations (Supply & Install)	no	2		
37.1.24	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.7	10mm², 4C, PVC, Cu, LV Cable				
37.1.25	a	Supply	m	303		
37.1.26	b	Install	m	303		
37.1.27	c	Cable Terminations (Supply & Install)	no	8		
37.1.28	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.8	6mm², 4C, PVC, Cu, LV Cable				
37.1.29	a	Supply	m	1		Rate Only
37.1.30	b	Install	m	1		Rate Only
37.1.31	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.32	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.9	4mm², 4C, PVC, Cu, LV Cable				
37.1.33	a	Supply	m	826		
37.1.34	b	Install	m	826		
37.1.35	c	Cable Terminations (Supply & Install)	no	40		
37.1.36	d	Cable Joint (Supply & Install)	no	1		Rate Only
		Type : 600/1000V * PVC * 3/4C, AL				
	5.1.10	150mm², 4C, PVC, Al, LV Cable				
37.1.37	a	Supply	m	1		Rate Only
37.1.38	b	Install	m	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 143						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 continued						
Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
-Schedule continued from page 142						
37.1.39	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.40	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.11	120mm², 4C, PVC, AI, LV Cable				
37.1.41	a	Supply	m	1		Rate Only
37.1.42	b	Install	m	1		Rate Only
37.1.43	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.44	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.12	95mm², 4C, PVC, AI, LV Cable				
37.1.45	a	Supply	m	1		Rate Only
37.1.46	b	Install	m	1		Rate Only
37.1.47	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.48	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.13	75mm², 4C, PVC, AI, LV Cable				
37.1.49	a	Supply	m	1		Rate Only
37.1.50	b	Install	m	1		Rate Only
37.1.51	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.52	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.14	50mm², 4C, PVC, AI, LV Cable				
37.1.53	a	Supply	m	1		Rate Only
37.1.54	b	Install	m	1		Rate Only
37.1.55	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.56	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.15	35mm², 4C, PVC, AI, LV Cable				
37.1.57	a	Supply	m	1		Rate Only
37.1.58	b	Install	m	1		Rate Only
37.1.59	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.60	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.16	25mm², 4C, PVC, AI, LV Cable				
37.1.61	a	Supply	m	1		Rate Only
37.1.62	b	Install	m	1		Rate Only
37.1.63	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.64	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.17	16mm², 4C, PVC, AI, LV Cable				
37.1.65	a	Supply	m	1		Rate Only
37.1.66	b	Install	m	1		Rate Only
37.1.67	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.68	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.1.18	10mm², 4C, PVC, AI, LV Cable				
37.1.69	a	Supply	m	1		Rate Only
37.1.70	b	Install	m	1		Rate Only
37.1.71	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.1.72	d	Cable Joint (Supply & Install)	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 144						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 continued						
Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
-Schedule continued from page 143						
37.2	5.2	SINGLE CORE CABLE - LOW VOLTAGE				
		Type : 600/1000V, PVC/PVC/AWA/PVC, 1C, Cu, SANS 1507-3: Plain Copper Conductor to SANS 1411-1, Class 2. Single Core Insulated with PVC, PVC Bedded, AWA Armoured and PVC Sheathed;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Purpose : Primary & Secondary power distribution;				
		Note : Rate to allow for cable off-cuts;				
	5.2.1	-				
37.3	5.3	MULTICORE CABLES - LOW VOLTAGE				
		Type : 600/1000V, PVC/PVC/AWA/PVC, MultiC, Cu, SANS 1507-3: Multi Core, PVC Insulated, PVC Bedded, SWA Armoured and PVC Sheathed;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Purpose : Motor Control;				
		Note : Rate to allow for cable off-cuts;				
	5.3.1	-				
37.4	5.4	AERIAL BUNDLE CONDUCTOR - LOW VOLTAGE				
		Type : 600/1000V * Carbon-Loaded XLPE UV Protected * 4C, AL * SANS 1418-1&2 ether self or core supported system;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Purpose : Primary & Secondary power distribution;				
		Note : Rate to allow for cable off-cuts;				
	5.4.1	95mm², 4C, PVC, Al, LV Cable				
37.4.1	a	Supply	m	1		Rate Only
37.4.2	b	Install	m	1		Rate Only
37.4.3	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.4.4	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.4.2	70mm², 4C, PVC, Al, LV Cable				
37.4.5	a	Supply	m	1		Rate Only
37.4.6	b	Install	m	1		Rate Only
37.4.7	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.4.8	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.4.3	50mm², 4C, PVC, Al, LV Cable				
37.4.9	a	Supply	m	1		Rate Only
37.4.10	b	Install	m	1		Rate Only
37.4.11	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.4.12	d	Cable Joint (Supply & Install)	no	1		Rate Only
	5.4.4	35mm², 4C, PVC, Al, LV Cable				
37.4.13	a	Supply	m	1		Rate Only
37.4.14	b	Install	m	1		Rate Only
37.4.15	c	Cable Terminations (Supply & Install)	no	1		Rate Only
37.4.16	d	Cable Joint (Supply & Install)	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 145						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 continued						
Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
-Schedule continued from page 144						
37.5	5.5	COPPER EARTH WIRING CABLE				
		Type : BCEW, SANS 1411: High Conductivity Plain Soft Stranded Bear Copper Conductor (BCEW) / Insulated Copper Conductors= (ICEW) ;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Note : Rate to allow for cable off-cuts;				
		Bear Copper Earth Wire (BCEW)				
	5.5.1	95mm², Bear Copper Earth Wire (BCEW)				
37.5.1	a	Supply	m	1		
37.5.2	b	Install	m	1		
37.5.3	c	Cable Terminations (Supply & Install)	ea	1		
	5.5.2	70mm², Bear Copper Earth Wire (BCEW)				
37.5.4	a	Supply	m	46		
37.5.5	b	Install	m	46		
37.5.6	c	Cable Terminations (Supply & Install)	ea	4		
	5.5.3	50mm², Bear Copper Earth Wire (BCEW)				
37.5.7	a	Supply	m	1		
37.5.8	b	Install	m	1		
37.5.9	c	Cable Terminations (Supply & Install)	ea	1		
	5.5.4	35mm², Bear Copper Earth Wire (BCEW)				
37.5.10	a	Supply	m	1		
37.5.11	b	Install	m	1		
37.5.12	c	Cable Terminations (Supply & Install)	ea	1		
		Insulated Copper Earth Wire (ICEW)				
	5.5.5	50mm², Insulated Copper Earth Wire (ICEW)				
37.5.13	a	Supply	m	1		
37.5.14	b	Install	m	1		
37.5.15	c	Cable Terminations (Supply & Install)	ea	1		
	5.5.6	35mm², Insulated Copper Earth Wire (ICEW)				
37.5.16	a	Supply	m	1		
37.5.17	b	Install	m	1		
37.5.18	c	Cable Terminations (Supply & Install)	ea	1		
	5.5.7	25mm², Insulated Copper Earth Wire (ICEW)				
37.5.19	a	Supply	m	190		
37.5.20	b	Install	m	190		
37.5.21	c	Cable Terminations (Supply & Install)	ea	4		
	5.5.8	16mm², Insulated Copper Earth Wire (ICEW)				
37.5.22	a	Supply	m	175		
37.5.23	b	Install	m	175		
37.5.24	c	Cable Terminations (Supply & Install)	ea	4		
	5.5.9	10mm², Insulated Copper Earth Wire (ICEW)				
37.5.25	a	Supply	m	144		
37.5.26	b	Install	m	144		
37.5.27	c	Cable Terminations (Supply & Install)	ea	2		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 146						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 continued						
Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
-Schedule continued from page 145						
	5.5.8	6mm ² , Insulated Copper Earth Wire (ICEW)				
37.5.28	a	Supply	m	249		
37.5.29	b	Install	m	249		
37.5.30	c	Cable Terminations (Supply & Install)	ea	2		
37.6	5.6	EXCAVATION, PROTECTION & MARKING				
		Note : Excavations for cable and sleeve trenches including bush clearing, temporary support of sides, keeping excavations dry, backfilling and compaction;				
		Note : Bedding under & fill around cable & sleeves comprising of 300mm sifted sand or approved material;				
		Note : Contractor to make own assessment of % pickable/soft rock/hard rock (Rate per running meter);				
		Note : Rate to include complete work for the specified length, equipment hire, material and labour;				
		Note : Rate to include complete breakage & repair work to original condition for the length;				
	5.6.1	Excavations (for cable and sleeve trenches) :				
37.6.1	a	400mm wide (w) & 600mm deep (d)	m	804		
37.6.2	b	800mm wide (w) & 600mm deep (d)	m	1		Rate Only
37.6.3	c	1200mm wide (w) & 600mm deep (d)	m	1		Rate Only
	5.6.2	Road Crossing (for cable and sleeve) :				
37.6.4	a	400mm wide (w) & 600mm deep (d)	m	1		Rate Only
37.6.5	b	800mm wide (w) & 600mm deep (d)	m	1		Rate Only
37.6.6	c	1200mm wide (w) & 600mm deep (d)	m	1		Rate Only
	5.6.3	Rail Crossing (for cable and sleeve);				
37.6.7	a	400mm wide (w) & 600mm deep (d)	m	1		Rate Only
37.6.8	b	800mm wide (w) & 600mm deep (d)	m	1		Rate Only
37.6.9	c	1200mm wide (w) & 600mm deep (d)	m	1		Rate Only
	5.6.4	Concrete / Paved Floor Surface: (Break & Repair)				
37.6.10	a	400mm wide (w)	m	1		Rate Only
37.6.11	b	800mm wide (w)	m	1		Rate Only
37.6.12	c	1200mm wide (w)	m	1		Rate Only
	5.6.5	Cable & Route Markers :				
		Note : Rate include complete installation, material & installation;				
37.6.13	a	Concrete Cable Route Markers (change in direction) ;	no	1		Rate Only
37.6.14	b	Concrete Cable Joint Markers (at each joint) ;	no	1		Rate Only
37.6.15	c	Cable Warning PVC Chevron Tape (Laid in cable trenches at a minimum depth 300mm above buried electrical cables);	m	1		Rate Only
37.6.16	d	Cable Marking;	no	1		Rate Only
	5.6.6	Cable Protection :				
37.6.17	a	Installed in ground at 300mm above cable 760mm x 200mm x 50mm	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 147						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 continued						
Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
-Schedule continued from page 146						
37.7	5.7	SLEEVE & ACCESSORIES				
	5.7.1	HDPE Corrugated Flexible Cable Conduit :				
		Type : Manufactured to SANS 61386 and Installed in ground or placed in position for casting into concrete / screed / brickwork complete with slow bends, couplings, draw wire and sealing.				
	5.7.1.1	160mm Ø, HDPE Corrugated Flexible Conduit (6m Lengths)				
37.7.1	a	Supply	m	1		Rate Only
37.7.2	b	Install	m	1		Rate Only
37.7.3	c	Couplings (Supply & Install)	no	1		Rate Only
37.7.4	d	End Plug (Supply & Install)	no	1		Rate Only
	5.7.1.2	110mm Ø, HDPE Corrugated Flexible Conduit (6m Lengths)				
37.7.5	a	Supply	m	1		Rate Only
37.7.6	b	Install	m	1		Rate Only
37.7.7	c	Couplings (Supply & Install)	no	1		Rate Only
37.7.8	d	End Plug (Supply & Install)	no	1		Rate Only
	5.7.2	PVC Tubular Sleeve Pipe :				
		Type : Manufactured to SANS 966 and Installed in ground or placed in position for casting into concrete / screed / brickwork complete with slow bends, couplings, draw wire and sealing of PVC sleeves with sealing compound.				
	5.7.2.1	110mm Ø, PVC, Tubular Pipe (6m Lengths)				
37.7.9	a	Supply	m	1		Rate Only
37.7.10	b	Install	m	1		Rate Only
37.7.11	c	Couplings (Supply & Install)	no	1		Rate Only
37.7.12	d	End Plug (Supply & Install)	no	1		Rate Only
	5.7.2.2	95mm Ø, PVC, Tubular Pipe (6m Lengths)				
37.7.13	a	Supply	m	1		Rate Only
37.7.14	b	Install	m	1		Rate Only
37.7.15	c	Couplings (Supply & Install)	no	1		Rate Only
37.7.16	d	End Plug (Supply & Install)	no	1		Rate Only
	5.7.2.3	70mm Ø, PVC, Tubular Pipe (6m Lengths)				
37.7.17	a	Supply	m	1		Rate Only
37.7.18	b	Install	m	1		Rate Only
37.7.19	c	Couplings (Supply & Install)	no	1		Rate Only
37.7.20	d	End Plug (Supply & Install)	no	1		Rate Only
	5.7.2.4	Sealing Compound				
37.7.21	a	Supply	no	1		Rate Only
37.7.22	b	Install	no	1		Rate Only
	5.7.2.5	1,6mm Ø (16swg) Non-corrodible galvanised draw wire:				
37.7.23	a	Supply	m	1		Rate Only
37.7.24	b	Install	m	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 148						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 continued						
Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
-Schedule continued from page 147						
37.9	5.8	CABLE MANAGEMENT & ACCESSORIES				
		Type : Pre-Galvanized Cable Racks and Trays, surface and/or suspended mounted supported every 1.5m (min) ; c/w all covers, splices, end caps, channel supports, hangers, mounting and fixing accessories;				
		Manufacturer : O-Line RKS, PT 12/19, PT 38/76, GS50/75 Range; Similar and Approved;				
		Note : Rate to allow for Supply & Install;				
	5.8.1	Light Duty Cable Trays (PT12/19 range) :				
	5.8.1.1	300mm Wide (w) Trays:				
37.9.1	a	Straight	m	1		Rate Only
37.9.2	b	Internal Bend	no	1		Rate Only
37.9.3	c	External Bend	no	1		Rate Only
37.9.4	d	Horizontal Bend	no	1		Rate Only
37.9.5	e	Tee	no	1		Rate Only
37.9.6	f	Covers	m	1		Rate Only
37.9.7	g	Mounting Support Accessories	sum	1		Rate Only
37.9.8	h	Hanging Support Accessories	sum	1		Rate Only
	5.8.2	M & Heavy Duty Cable Trays (PT38/76 range) :				
	5.8.2.1	650mm Wide (w) Trays:				
37.9.9	a	Straight	m	1		Rate Only
37.9.10	b	Internal Bend	no	1		Rate Only
37.9.11	c	External Bend	no	1		Rate Only
37.9.12	d	Horizontal Bend	no	1		Rate Only
37.9.13	e	Tee	no	1		Rate Only
37.9.14	f	Covers	m	1		Rate Only
37.9.15	g	Mounting Support Accessories	sum	1		Rate Only
37.9.16	h	Hanging Support Accessories	sum	1		Rate Only
	5.8.2.1	1000mm Wide (w) Trays:				
37.9.17	a	Straight	m	1		Rate Only
37.9.18	b	Internal Bend	no	1		Rate Only
37.9.19	c	External Bend	no	1		Rate Only
37.9.20	d	Horizontal Bend	no	1		Rate Only
37.9.21	e	Tee	no	1		Rate Only
37.9.22	f	Covers	m	1		Rate Only
37.9.23	g	Mounting Support Accessories	sum	1		Rate Only
37.9.24	h	Hanging Support Accessories	sum	1		Rate Only
	5.8.3	Wire Mesh Cable Trays (GS50/75 range) :				
	5.8.3.1	150mm Wide (w) Trays:				
37.9.25	a	Straight	m	1		Rate Only
37.9.26	b	Mounting Support Accessories	sum	1		Rate Only
	5.8.3.2	300mm Wide (w) Trays:				
37.9.27	a	Straight	m	1		Rate Only
37.9.28	b	Mounting Support Accessories	sum	1		Rate Only
	5.8.3.3	650mm Wide (w) Trays:				
37.9.29	a	Straight	m	1		Rate Only
37.9.30	b	Mounting Support Accessories	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 149						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 37 continued						
Electrical works 05 - Low Voltage Reticulation Work (LVrt)						
-\sheduled continued from page 142						
37.9.31	k	Insulation Piercing Connectors (257A, TPE/Tinned Copper and Carbon Steel Connectors, for tapping into AVC);	no	1		Rate Only
37.9.32	l	PG Clamps (Al/Al);	no	1		Rate Only
37.9.33	l	PG Clamps (Cu/Al);	no	1		Rate Only
37.10	5.10	ROUTE SURVEY & MANAGEMENT				
37.10.1	a	Cross Section Excavation pits to determine existing services and ground type in the area;	no	1		Rate Only
37.10.2	b	Management of Traffic, blocking off and diverting traffic;	sum	n/a		Rate Only
37.10.3	c	Route survey, pegging of route and distance confirmation;	sum	n/a		Rate Only
37.10.4	d	Identification of services & arrangement of way leaves;	sum	n/a		Rate Only
37.11	5.11	TESTING & COMMISSIONING				
37.11.1	a	Megger / Insulation Test on LV cables.	sum	1		
37.11.2	b	Pressure test on LV cables.	sum	1		
37.11.3	c	Phasing test on LV cables.	sum	1		
37.11.4	d	Joint test on LV Cable joints.	sum	1		
37.11.5	e	Completion of test schedules and certificates.	sum	1		
37.12	5.12	ASSOCIATED SEQUENCE OF WORKS				
	5.12.1	Allowance for associated sequence of works;	sum	1		
37.12.1	a	Confirmation of manufacturer and range of equipment and material;	sum	1		Rate Only
37.12.2	c	Confirmation of route, length & quantities, route survey, pegging of route and distance confirmation. Excavation of cross sections to determine existing services and ground type;	sum	1		Rate Only
37.12.3	d	Excavation of underground LV cable routes as per Design Schedule and Drawings, complete with trenching, bedding;	sum	1		Rate Only
37.12.4	e	Construction, horizontal drilling, pipe jacking or concrete culvert installation of special crossing;	sum	1		Rate Only
37.12.5	f	Supply & installation of LV cable feeders as per Design Schedule and Drawings, complete with joints, termination, lugs, etc;	sum	1		Rate Only
37.12.6	g	Supply & installation of accompanying earth continuity BCEW cables complete with joints, termination, lugs, etc;	sum	1		Rate Only
37.12.7	h	Marking of LV cables by installing danger tape along the complete excavated routes and cable route markers at every joint position, road crossings, where the cable turns and on straight sections longer than 200m;	sum	1		Rate Only
37.12.8	i	Protection of LV cables by supplying and installing concrete protection slabs along the complete excavated routes where other services are crossed;	sum	1		Rate Only
37.12.9	j	Labelling of LV cables using source equipment being fed to or fed from, cable size and type;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 150						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 38 Electrical works 06 - Small Power & Lighting Work (SP&L)						
A OVERVIEW OF WORKS						
	i	Supply & Installation of Small Power & Lighting (SANS 10142-1) , c/w wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;				
B CLIENTS OBJECTIVES						
	i	Complete small power & lighting installation;				
	ii	Address all MCC / control buildings within plant;				
c EXTENT OF WORKS						
	i	Complete and/or verify small power & lighting design;				
	ii	Installation of Small Power Equipment;				
	iii	Installation of Lighting Equipment;				
	iv	Associated, wiring, cable management & termination works;				
	v	Testing & commissioning of works;				
D CONTRACTOR OFFERING:						
	i	Small Power Equipment Offered :				
	ii	Lighting Equipment Offered :				
	iii	Wire Management Offered :				
	iv	General Equipment Offered :				
	v	Material Delivery Period :				
	vi	Installation Period :				
38.1 6.1 SWITCHED SOCKET OUTLETS						
		Type : Switched Socket Outlets (SSO) : 16A, 250V, 3-Pin; Indoor (IP20) or Outdoor (IP55) ; Normal (White) , Emergency (Red c/w flat earth pen) and/ or Dedicated (Blue c/w flat earth pen) ; Supply & Install Flush/Wall, Surface and/or Power Skirting Mounted, c/w cover plates and fixing accessories;				
		Manufacturer : Clipsal, CBI, Crabtree; Similar and Approved;				
	6.1.1	Single SSO * Normal (White) * Indoor * Wall Mounted;				
38.1.1	a	Supply	no	7		
38.1.2	b	Install	no	7		
	6.1.2	Double SSO * Normal (White) * Indoor * Wall Mounted;				
38.1.3	a	Supply	no	5		
38.1.4	b	Install	no	5		
	6.1.3	Single SSO * Outdoor * Surface Mounted;				
38.1.5	a	Supply	no	9		
38.1.6	b	Install	no	9		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 152						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 38 continued Electrical works 06 - Small Power & Lighting Work (SP&L)						
-Schedule continued from page 151						
	6.1.4	Double SSO * Outdoor * Surface Mounted;				
38.1.7	a	Supply	no	5		
38.1.8	b	Install	no	5		
38.2	6.2	ISOLATORS				
		Type : Supply & Installation of Isolator Outlets (S/O) : 20/30/60A, 250V, flush, surface and/or power skirting mounted, Indoor (IP20) or Outdoor (IP65) , c/w cover plates, fixing accessories and cord grip.				
		Manufacturer : Clipsal, CBI, Crabtree; Similar and Approved;				
	6.2.1	30A * 2 Pole * Indoor * Flush Mounted;				
38.2.1	a	Supply	no	1		
38.2.2	b	Install	no	1		
	6.2.2	60A * 2 Pole * Indoor * Flush Mounted;				
38.2.3	a	Supply	no	1		Rate Only
38.2.4	b	Install	no	1		Rate Only
	6.2.3	30A * 2 Pole * Outdoor * Surface Mounted;				
38.2.5	a	Supply	no	5		
38.2.6	b	Install	no	5		
	6.2.4	60A * 2 Pole * Outdoor * Surface Mounted;				
38.2.7	a	Supply	no	1		Rate Only
38.2.8	b	Install	no	1		Rate Only
	6.2.5	30A * 3 Pole * Outdoor * Surface Mounted;				
38.2.9	a	Supply	no	1		Rate Only
38.2.10	b	Install	no	1		Rate Only
38.3	6.3	COMMUNICATION OUTLETS				
	6.3.1	-				
38.4	6.4	POWER SKIRTING & ACCESSORIES				
		Note : Power skirting of the O-Line Multiskirt range, or equivalent and approved, c/w all covers, splices, elbows, tees, end caps, mounting fixtures and accessories:				
	6.4.1	MS1 - One (1) Tier Powerskirt :				
38.4.1	a	Supply	m	35		
38.4.2	b	Install	m	35		
	6.4.2	MS1 - Two (2) Tier Powerskirt :				
38.4.3	a	Supply	m	1		Rate Only
38.4.4	b	Install	m	1		Rate Only
	6.4.3	Switching Accessories :				
		Note : Power Skirting Mounted, c/w cover plates and fixing accessories;				
38.4.5	a	Blank Cover	ea	1		Rate Only
38.4.6	b	20A * Double Pole * Isolator	ea	1		Rate Only
38.4.7	c	30A * Double Pole * Isolator	ea	1		Rate Only
38.4.8	d	60A * Tripple Pole * Isolator	ea	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 153						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 38 continued						
Electrical works 06 - Small Power & Lighting Work (SP&L)						
-Schedule continued from page 152						
38.4.9	e	16A * SSO * Normal (White)	no	1		Rate Only
38.4.10	f	16A * SSO * Emergency (Red)	no	1		Rate Only
38.4.11	g	16A * SSO * Dedicated (Blue)	no	1		Rate Only
38.4.12	h	RJ11 / RJ45 * Single * Communication Outlet	no	1		Rate Only
38.4.13	i	RJ11 / RJ45 * Double * Communication Outlet	no	1		Rate Only
38.5	6.5	POWER POLE & ACCESSORIES				
		Note : Power pole of the O-Line Power Pole range, or equivalent and approved, c/w all covers, splices, elbows, tees, end caps, mounting fixtures and accessories:				
	6.5.1	Power Poles				
38.5.1	a	Supply	m	1		Rate Only
38.5.2	b	Install	m	1		Rate Only
	6.5.2	Switching Accessories :				
		Note : Power Pole Mounted, c/w cover plates and fixing accessories;				
38.5.3	a	Blank Box	no	1		Rate Only
38.5.4	e	16A * SSO * Normal (White)	no	1		Rate Only
38.5.5	f	16A * SSO * Emergency (Red)	no	1		Rate Only
38.5.6	g	16A * SSO * Dedicated (Blue)	no	1		Rate Only
38.5.7	h	RJ11 / RJ45 * Single * Communication Outlet	no	1		Rate Only
38.5.8	i	RJ11 / RJ45 * Double * Communication Outlet	no	1		Rate Only
38.6	6.6	POWER BOX & ACCESSORIES				
	6.6.1	-				
38.7	6.7	UN-SWITCHED SOCKET OUTLETS				
		Type : Connector arrangements of the WAGO Cage Clamp range, or equivalent and approved. Allow for mounting on wiring channel c/w mounting and fixing accessories;				
		Manufacturer : Clipsal, CBI, Crabtree; Similar and Approved;				
	6.7.1	Un-Switched SS; 250Vac; 6A; 3-Pin; IP20 (White);				
38.7.1	a	Supply	no	1		Rate Only
38.7.2	b	Install	no	1		Rate Only
	6.7.2	Un-Switched SS; 400Vac; 25A; 5-Pin; IP20 (Blue);				
38.7.3	a	Supply	no	1		Rate Only
38.7.4	b	Install	no	1		Rate Only
38.8	6.8	LIGHTING SWITCHING ACCESSORIES				
		Note : Supply & Installation of Lighting Switches flush and/or surface wall-mounted; c/w cover plates and fixing accessories:				
	6.8.1	1 Lever - One Way; 16A; 250V; White; 100x50				
38.8.1	a	Supply	no	1		Rate Only
38.8.2	b	Install	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 154						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 38 continued						
Electrical works 06 - Small Power & Lighting Work (SP&L)						
-Schedule continued from page 153						
	6.8.2	2 Lever - One Way; 16A; 250V; White; 100x50				
38.8.3	a	Supply	no	13		
38.8.4	b	Install	no	13		
	6.8.3	1 Lever - Two Way; 16A; 250V; White; 100x50				
38.8.5	a	Supply	no	1		Rate Only
38.8.6	b	Install	no	1		Rate Only
	6.8.4	2 Lever - Two Way; 16A; 250V; White; 100x50				
38.8.7	a	Supply	no	1		Rate Only
38.8.8	b	Install	no	1		Rate Only
38.9	6.9	LIGHTING CONTROL ACCESSORIES				
		Note : Supply & Installation of Lighting Control equipment c/w all accessories;				
	6.9.1	Light Sensor :				
38.9.1	a	Supply	no	1		Rate Only
38.9.2	b	Install	no	1		Rate Only
	6.9.2	Motion Sensor :				
38.9.3	a	Supply	no	1		Rate Only
38.9.4	b	Install	no	1		Rate Only
	6.9.3	Photocell : 10 Ampere, 220/250V Grade photocell mounted in bulk head with clear polycarbonate cover;				
38.9.5	a	Supply	no	7		
38.9.6	b	Install	no	7		
38.10	6.10	LIGHTING LUMINAIRES				
		Note : Supply and installation of all luminaires c/w lamps. Allow for the mounting onto cable trays, concrete, brickwork, walls and/or ceilings c/w all brackets, supports, mounting, connecting, and fixing accessories.				
	6.10.1	Type A : Industrial Open Channel Luminaire :				
		Type : BEKA VLN LED : 46W; Neutral white (7 000 lm) ; IP65 (similar & approved);				
38.10.1	a	Supply	no	8		
38.10.2	b	Install	no	8		
	6.10.2	Type B : Industrial Vapour proof Luminaire :				
		Type : BEKA VLN LED : 46W; Neutral white (7 000 lm) ; IP65 (similar & approved);				
38.10.3	a	Supply	no	16		
38.10.4	b	Install	no	16		
	6.10.3	Type C : Industrial Bulkhead Luminaire :				
		Note : BEKABULK LED : 18W; Neutral white (2 400lm) ; IP65 (similar & approved);				
38.10.5	a	Supply	no	6		
38.10.6	b	Install	no	6		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 155						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 38 continued Electrical works 06 - Small Power & Lighting Work (SP&L)						
-Schedule continued from page 154						
	6.10.4	Type D : Industrial Flood Luminaire :				
		Type : Beka LEDnova-Midi : 50W; Neutral white (8 000 lm) ; IP65 (similar & approved);				
38.10.7	a	Supply	no	6		
38.10.8	b	Install	no	6		
	6.10.5	Type E : Industrial Flood Luminaire :				
		Note : Beka LEDnova-Midi : 100W; Neutral white (13 000 lm) ; IP65 (similar & approved);				
38.10.9	a	Supply	no	6		
38.10.10	b	Install	no	6		
38.11	6.11	CONDUCTOR WORK				
		Note : Conductors: 600/1000V Grade PVC insulated stranded copper conductors (SANS 1507-2) and drawn in conduits and/or sleeves.				
	6.11.1	6.0mm², GPW, Cu, LV				
38.11.1	a	Supply	m	1		Rate Only
38.11.2	b	Install	m	1		Rate Only
	6.11.2	4.0mm², GPW, Cu, LV				
38.11.3	a	Supply	m	1		Rate Only
38.11.4	b	Install	m	1		Rate Only
	6.11.3	2.5mm², GPW, Cu, LV				
38.11.5	a	Supply	m	780		
38.11.6	b	Install	m	780		
	6.11.4	1.5mm², GPW, Cu, LV				
38.11.7	a	Supply	m	840		
38.11.8	b	Install	m	840		
38.12	6.12	CONDUCTOR WORK				
		Note : BCEW: 600/1000V Grade PVC Insulated & Bare stranded Copper Earth Conductors (SANS 1411-1) drawn in conduits and/or sleeves.				
	6.12.1	4mm², B.C.E.W.				
38.12.1	a	Supply	m	1		Rate Only
38.12.2	b	Install	m	1		Rate Only
	6.12.2	2.5mm², B.C.E.W.				
38.12.3	a	Supply	m	810		
38.12.4	b	Install	m	810		
38.13	6.13	DATA CABLE WORK				
		Note : Network data cable as may be required to be drawn in conduits, wiring channels and/or trunking.				
	6.13.1	CAT5 Unshielded				
38.13.1	a	Supply	m	1		Rate Only
38.13.2	b	Install	m	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 156						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 38 continued						
Electrical works 06 - Small Power & Lighting Work (SP&L)						
-Schedule continued from page 155						
38.14	6.14	CONDUIT AND ACCESSORIES				
		Type : Conduit and/or sleeves placed in position for casting into concrete or screed or chased into concrete, brickwork or drywall; and for surface mounting, inclusive of all bending, jointing, short lengths, draw boxes, couplings, bends, tees, saddles, lock nuts & fixing accessories;				
	6.14.1	70mmØ PVC sleeve				
8.14.1	a	Supply	m	1		Rate Only
38.14.2	b	Install	m	1		Rate Only
	6.14.2	50mmØ PVC sleeve				
38.14.3	a	Supply	m	1		Rate Only
38.14.4	b	Install	m	1		Rate Only
	6.14.3	32mmØ PVC conduit				
38.14.5	a	Supply	m	1		Rate Only
38.14.6	b	Install	m	1		Rate Only
	6.14.4	25mmØ Steel Conduit - Small Power				
38.14.7	a	Supply	m	390		
38.14.8	b	Install	m	390		
	6.14.5	20mmØ Steel Conduit - Lighting				
38.14.9	a	Supply	m	420		
38.14.10	b	Install	m	420		
38.15	6.15	GALVANIZED BOXES				
		Type : Supply and Installation of Galvanised boxes flush and/or surface wall-mounted, c/w with surrounds for Isolator Outlets, Lighting Switches, Socket Outlets, etc.;				
	6.15.1	100x100mm - Flush Mounted				
38.15.1	a	Supply	no	1		Rate Only
38.15.2	b	Install	no	1		Rate Only
	6.15.2	100x50mm - Flush Mounted				
38.15.3	a	Supply	no	1		Rate Only
38.15.4	b	Install	no	1		Rate Only
	6.15.3	100x100mm - Surface Mounted				
38.15.5	a	Supply	no	26		
38.15.6	b	Install	no	26		
	6.15.4	100x50mm - Surface Mounted				
38.15.7	a	Supply	no	19		
38.15.8	b	Install	no	19		
38.16	6.16	TRUNKING AND ACCESSORIES				
		Type : PVC Trunking of the O-Line range ; c/w all covers, end caps, supports, hangers, mounting & fixing accessories;				
	6.16.4	25x16mm - PVC Trunking (YT range):				
38.16.1	a	Supply	no	180		
38.16.2	b	Install	no	180		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 157						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 38 continued Electrical works 06 - Small Power & Lighting Work (SP&L)						
-Schedule continued from page 156						
38.17	6.17	WIRING CHANNEL & ACCESSORIES				
		Type : Wiring channel of the O-Line range; c/w all covers, splices, end caps, channel supports, hangers, mounting and fixing accessories:				
		Note : Rate to allow for Supply & Install.				
		O-Line OL2000 range, or equivalent and approved;				
	6.17.1	OL2000 - Channel + Cover				
38.17.1	a	Supply	m	60		
38.17.2	b	Install	m	60		
	6.17.2	OL2000 - Horizontal Elbow				
38.17.3	a	Supply	no	1		Rate Only
38.17.4	b	Install	no	1		Rate Only
	6.17.3	OL2000 - 4 Way				
38.17.5	a	Supply	no	1		Rate Only
38.17.6	b	Install	no	1		Rate Only
	6.17.4	OL2000 - Tee				
38.17.7	a	Supply	no	1		Rate Only
38.17.8	b	Install	no	1		Rate Only
	6.17.5	Mounting Support Accessories				
38.17.9	a	Supply & Install	no	1		Rate Only
	6.17.6	Hanging Support Accessories				
38.17.10	a	Supply & Install	no	1		Rate Only
		O-Line OL8000 range, or equivalent and approved;				
	6.17.7	OL8000 - Channel + Cover				
38.17.11	a	Supply	m	30		
38.17.12	b	Install	m	30		
	6.17.8	OL8000 - Horizontal Elbow				
38.17.13	a	Supply	no	1		Rate Only
38.17.14	b	Install	no	1		Rate Only
	6.17.9	OL8000 - 4 Way				
38.17.15	a	Supply	no	1		Rate Only
38.17.16	b	Install	no	1		Rate Only
	6.17.10	OL8000 - Tee				
38.17.17	a	Supply	no	1		Rate Only
38.17.18	b	Install	no	1		Rate Only
	6.17.11	Mounting Support Accessories				
38.17.19	a	Supply & Install	no	1		Rate Only
	6.17.12	Hanging Support Accessories				
38.17.20	a	Supply & Install	no	1		Rate Only
38.18	6.18	ASSOCIATED SEQUENCE OF WORKS				
	6.18.1	Allowance for associated sequence of works;	sum	1		
38.18.1	a	Confirmation of manufacturer and range of equipment and material;	sum	1		Rate Only
38.18.2	c	Confirmation of equipment positions, route, length & quantities;	sum	1		Rate Only
38.18.3	d	Supply & installation of Small Power and Lighting equipment complete with accessories, wiring, etc.;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 158						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 39 Electrical works 07 - Industrial Power Work (IP)						
A OVERVIEW OF WORKS						
	i	Supply & Installation of Industrial Power (SANS 10142-1) , c/w wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;				
B CLIENTS OBJECTIVES						
	i	Complete power supply of industrial process equipment;				
	ii	Address all MCC / control buildings within plant;				
C EXTENT OF WORKS						
	i	Complete and/or verify industrial control design;				
	ii	Installation of Industrial Power Equipment;				
	iii	-				
	iv	Associated, wiring, cable management & termination works;				
	v	Testing & commissioning of works;				
D CONTRACTOR OFFERING:						
	i	Industrial Power Equipment Offered :				
	ii	Junction Boxes Equipment Offered :				
	iii	Cable Management Offered :				
	iv	General Equipment Offered :				
	v	Material Delivery Period :				
	vi	Installation Period :				
39.1	7.1	INDUSTRIAL SOCKET OUTLETS				
		Type : Supply & Installation of Industrial Plug Outlets surface mounted, 690V, Indoor (IP44/54) or Outdoor (IP67/8/9) , c/w cover fixing accessories in accordance with IEC 6039-1 / EN 60309-3;				
		Manufacturer : Scame; Similar and Approved;				
	7.1.1	16A * 690Vac * 4/5-Pin * IP 54 * Surface Mounted :				
39.1.1	a	Supply	no	2		
39.1.2	b	Install	no	2		
	7.1.2	32A * 690Vac * 4/5-Pin * IP 54 * Surface Mounted :				
39.1.3	a	Supply	no	5		
39.1.4	b	Install	no	5		
	7.1.3	63A * 690Vac * 4/5-Pin * IP 54 * Surface Mounted :				
39.1.5	a	Supply	no	1		Rate Only
39.1.6	b	Install	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 160						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 39 continued						
Electrical works 07 - Industrial Power Work (IP)						
-Schedule continued from page 159						
39.2	7.2	INDUSTRIAL ISOLATORS				
		Note : Enclosed Normal or Emergency (Red) Switch Disconnecter; Surface Mounted, Indoor (IP44) , Outdoor / Special (IP66) and/or Hazardous Zone (ATEX) Rated; c/w Padlocakable Handle (I-O/ON-OFF) , PE-terminal , Early-Break Auxiliary N/O contact and fixing accessories.				
	7.2.1	0.37kW // 7.5kW (KG20) :				
39.2.1	a	Supply	no	5		
39.2.2	b	Install	no	5		
	7.2.2	11kW // 15kW (KG41) :				
39.2.3	a	Supply	no	1		Rate Only
39.2.4	b	Install	no	1		Rate Only
	7.2.3	18.5 // 22kW (KG64) :				
39.2.5	a	Supply	no	1		Rate Only
39.2.6	b	Install	no	1		Rate Only
	7.2.4	30 // 37kW (KG100) :				
39.2.7	a	Supply	no	3		
39.2.8	b	Install	no	3		
	7.2.5	45kW (KG125) :				
39.2.9	a	Supply	no	1		Rate Only
39.2.10	b	Install	no	1		Rate Only
	7.2.6	Motor Pedestal :				
		Note : Allow for installation in position next to motor complete with suitable pedestal; c/w mounting supports and fixing accessories.				
39.2.11	a	Supply	sum	1		Rate Only
39.2.12	b	Install	sum	1		Rate Only
39.3	7.3	FIELD CONTROL STATIONS				
		Note : Die-cast aluminium enclosure, IP65, c/w push button start/stop latch stop station & one twist-to-release e-stop (40mm mushroom head / red);				
	7.3.1	Enclosure :				
39.3.1	a	Supply	no	1		Rate Only
39.3.2	b	Install	no	1		Rate Only
	7.3.2	Start / Stop Station (CHW91176G) :				
		Note : IP65, Eaton type start/stop station;				
39.3.3	a	Supply	no	1		Rate Only
39.3.4	b	Install	no	1		Rate Only
	7.3.3	Start / E-Stop Station (CHW91176G) :				
		Note : IP65, Eaton type start/stop station;				
39.3.5	a	Supply	no	25		
39.3.6	b	Install	no	25		
	7.3.4	Emergency Stop Station (10250T) :				
		Note : IP65, Eaton type start/stop station;				
39.3.7	a	Supply	no	1		Rate Only
39.3.8	b	Install	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 161						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 39 continued Electrical works 07 - Industrial Power Work (IP)						
-Schedule continued from page 160						
	7.3.5	Motor Pedestal :				
		Note : Suitable pedestal for above start/stop station, mounting supports and fixing accessories;				
39.3.9	a	Supply	no	25		
39.3.10	b	Install	no	25		
39.4	7.4	CUSTOM FIELD ISOLATION & CONTROL STATION				
	7.4.1	Motor Stand :				
		Note : Allow for installation in position next to motor complete with suitable pedestal, mounting supports and fixing accessories;				
39.4.1	a	Supply	no	1		Rate Only
39.4.2	b	Install	no	1		Rate Only
	7.4.2	Enclosure :				
		Note : 350(H) x 250 (W) x 170(D) * Outdoor * IP65 * Galvanized Steel * Power Coated * Front Access * Bottom Entry * Surface Mounted;				
39.4.3	a	Supply	no	1		Rate Only
39.4.4	b	Install	no	1		Rate Only
	7.4.3	Stop / Start / E-stop Buttons :				
		Note : Buttons installed and wired within enclosure;				
39.4.5	a	Supply	no	1		Rate Only
39.4.6	b	Install	no	1		Rate Only
	7.4.4	Field Isolator :				
		Note : Enclosed Normal or Emergency (Red) Switch Disconnecter, c/w Padlocakable Handle (I-O/ON-OFF) , PE-terminal , Early-Break Auxiliary N/O contact and fixing accessories;				
39.4.7	a	Isolator * Schneider * NS630NA * 3P * 450A;	no	1		Rate Only
39.4.8	b	Early Break, Auxiliary N/O, Contact;	no	1		Rate Only
39.4.9	c	Installation works for the above, c/w wiring & accessories;	no	1		Rate Only
39.5	7.5	BELLS & MAINS CABLES - LOW VOLTAGE				
		Type : 600/1000V * PVC/PVC/SWA/PVC * 3/4C, CU/AL * SANS 1507-3:				
		Plain Copper Conductor to SANS 1411-1, Class 2. Two, Three or Four Cores Insulated with PVC, PVC Bedded, Steel Wire Armoured and Sheathed with General Purpose Fire Retardant PVC;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Purpose : Primary & Secondary power distribution;				
		Note : Rate to allow for cable off-cuts;				
	7.5.1	25mm², 4C, PVC, Cu, LV Cable				
39.5.1	a	Supply	m	1		Rate Only
39.5.2	b	Install	m	1		Rate Only
39.5.3	c	Cable Terminations (Supply & Install)	no	1		Rate Only
39.5.4	d	Cable Joint (Supply & Install)	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 162						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 39 continued						
Electrical works 07 - Industrial Power Work (IP)						
-Schedule continued from page 161						
	7.5.2	16mm², 4C, PVC, Cu, LV Cable				
39.5.5	a	Supply	m	1		Rate Only
39.5.6	b	Install	m	1		Rate Only
39.5.7	c	Cable Terminations (Supply & Install)	no	1		Rate Only
39.5.8	d	Cable Joint (Supply & Install)	no	1		Rate Only
	7.5.3	10mm², 4C, PVC, Cu, LV Cable				
39.5.9	a	Supply	m	1		Rate Only
39.5.10	b	Install	m	1		Rate Only
39.5.11	c	Cable Terminations (Supply & Install)	no	1		Rate Only
39.5.12	d	Cable Joint (Supply & Install)	no	1		Rate Only
	7.5.4	6mm², 4C, PVC, Cu, LV Cable				
39.5.13	a	Supply	m	1		Rate Only
39.5.14	b	Install	m	1		Rate Only
39.5.15	c	Cable Terminations (Supply & Install)	no	1		Rate Only
39.5.16	d	Cable Joint (Supply & Install)	no	1		Rate Only
	7.5.5	4mm², 4C, PVC, Cu, LV Cable				
39.5.17	a	Supply	m	165		
39.5.18	b	Install	m	165		
39.5.19	c	Cable Terminations (Supply & Install)	ea	10		
39.5.20	d	Cable Joint (Supply & Install)	ea	1		Rate Only
	7.5.6	2.5mm², 4C, PVC, Cu, LV Cable				
39.5.21	a	Supply	m	66		
39.5.22	b	Install	m	66		
39.5.23	c	Cable Terminations (Supply & Install)	ea	4		
39.5.24	d	Cable Joint (Supply & Install)	ea	1		Rate Only
	7.5.7	1.5mm², 4C, PVC, Cu, LV Cable				
39.5.25	a	Supply	m	1		Rate Only
39.5.26	b	Install	m	1		Rate Only
39.5.27	c	Cable Terminations (Supply & Install)	no	1		Rate Only
39.5.28	d	Cable Joint (Supply & Install)	no	1		Rate Only
39.6	7.6	MULTICORE CABLES - LOW VOLTAGE				
		Type : 600/1000V, PVC/PVC/AWA/PVC, MultiC, Cu, SANS 1507-3: Multi				
		Core, PVC Insulated, PVC Bedded, SWA Armoured and PVC Sheathed;				
		Manufacturer : Abedare, CBI; Similar and Approved;				
		Purpose : Motor Control;				
		Note : Rate to allow for cable off-cuts;				
	7.6.1	1,5mm², 3C, PVC, Cu, LV (Motor Field Control Station)				
39.6.1	a	Supply	m	34		
39.6.2	b	Install	m	34		
39.6.3	c	Cable Terminations (Supply & Install)	no	68		
	7.6.2	1,5mm², 7C, PVC, Cu, LV (Motor Field Control Station)				
39.6.4	a	Supply	m	1		Rate Only
39.6.5	b	Install	m	1		Rate Only
39.6.6	c	Cable Terminations (Supply & Install)	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 163						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 39 continued						
Electrical works 07 - Industrial Power Work (IP)						
-Schedule continued from page 162						
	7.6.3	1,5mm², 14C, PVC, Cu, LV (Motor Field Control Station)				
39.6.7	a	Supply	m	1		Rate Only
39.6.8	b	Install	m	1		Rate Only
39.6.9	c	Cable Terminations (Supply & Install)	no	1		Rate Only
	7.6.4	2,5mm², 3C, PVC, Cu, LV (Motor Field Control Station)				
39.6.10	a	Supply	m	1		Rate Only
39.6.11	b	Install	m	1		Rate Only
39.6.12	c	Cable Terminations (Supply & Install)	no	1		Rate Only
	7.6.5	2,5mm², 7C, PVC, Cu, LV (Motor Field Control Station)				
39.6.13	a	Supply	m	960		
39.6.14	b	Install	m	960		
39.6.15	c	Cable Terminations (Supply & Install)	ea	34		
	7.6.6	2,5mm², 14C, PVC, Cu, LV (Motor Field Control Station)				
39.6.16	a	Supply	m	1		Rate Only
39.6.17	b	Install	m	1		Rate Only
39.6.18	c	Cable Terminations (Supply & Install)	no	1		Rate Only
	7.6.7	4mm², 3C, PVC, Cu, LV (Motor Field Control Station)				
39.6.19	a	Supply	m	1		Rate Only
39.6.20	b	Install	m	1		Rate Only
39.6.21	c	Cable Terminations (Supply & Install)	no	1		Rate Only
	7.6.8	4mm², 7C, PVC, Cu, LV (Motor Field Control Station)				
39.6.22	a	Supply	m	1		Rate Only
39.6.23	b	Install	m	1		Rate Only
39.6.24	c	Cable Terminations (Supply & Install)	no	1		Rate Only
	7.6.9	4mm², 14C, PVC, Cu, LV (Motor Field Control Station)				
39.6.25	a	Supply	m	1		Rate Only
39.6.26	b	Install	m	1		Rate Only
39.6.27	c	Cable Terminations (Supply & Install)	no	1		Rate Only
39.7	7.7	ENCLOSURES				
		Note : Industrial Type Sheet Moulding Compound Enclosures, Surface Mounted, Outdoor (IP66) and/or hazardous Zone (ATEX) rated, flush mounted window c/w quarter turn lock, multi angle mounting brackets, integrated rain canopy, internal hinges, flame retardant, durable GRP material & all accessories;				
		Manufacturer : Allbro / O-Line;				
	7.7.1	350mm(W) x 250mm(H) x 200mm(D) (Allbrox 3)				
39.7.1	a	Supply	no	1		Rate Only
39.7.2	b	Install	no	1		Rate Only
	7.7.2	400mm(W) x 300mm(H) x 200mm(D) (Allbrox 4)				
39.7.3	a	Supply	no	1		Rate Only
39.7.4	b	Install	no	1		Rate Only
	7.7.3	600mm(W) x 400mm(H) x 200mm(D) (Allbrox 6)				
39.7.5	a	Supply	sum	1		Rate Only
39.7.6	b	Install	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 164						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 39 continued						
Electrical works 07 - Industrial Power Work (IP)						
-Schedule continued from page 163						
7.8 JUNCTION BOXES						
		Note : Industrial Type Junction Boxes; Surface Mounted, Indoor (<i>IP44</i>) , Outdoor / Special (<i>IP66</i>) and/or Hazardous Zone (<i>ATEX</i>) Rated; c/w cover plates and fixing accessories.				
		Manufacturer : Allbro / O-Line / CCG;				
		Multi Way Junction Box Enclosures :				
	7.8.1	Junction Box; IP66 - 400mm(W) x250mm(H) x 160mm(D)				
39.7.7	a	Supply	no	1		Rate Only
39.7.8	b	Install	no	1		Rate Only
	7.8.2	Junction Box; IP66 - 255mm(W) x 250mm(H) x 160mm(D)				
39.7.9	a	Supply	no	1		Rate Only
39.7.10	b	Install	no	1		Rate Only
	7.8.3	Terminal Strips				
39.7.11	a	Supply	sum	1		Rate Only
39.7.12	b	Install	sum	1		Rate Only
		Standard general Purpose GCC Junction Box :				
	7.8.4	Posi Fit; Utility Box; IP66				
39.7.13	a	Supply	no	1		Rate Only
39.7.14	b	Install	no	1		Rate Only
	7.8.5	Posi Fit; 2-Way; IP66				
39.7.15	a	Supply	no	38		
39.7.16	b	Install	no	38		
	7.8.6	Posi Fit; 4-Way; IP66				
39.7.17	a	Supply	no	19		
39.7.18	b	Install	no	19		
	7.8.7	Posi Fit; 5-Way; IP66				
39.7.19	a	Supply	no	1		Rate Only
39.7.20	b	Install	no	1		Rate Only
39.8 7.8 CABLE MANAGEMENT & ACCESSORIES						
		Type : Pre-Galvanized Cable Racks and Trays, surface and/or suspended mounted supported every 1.5m (<i>min</i>) ; c/w all covers, splices, end caps, channel supports, hangers, mounting and fixing accessories;				
		Manufacturer : O-Line RKS, PT 12/19, PT 38/76, GS50/75 Range; Similar and Approved.				
		Note : Rate to allow for Supply & Install.				
	7.8.1	Light Duty Cable Trays (PT12/19 range) :				
	7.8.1.1	300mm Wide (w) Trays:				
39.8.1	a	Straight	m	1		Rate Only
39.8.2	b	Internal Bend	no	1		Rate Only
39.8.3	c	External Bend	no	1		Rate Only
39.8.4	d	Horizontal Bend	no	1		Rate Only
39.8.5	e	Tee	no	1		Rate Only
39.8.6	f	Covers	m	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 165						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 39 continued Electrical works 07 - Industrial Power Work (IP)						
-Schedule continued from page 164						
39.8.7	g	Mounting Support Accessories	sum	1		Rate Only
39.8.8	h	Hanging Support Accessories	sum	1		Rate Only
	7.8.1.2	600mm Wide (w) Trays:				
39.8.9	a	Straight	m	1		Rate Only
39.8.10	b	Internal Bend	no	1		Rate Only
39.8.11	c	External Bend	no	1		Rate Only
39.8.12	d	Horizontal Bend	no	1		Rate Only
39.8.13	e	Tee	no	1		Rate Only
39.8.14	f	Covers	m	1		Rate Only
39.8.15	g	Mounting Support Accessories	sum	1		Rate Only
39.8.16	h	Hanging Support Accessories	sum	1		Rate Only
	7.8.2	Wire Mesh Cable Trays (GS50/75 range) :				
	7.8.2.1	150mm Wide (w) Trays:				
39.8.17	a	Straight	m	75		
39.8.18	b	Mounting Support Accessories	sum	1		
	7.8.2.2	300mm Wide (w) Trays:				
39.8.19	a	Straight	m	73		
39.8.20	b	Mounting Support Accessories	sum	1		
	7.8.2.3	650mm Wide (w) Trays:				
39.8.21	a	Straight	m	17		
39.8.22	b	Mounting Support Accessories	sum	1		
39.9	7.9	TRUNKING AND ACCESSORIES				
		Type : Industrial PVC Trunking of the O-Line range ; c/w all covers, end caps, supports, mounting & fixing accessories;				
	7.9.1	50x50mm - PVC Trunking (CLT range):				
39.9.1	a	Supply	no	36		
39.9.2	b	Install	no	36		
	7.9.2	100x75mm - PVC Trunking (CLT range):				
39.9.3	a	Supply	no	36		
39.9.4	b	Install	no	36		
39.10	7.10	ELECTRIC MOTORS				
		Three Phase; 2 / 4 / 6 Pole; Foot or Flange Mounted; Cast Iron; IP66 or ATEX Rated; Class H Insulation (180°C) ; VSD Compliant; WEG W22 IE3 Top Premium Efficiency similar or approved.				
	7.10.1	45 kW * IE3 * IP66 * Class F * VSD Compliant :				
39.10.1	a	Supply;	no	1		Rate Only
39.10.2	b	Installation by a qualified artisan in accordance with industry norms and best practices;	no	1		Rate Only
	7.10.2	22 kW * IE3 * IP66 * Class F * VSD Compliant :				
39.10.3	a	Supply;	no	1		Rate Only
39.10.4	b	Installation by a qualified artisan in accordance with industry norms and best practices;	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 166						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

[illegible]

BILL OF QUANTITIES PAGE NUMBER 166

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 40						
Electrical works 08 - Industrial Control Weeks (IC)						
A OVERVIEW OF WORKS						
	i	Design, Supply, Installation and Configuration of PLC and SCADA / HMI systems and corresponding Field Instrumentation Works; testing and commissioning and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;				
B CLIENTS OBJECTIVES						
	i	Complete automation & control of industrial process;				
	ii	Address all MCC / control buildings within plant;				
C EXTENT OF WORKS						
	i	Complete and/or verify industrial control design;				
	ii	Installation of Industrial Control Equipment;				
	iii	Installation of Industrial Instrumentation;				
	iv	Associated, cabling, wiring, cable management & termination works;				
	v	Testing & commissioning of works;				
D CONTRACTOR OFFERING:						
	i	Specialized Industrial Control Sub-Contractor Offered :				
	ii	Instrumentation Equipment Offered :				
	iii	Cable Management Offered :				
	iv	General Equipment Offered :				
	v	Material Delivery Period :				
	vi	Installation Period :				
40.1	8.1	INSTRUMENTATION WORKS				
		Manufacturer : WIKA Similar and Approved;				
		Note : Allowance for the Supply & Installation of Instrumentation c/w all mounting and control accessories;				
		Proximity Indication :				
	8.1.1	STD Proximity Transmitter (Magnetic):				
40.1.1	a	Supply Instrument;	no	2		
40.1.2	b	Supply Mounting & Junction Assembly;	no	2		
40.1.3	c	Install Complete;	no	2		
	8.1.2	STD Proximity Transmitter (Capacitive):				
40.1.4	a	Supply Instrument;	no	1		Rate Only
40.1.5	b	Supply Mounting & Junction Assembly;	no	1		Rate Only
40.1.6	c	Install Complete;	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 168						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 40 continued Electrical works 08 - Industrial Control Weeks (IC)						
- \schedule continued from page 161						
		Pressure Indication :				
	8.1.3	STD Pressure Gauge (Mechanical):				
40.1.7	a	Supply Instrument;	no	1		Rate Only
40.1.8	b	Supply Mounting & Junction Assembly;	no	1		Rate Only
40.1.9	c	Install Complete;	no	1		Rate Only
	8.1.4	STD Pressure Transducer (Digital):				
40.1.10	a	Supply Instrument;	no	1		Rate Only
40.1.11	b	Supply Controller;	no	1		Rate Only
40.1.12	c	Supply Mounting & Junction Assembly;	no	1		Rate Only
40.1.13	d	Install Complete;	no	1		Rate Only
		Flow Indication :				
	8.1.5	STD Flow Transducer (Ultrasonic):				
40.1.14	a	Supply Instrument;	no	1		Rate Only
40.1.15	b	Supply Controller;	no	1		Rate Only
40.1.16	c	Supply Mounting & Junction Assembly;	no	1		Rate Only
40.1.17	d	Install Complete;	no	1		Rate Only
		Flow Switch Indication :				
	8.1.6	STD Mechanical Flow Switch (Paddle Type):				
40.1.18	a	Supply Instrument;	no	11		
40.1.19	b	Supply Mounting & Junction Assembly;	no	11		
40.1.20	c	Install Complete;	no	11		
	8.1.7	STD Electronic Flow Switch (Thermal Dispersion):				
40.1.21	a	Supply Instrument;	no	1		Rate Only
40.1.22	b	Supply Controller;	no	1		Rate Only
40.1.23	c	Supply Mounting & Junction Assembly;	no	1		Rate Only
40.1.24	c	Install Complete;	no	1		Rate Only
		Level Indication :				
		Note : Stainless steel top bracket with each float switch mounted 750mm apart, cable hangs over 30mmØ round surface area and CCG Junction Box installed near the stainless steel bracket for connection of instrument;				
	8.1.8	STD Suspended Float Switch (Magnetic / 10m length):				
40.1.25	a	Supply Instrument;	no	1		Rate Only
40.1.26	b	Supply Mounting & Junction Assembly;	no	1		Rate Only
40.1.27	c	Install Complete;	no	1		Rate Only
	8.1.9	STD Level Transducer (Hydrostatic / 10m length):				
40.1.28	a	Supply Instrument;	ea	8		
40.1.29	b	Supply Controller;	ea	4		
40.1.30	c	Supply Mounting & Junction Assembly;	ea	8		
40.1.31	d	Install Complete;	ea	4		
		Temperature Indication :				
	8.1.10	STD Temperature Transmitter:				
40.1.32	a	Supply Instrument;	no	1		Rate Only
40.1.33	b	Supply Controller;	no	1		Rate Only
40.1.34	c	Supply Mounting & Junction Assembly;	no	1		Rate Only
40.1.35	d	Install Complete;	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 169						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 40 continued						
Electrical works 08 - Industrial Control Weeks (IC)						
-Schedule continued from page 168						
		Vibration Indication :				
	8.1.11	STD Vibration Transmitter:				
40.1.36	a	Supply Instrument;	no	1		Rate Only
40.1.37	b	Supply Controller;	no	1		Rate Only
40.1.38	c	Supply Mounting & Junction Assembly;	no	1		Rate Only
40.1.39	d	Install Complete;	no	1		Rate Only
40.2 8.2 ENCLOSURES						
		Note : Industrial Type Sheet Moulding Compound Enclosures, Surface Mounted, Outdoor (IP66) and/or hazardous Zone (ATEX) rated, flush mounted window c/w quarter turn lock, multi angle mounting brackets, integrated rain canopy, internal hinges, flame retardant, durable GRP material & all accessories;				
		Manufacturer : Allbro / O-Line;				
	8.2.1	350mm(W) x 250mm(H) x 200mm(D) (Allbrox 3)				
40.2.1	a	Supply	no	1		Rate Only
40.2.2	b	Install	no	1		Rate Only
	8.2.2	400mm(W) x 300mm(H) x 200mm(D) (Allbrox 4)				
40.2.3	a	Supply	no	2		
40.2.4	b	Install	no	2		
	8.2.3	600mm(W) x 400mm(H) x 200mm(D) (Allbrox 6)				
40.2.5	a	Supply	sum	1		Rate Only
40.2.6	b	Install	sum	1		Rate Only
40.3 8.3 JUNCTION BOXES						
		Note : Industrial Type Junction Boxes; Surface Mounted, Indoor (IP44) , Outdoor / Special (IP66) and/or Hazardous Zone (ATEX) Rated; c/w cover plates and fixing accessories.				
		Manufacturer : Allbro / O-Line / CCG;				
		Multi Way Junction Box Enclosures :				
	8.3.1	Junction Box * Multi Way * 400mm(W) x250mm(H) x 160mm(D)				
40.3.1	a	Supply	no	1		Rate Only
40.3.2	b	Install	no	1		Rate Only
	8.3.2	Junction Box * Multi Way * 255mm(W) x 250mm(H) x 160mm(D)				
40.3.3	a	Supply	no	1		Rate Only
40.3.4	b	Install	no	1		Rate Only
	8.3.3	Terminal Strips				
40.3.5	a	Supply	sum	1		Rate Only
40.3.6	b	Install	sum	1		Rate Only
		Standard general Purpose GCC Junction Box :				
	8.3.4	Posi Fit * 2-Way * General Purpose GCC				
40.3.7	a	Supply	no	35		
40.3.8	b	Install	no	35		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 170						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 40 continued Electrical works 08 - Industrial Control Weeks (IC)						
-Schedule continued from page 169						
	8.3.5	Posi Fit * 4-Way * General Purpose GCC				
40.3.9	a	Supply	no	7		
40.3.10	b	Install	no	7		
	8.3.6	Posi Fit * 5-Way * General Purpose GCC				
40.3.11	a	Supply	no	1		Rate Only
40.3.12	b	Install	no	1		Rate Only
40.4	8.4	INSTRUMENTATION CABLES				
		Type : 300/500V * PE Sheath * Dekabon * PVC FR Bedding * Overall Aluminium Mylar Screen * Tinned Copper Drain Wire * Multiple Twisted Pairs / Triads Insulated Stranded Copper Wire * Aluminium Mylar Screen Over Individual Pairs * Tinned Copper Drain Wire;				
		Purpose : Industrial Control;				
		Note : Rate to allow for cable off-cuts;				
	8.4.1	0.5mm² * 1 Pair * Dekabon				
40.4.1	a	Supply	m	28		
40.4.2	b	Install	m	28		
40.4.3	c	Cable Terminations (Supply & Install)	no	56		
	8.4.2	1,5mm² * 2 Pair * Dekabon				
40.4.4	a	Supply	m	745		
40.4.5	b	Install	m	745		
40.4.6	c	Cable Terminations (Supply & Install)	no	38		
	8.4.3	1,5mm² * 4 Pair * Dekabon				
40.4.7	a	Supply	m	225		
40.4.8	b	Install	m	225		
40.4.9	c	Cable Terminations (Supply & Install)	no	8		
	8.4.4	1,5mm² * 6 Pair * Dekabon				
40.4.10	a	Supply	m	175		
40.4.11	b	Install	m	175		
40.4.12	c	Cable Terminations (Supply & Install)	no	11		
40.5	8.5	FIBRE CABLES				
		Type : Outer Sheath HDPE * CCSTP Armouring * WB Glass Yarn Reinforcement * JF Loose Tube with Fibres * 50/125 MMF;				
		Purpose : Industrial Control;				
		Note : Rate to allow for cable off-cuts;				
40.5.1	8.5.1	4 Pair * HDD	m	1		Rate Only
40.5.2	8.5.2	12 Pair * HDD	m	1		Rate Only
40.6	8.6	COMMUNICATION CABLES				
		Type : 250V * PVC Sheath * Stranded / Solid Copper Conductors * Polyethylene Insulated Cores;				
		Purpose : Industrial Control;				
		Note : Rate to allow for cable off-cuts				
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 171						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 40 continued						
Electrical works 08 - Industrial Control Weeks (IC)						
-Schedule continued from page 170						
	8.6.1	CAT 5 / 5e / 6 Communication Cable				
40.6.1	a	Unshielded Twisted Pair (UTP)	m	1		Rate Only
40.6.2	b	Foiled Twisted Pair (FTP)	m	1		Rate Only
40.6.3	c	Shielded Twisted Pair (STP)	m	1		Rate Only
	8.6.2	Serial Communication Cable				
40.6.4	a	Profibus PVC	m	1		Rate Only
40.6.5	b	RS 485 PVC	m	1		Rate Only
40.6.6	c	RS 232 PVC	m	1		Rate Only
40.7	8.7	CABLE MANAGEMENT & ACCESSORIES				
		Type : Pre-Galvanized Cable Racks and Trays, surface and/or suspended mounted supported every 1.5m (min) ; c/w all covers, splices, end caps, channel supports, hangers, mounting and fixing accessories;				
		Manufacturer : O-Line RKS, PT 12/19, PT 38/76, GS50/75 Range; Similar and Approved.				
		Note : Rate to allow for Supply & Install.				
		Light Duty Cable Trays (PT12/19 range) :				
	8.7.1	300mm Wide (w) Trays:				
40.7.1	a	Straight	m	1		Rate Only
40.7.2	b	Internal Bend	no	1		Rate Only
40.7.3	c	External Bend	no	1		Rate Only
40.7.4	d	Horizontal Bend	no	1		Rate Only
40.7.5	e	Tee	no	1		Rate Only
40.7.6	f	Covers	m	1		Rate Only
40.7.7	g	Mounting Support Accessories	sum	1		Rate Only
40.7.8	h	Hanging Support Accessories	sum	1		Rate Only
	8.7.2	600mm Wide (w) Trays:				
40.7.9	a	Straight	m	1		Rate Only
40.7.10	b	Internal Bend	no	1		Rate Only
40.7.11	c	External Bend	no	1		Rate Only
40.7.12	d	Horizontal Bend	no	1		Rate Only
40.7.13	e	Tee	no	1		Rate Only
40.7.14	f	Covers	m	1		Rate Only
40.7.15	g	Mounting Support Accessories	sum	1		Rate Only
40.7.16	h	Hanging Support Accessories	sum	1		Rate Only
		Wire Mesh Cable Trays (GS50/75 range) :				
	8.7.3	150mm Wide (w) Trays:				
40.7.17	a	Straight	m	75		
40.7.18	b	Mounting Support Accessories	sum	1		
	8.7.4	300mm Wide (w) Trays:				
40.7.19	a	Straight	m	73		
40.7.20	b	Mounting Support Accessories	sum	1		
	8.7.5	650mm Wide (w) Trays:				
40.7.21	a	Straight	m	1		Rate Only
40.7.22	b	Mounting Support Accessories	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 172						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 40 continued						
Electrical works 08 - Industrial Control Weeks (IC)						
-Schedule continued from page 171						
40.8	8.8	TRUNKING AND ACCESSORIES				
		Type : Industrial PVC Trunking of the O-Line range ; c/w all covers, end caps, supports, mounting & fixing accessories;				
	8.8.1	50x50mm - PVC Trunking (CLT range):				
40.8.1	a	Supply	no	36		
40.8.2	b	Install	no	36		
	8.8.2	100x75mm - PVC Trunking (CLT range):				
40.8.3	a	Supply	no	36		
40.8.4	b	Install	no	36		
40.9	8.9	TELEMETRY WORKS				
		Note : Allowance made by way of provisional amount for the design, installation, testing and commissioning of Telemetry Works by a Nominated Specialist Sub-Contractor;				
40.9.1	9.9.1	Design and submission of design documentation to Engineer / Project Manager for review and approval.	sum	1		Rate Only
40.9.2	9.9.2	Installation of new telemetry base station.	sum	1		Rate Only
40.9.3	9.9.3	Commissioning & testing of installation and submission of site acceptance test certificate (SAT) for review and approval by die Engineer / Project Manager.	sum	1		Rate Only
40.9.4	9.9.4	Provision for the supply of As-Build documentation.	sum	1		Rate Only
40.9.5	9.9.5	ICASA Radio Frequency Application & Implementation	sum	1		Rate Only
40.9.6	9.9.6	Contractor's handling and profit on the above items.	%	1		Rate Only
40.9.7	9.9.7	Any other items the Tenderer deems necessary for the successful completion of the works.	sum	1		Rate Only
40.10	8.1	POWER MONITORING SCADA WORKS				
		Note : Allowance made by way of provisional amount for the design, installation, testing and commissioning of Power Monitoring Works by a Nominated Specialist Sub-Contractor;				
40.10.1	9.10.1	Design and submission of design documentation to Engineer / Project Manager for review and approval.	sum	1		Rate Only
40.10.2	9.10.2	Provision for Schneider PME device Licences	sum	1		Rate Only
40.10.3	9.10.3	Configuration of Power Meters	sum	1		Rate Only
40.10.4	9.10.4	Configuration of existing Schneider PME SCADA System	sum	1		Rate Only
40.10.5	9.10.5	Commissioning & testing of installation and submission of site acceptance test certificate (SAT) for review and approval by die Engineer / Project Manager.	sum	1		Rate Only
40.10.6	9.10.6	Provision for the supply of As-Build documentation.	sum	1		Rate Only
40.10.7	9.10.7	Contractor's handling and profit on the above items.	%			
40.10.8	9.10.8	Any other items the Tenderer deems necessary for the successful completion of the works.	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 173						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 40 continued						
Electrical works 08 - Industrial Control Weeks (IC)						
-Schedule continued from page 172						
40.11	8.11	MOTOR MONITORING WORKS				
		Note : Allowance made by way of provisional amount for the design, installation, testing and commissioning of Motor Monitoring Works by a Nominated Specialist Sub-Contractor;				
40.11.1	9.11.1	Design and submission of design documentation to Engineer / Project Manager for review and approval;	sum	1		
40.11.2	9.11.2	Provision for Sim device Licences;	no	4		Rate Only
40.11.3	9.11.3	Provision and Installation of Equipment;	no	4		
40.11.4	9.11.4	Configuration of Equipment;	no	4		Rate Only
40.11.5	9.11.5	Configuration of existing Schneider PME SCADA System;	no	4		Rate Only
40.11.6	9.11.6	Commissioning & testing of installation and submission of site acceptance test certificate (SAT) for review and approval by die Engineer / Project Manager;	no	4		Rate Only
40.11.7	9.11.7	Provision for the supply of As-Build documentation;	no	4		Rate Only
40.11.8	9.11.8	Contractor's handling and profit on the above items;	%			
40.11.9	9.11.9	Any other items the Tenderer deems necessary for the successful completion of the works;	sum	4		Rate Only
40.12	8.12	PLC & SCADA WORKS				
		Type : Installation of PLC Section; Allow for the manufacture and supply of PLC chassis plate. Note: Equipping of chassis plate to be completed off-site by specialised control & instrumentation contractor.				
		Manufacturer : Schneider Electric (SE) .				
		Note : The equipping of the PLC section shall be completed in conjunction with the Appointed Control & Instrumentation Specialist Contractor.				
	8.12.1	IP Rated Enclosure; c/w all Accessories.	sum	1		Rate Only
40.12.1	a	IP Rated Enclosure; c/w all Accessories.	sum	1		Rate Only
40.12.2	b	PLC; c/w all Accessories.	sum	1		Rate Only
40.12.3	c	Digital Input Module; c/w all Accessories.	sum	1		Rate Only
40.12.4	d	Digital Output Module; c/w all Accessories.	sum	1		Rate Only
40.12.5	e	Analog Input Module; c/w all Accessories.	sum	1		Rate Only
40.12.6	f	Analog Output Module; c/w all Accessories.	sum	1		Rate Only
40.12.7	g	HMI; 12" c/w all Accessories:	sum	1		Rate Only
40.12.8	h	Ethernet Hub / Switch; 8 Port c/w all Accessories:	sum	1		Rate Only
40.12.9	i	RS485 Hub / Switch; 8 Port c/w all Accessories:	sum	1		Rate Only
40.12.10	j	RS485 - Ethernet Gateway; c/w all Accessories:	sum	1		Rate Only
40.12.11	k	Power Supply; c/w all Accessories:	sum	1		Rate Only
40.12.12	l	SCADA Computer; c/w all Accessories:	sum	1		Rate Only
40.12.13	m	SCADA Licence; c/w all Accessories:	sum	1		Rate Only
	8.12.2	MISSELANEOUS WORK:				
		Note : Allowance is made by way of provisional amount for the design, installation, testing and commissioning of Power Monitoring Works by a Nominated Specialist Sub-Contractor.				
40.12.14	a	Design and submission of design documentation to Engineer / Project	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 174						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 40 continued Electrical works 08 - Industrial Control Weeks (IC)						
-Schedule continued from page 173						
40.12.15	b	PLC Configuration & Programming.	sum	1		Rate Only
40.12.16	c	HMI Configuration & Programming.	sum	1		Rate Only
40.12.17	d	SCADA Integration into Existing.	sum	1		Rate Only
40.12.18	e	Commissioning & testing of installation and submission of site acceptance test certificate (SAT) for review and approval by die Engineer / Project Manager.	sum	1		Rate Only
40.12.19	f	Provision for the supply of As-Build documentation.	sum	1		Rate Only
40.12.20	g	Contractor's handling and profit on the above items.	%			Rate Only
40.13	8.13	ASSOCIATED SEQUENCE OF WORKS				
	8.13.1	Allowance for associated sequence of works;	sum	1		
40.13.1	a	Confirmation of specialised Industrial Control sub-contractor;	sum	1		Rate Only
40.13.2	c	Confirmation of manufacturer and range of equipment and material;	sum	1		Rate Only
40.13.3	d	Confirmation of equipment positions, route, length & quantities;	sum	1		Rate Only
40.13.4	e	Detail design of Industrial Control in accordance with Specifications;	sum	1		Rate Only
40.13.5	f	Submit detail design drawings and documentation to Engineer for review and approval;	sum	1		Rate Only
40.13.6	g	Ordering of material, assembly and programming of Industrial Control equipment and/or ordering and delivery of unit by specialised manufacture and / or supplier;	sum	1		Rate Only
40.13.7	h	Perform inspection and factory acceptance test (FAT) between specialist builder and / or supplier and contractor.;	sum	1		Rate Only
40.13.8	i	Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
40.13.9	j	Supply & installation of Industrial Power equipment complete with accessories, wiring, etc.;	sum	1		Rate Only
40.13.10	k	Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;	sum	1		Rate Only
40.13.11	l	Completion of test schedules and certificates for approval by the Engineer before handing-over;	sum	1		Rate Only
40.13.12	m	Labelling by way of indicating the relevant point of supply (i.e. distribution board and circuit number) , identification labels shall be an indoor grade printed vinyl tape, with a gloss finish;	sum	1		Rate Only
40.13.13	n	Testing, Commissioning and Certificate of Compliance (COC) for the LV Internal Distribution Boards and Small Power & Lighting installations.	sum	1		Rate Only
40.13.14	o	Technical data pack in A4 size binder - 3 hard copies and 1 soft copy on CD/memory stick (Including operating / maintenance manuals, drawings, technical information, guarantees and warranties);	sum	1		Rate Only
40.14	8.14	MISCELLANEOUS WORKS				
40.14.1	a	Provisional amount for items not covered above and as yet to be confirmed.	prov	1		Rate Only
40.14.2	b	Any other items the Tenderer deems necessary for the successful completion of the works.	sum	1		Rate Only
SCHEDULE 40 CONTINUED CARRIED OVER TO SUMMARY OF PHASE 4						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 41 Electrical works 09 - Area Lighting Works						
A OVERVIEW OF WORKS						
i		Design, (SANS 10098 & 10389) Supply (SANS 475) & Installation of Public / Area Lighting (SANS 10142-1) with the appropriate degree of protection enclosures (SANS 60529) and application (SANS 10108) in line with OHS Act environmental and lighting regulations, c/w luminaires, poles, mounting brackets, wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;				
B CLIENTS OBJECTIVES						
i		Minimize operational and security risk;				
ii		Address area lighting for complete plant site;				
C EXTENT OF WORKS						
i		Complete and/or verify lighting design;				
ii		Supply & Installation of pole structures;				
iii		Supply & installation of luminaires;				
iv		Supply & installation of power cables & switchgear;				
v		Testing & commissioning of works;				
D CONTRACTOR OFFERING:						
i		Specialized Sub-Contractor Offered :				
ii		Luminaires Offered :				
iii		Poles Offered :				
iv		Switchgear & Controller Offered :				
v		Material Delivery Period :				
vi		Installation Period :				
41.1 9.1 DESIGN						
		Requirements : Public / Area Lighting Installation in accordance with the latest SANS Codes of Practice 10098 and 10389 in conjunction with SANS 10142-01 by a Specialist Sub-contractor;				
		Note : Aim is to achieve a desired lighting lux levels in accordance with OHS regulations to ensure safe and secure working environment;				
41.1.1	9.1.1	Site Survey;	sum	1		
41.1.2	9.1.2	Risk / Requirement Assessment;;	sum	1		
41.1.3	9.1.3	Lighting Design (Calculations with Relux / Dialux) ;	sum	1		
41.1.4	9.1.4	Lighting Design Recommendation Report;	sum	1		Rate Only
41.1.5	9.1.5	Provisional amount for steer lighting installation;	sum	1		Rate Only
41.1.6	9.1.6	Provisional amount for area lighting installation;	sum	1		Rate Only
41.1.7	9.1.7	Contractor's handling and profit on the above items.	%			Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 176						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 41 continued						
Electrical works 09 - Area Lighting Works						
-Schedule continued from page 175						
41.1.8	9.1.8	Any other items the Tenderer deems necessary for the successful completion of the works.	sum	1		
41.2 9.2 SREET LIGHTING (SL) LUMINARES						
		Manufacturer : Beka, Similar and Approved.				
		Note : Supply & Installation of street ligting luminaires as specified c/w control gear and lamps, mounting and connecting accessories;				
	9.2.1	Type SL01 : StreetLight * LED * 18W * 3240lm * Pole Mounted (LEDlume mini);				
41.2.1	a	Supply	no	1		Rate Only
41.2.2	b	Install	no	1		Rate Only
	9.2.2	Type SL02 : StreetLight * LED * 26W * 4128lm * Pole Mounted (LEDlume mini);				
41.2.3	a	Supply	no	1		Rate Only
41.2.4	b	Install	no	1		Rate Only
	9.2.3	Type SL03 : StreetLight * LED * 36W * 5328lm * Pole Mounted (LEDlume mini);				
41.2.5	a	Supply	no	1		Rate Only
41.2.6	b	Install	no	1		Rate Only
41.3 9.3 POST TOP LIGHTING (PT) LUMINARES						
		Manufacturer : Beka, Similar and Approved.				
		Note : Supply & Installation of street ligting luminaires as specified c/w control gear and lamps, mounting and connecting accessories;				
	9.3.1	Type PT01 : PostTop * LED * Round * 19W * 2700lm * Pole Mounted;				
41.3.1	a	Supply	no	1		Rate Only
41.3.2	b	Install	no	1		Rate Only
	9.3.2	Type PT02 : PostTop * LED * Round * 28W * 4000lm * Pole Mounted;				
41.3.3	a	Supply	no	1		Rate Only
41.3.4	b	Install	no	1		Rate Only
	9.3.3	Type PT03 : PostTop * LED * Round * 37W * 5300lm * Pole Mounted;				
41.3.5	a	Supply	no	1		Rate Only
41.3.6	b	Install	no	1		Rate Only
41.4 9.4 HPS FLOOD LIGHTING (FLH) LUMINARES						
		Manufacturer : Beka, Similar and Approved.				
		Note : Supply & Installation of street ligting luminaires as specified c/w control gear and lamps, mounting and connecting accessories;				
	9.4.1	Type HFL01 : Flood * HPS * 1000W * 120 500lm * Bracket / Pole Mounted (BEKA PLR);				
41.4.1	a	Supply	no	1		Rate Only
41.4.2	b	Install	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 177						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 41 continued Electrical works 09 - Area Lighting Works						
-Schedule continued from page 176						
	9.4.2	Type HFL02 : Flood * HPS * 500W * 66 500lm * Bracket / Pole Mounted (BEKA PLR);				
41.4.3	a	Supply	no	1		Rate Only
41.4.4	b	Install	no	1		Rate Only
	9.4.3	Type HFL03 : Flood * HPS * 250W * 33 500lm * Bracket / Pole Mounted (BEKA PLR);				
41.4.5	a	Supply	no	1		Rate Only
41.4.6	b	Install	no	1		Rate Only
41.5	9.5	LED FLOOD LIGHTING (FLD) LUMINAIRES				
		Manufacturer : Beka, Similar and Approved.				
		Note : Supply & Installation of street ligting luminaires as specified c/w control gear and lamps, mounting and connecting accessories;				
	9.5.1	Type FLD01 : Flood * LED * 795W * 91 933lm * Bracket / Pole Mounted (Omniblast Mid);				
41.5.1	a	Supply	no	1		Rate Only
41.5.2	b	Install	no	1		Rate Only
	9.5.2	Type FLD02 : Flood * LED * 451W * 50 675lm * Bracket / Pole Mounted (Omnistar Maxi);				
41.5.3	a	Supply	no	1		Rate Only
41.5.4	b	Install	no	1		Rate Only
	9.5.3	Type FLD03 : Flood * LED * 217W * 29 593lm * Bracket / Pole Mounted (Ledflood Maxi);				
41.5.5	a	Supply	no	17		
41.5.6	b	Install	no	17		
	9.5.4	Type FLD04 : Flood * LED * 131W * 17 756 lm * Bracket / Pole Mounted (Ledflood Midi);				
41.5.7	a	Supply	no	1		Rate Only
41.5.8	b	Install	no	1		Rate Only
	9.5.5	Type FLD05 : Flood * LED * 38W * 4 748lm * Bracket / Pole Mounted (Omnistar Mini);				
41.5.9	a	Supply	no	1		Rate Only
41.5.10	b	Install	no	1		Rate Only
41.6	9.6	STEEL POLE STRUCTURES				
		Manufacturer : Beka, Similar and Approved.				
		Note : Supply & Installation of pole structures as specified c/w glandplate assembly, miniature circuit breaker, base plate, access door, luminaire mounting structures c/w all required accessories.				
	9.6.1	Type A1 : Steel Pole, 5.7m (5m above ground level), c/w cable entry, access opening, plates, 5A-5kA CB, etc.				
41.6.1	a	Supply	no	1		Rate Only
41.6.2	b	Install	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 178						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 41 continued Electrical works 09 - Area Lighting Works						
-Schedule continued from page 177						
	9.6.2	Type A2 : Steel Pole, 9.2m (8m above ground level), c/w cable entry, access opening, plates, 5A-5kA CB, etc.				
41.6.3	a	Supply	no	1		Rate Only
41.6.4	b	Install	no	1		Rate Only
	9.6.3	Type A3 : Steel Pole, 14m (12m above ground level), c/w cable entry, access opening, plates, 5A-5kA CB, etc.				
41.6.5	a	Supply	no	1		Rate Only
41.6.6	b	Install	no	1		Rate Only
41.7	9.7	FIBRE GLASS POLE STRUCTURES				
		Manufacturer : Beka, Similar and Approved.				
		Note : Supply & Installation of pole structures as specified c/w glandplate assembly, miniature circuit breaker, base plate, access door, luminaire mounting structures c/w all required accessories.				
	9.7.1	Type B1 : Fibre Glass Pole, 5.7m (5m above ground level), c/w cable entry, access opening, plates, 5A-5kA CB, etc.				
41.7.1	a	Supply	no	1		Rate Only
41.7.2	b	Install	no	1		Rate Only
	9.7.2	Type B2 : Fibre Glass Pole, 9.2m (8m above ground level), c/w cable entry, access opening, plates, 5A-5kA CB, etc.				
41.7.3	a	Supply	no	17		
41.7.4	b	Install	no	17		
	9.7.3	Type B3 : Fibre Glass Pole, 14m (12m above ground level), c/w cable entry, access opening, plates, 5A-5kA CB, etc.				
41.7.5	a	Supply	no	1		Rate Only
41.7.6	b	Install	no	1		Rate Only
41.8	9.8	HIGH MAST SOLAR LIGHTING ASSEMBLIES				
		Manufacturer : Beka, Similar and Approved.				
		Note : Supply & Installation of street lighting luminaires as specified c/w solar panels, inverters, batteries, enclosures, control gear and lamps, mounting and connecting accessories;				
	9.8.1	Flood Light Luminaires :				
		Note : -				
41.8.1	a	None ;	sum	1		Rate Only
	9.8.2	Associated PV Solar Panel :				
		Note : -				
41.8.2	a	None ;	sum	1		Rate Only
	9.8.3	Associated Batteries :				
		Note : -				
41.8.3	a	None ;	sum	1		Rate Only
	9.8.4	Associated Inverter :				
		Note : -				
41.8.4	a	None ;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 179						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 41 continued Electrical works 09 - Area Lighting Works						
-Schedule continued from page 178						
	9.8.5	Associated Enclosure :				
		Note : -				
41.8.5	a	None ;	sum	1		Rate Only
	9.8.6	Associated Pole Fixing Bracket & Accessories :				
		Note : -				
41.8.6	a	None ;	sum	1		Rate Only
	9.8.7	Associated Power & Control Cabling :				
		Note : -				
41.8.7	a	None ;	sum	1		Rate Only
41.9	9.9	MAST STRUCTURES				
		Manufacturer : Fabrication to SANS 1021 4-1987, Galvanized to SANS 121 (ISO 1461) - 1987 - 1, Designed of poles to SANS 1022-1991, Spigot swaged dow and not welded in, Welding to SANS 1044 Part 1, II, III, IV, All tubing to SANS 657-1-2004 Grade S355.				
		Note : Supply & Installation of steel mast structures as specified c/w glandplate assembly, miniature circuit breaker, base plate, access door, luminaire mounting structures c/w all required accessories.				
	9.9.1	Type C1 : Galvanized Steel Mast (scissor/hinge), 30m, c/w foot piece, plinth, cable entry, access opening, plates, local CB protection, etc.				
41.9.1	a	Supply	no	1		Rate Only
41.9.2	b	Install	no	1		Rate Only
	9.9.2	Type C2 : Galvanized Steel Mast (scissor/hinge), 20m, c/w foot piece, plinth, cable entry, access opening, plates, local CB protection, etc.				
41.9.3	a	Supply	no	1		Rate Only
41.9.4	b	Install	no	1		Rate Only
	9.9.3	Type C3 : Galvanized Steel Mast (scissor/hinge), 15m, c/w foot piece, plinth, cable entry, access opening, plates, local CB protection, etc.				
41.9.5	a	Supply	no	1		Rate Only
41.9.6	b	Install	no	1		Rate Only
41.10	9.10	LIGHTING MOUNTING STRUCTURES				
	9.10.1	Supply and install of lighting pole bracket for mounting of luminaries c/w 16 mm Ø spike, removable disk, 16 mm Ø holes for mounting of luminaires:				
41.10.1	a	1 Way Bracket for Lighting Pole;	no	1		Rate Only
41.10.2	b	1 Way Bracket Decorative Lighting Pole;	no	1		Rate Only
41.10.3	c	2 Way Bracket Lighting Pole;	no	17		
41.10.4	d	2 Way Bracket Decorative Lighting Pole;	no	1		Rate Only
41.10.5	e	3 Way Bracket Lighting Pole;	no	1		Rate Only
41.10.6	f	3 Way Bracket Decorative Lighting Pole;	no	1		Rate Only
41.10.7	g	4 Way Bracket Lighting Pole;	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 180						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 41 continued Electrical works 09 - Area Lighting Works						
-Schedule continued from page 179						
	9.10.2	Supply and install of mast bracket for mounting of luminaries on mast complete high with 16 mm Ø spike, removable disk, 16 mm Ø holes for mounting of luminaires.				
41.10.8	h	4 Way Bracket for High Mast;	no	1		Rate Only
41.10.9	i	6 Way Bracket for High Mast;	no	1		Rate Only
41.10.10	j	9 Way Bracket for High Mast;	no	1		Rate Only
41.10.11	k	12 Way Bracket for High Mast;	no	1		Rate Only
41.11 9.11 SUPPLY CABLE INSTALLATION						
	9.11.1	LV Power Cable				
41.11.1	a	Supply	m	645		
41.11.2	b	Install	m	645		
41.11.3	c	Cable Terminations (Supply & Install)	no	17		
41.11.4	d	Cable Joint (Supply & Install)	no	1		Rate Only
	9.11.2	Bear Copper Earth Wire (BCEW)				
41.11.5	a	Supply	m	1		Rate Only
41.11.6	b	Install	m	1		Rate Only
41.11.7	c	Cable Terminations (Supply & Install)	no	1		Rate Only
	9.11.3	Cable Management				
41.11.8	a	Excavations for cable / sleeve (500mm wide, 1150mm deep) , including backfilling, bedding and blanketing, compact to specifications;	m	645		
41.11.9	b	PVC Tubular Sleeve Pipe;	m	1		Rate Only
41.11.10	c	M & Heavy Duty Cable Trays (PT38/76 range) ;	m	1		Rate Only
41.11.11	d	Wire Mesh Cable Trays (GS50/75 range) ;	m	1		Rate Only
41.12 9.12 CONTROL GEAR & SUPPLY HARNESS						
		Note : Supply and Install control gear, wiring harness, complete control circuit with photocell, 15 A socket outlet, contactor and circuit breakers for day-night control.				
41.12.1	a	1 Way Configuration (allowance made for 14m) ;	no	1		Rate Only
41.12.2	b	2 Way Configuration (allowance made for 14m) ;	ea	17		
41.12.3	c	3 Way Configuration (allowance made for 14m) ;	no	1		Rate Only
41.12.4	d	4 Way Configuration (allowance made for 15m) ;	no	1		Rate Only
41.12.5	e	6 Way Configuration (allowance made for 15m) ;	no	1		Rate Only
41.12.6	f	9 Way Configuration (allowance made for 20m) ;	no	1		Rate Only
41.12.7	g	12 Way Configuration (allowance made for 30m) ;	no	1		Rate Only
41.13 9.13 CIVIL WORKS						
41.13.1	10.10.1	Excavation of lighting pole foundations, including backfilling, bedding and blanketing, compact to specifications;	sum	17		
41.13.2	10.10.2	Excavation of high mast foundations, including backfilling, bedding and blanketing, compact to specifications;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 181						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 181

J:\4048 Jan Kempdorp WWTW\QS\Estims\2st-Tender-Oct 2025\1.JK -WWTW -R9 - Blank.xlsx 2025/09/16

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 42						
Electrical works 10 - Standby Generator Supply Works						
A OVERVIEW OF WORKS						
	i	Supply (SANS8528-1:2008) & Installation (SANS 10142-1) of Low Voltage Diesel Generator (DG) , IP Rated, Factory Build, Wired and Fully or Partially Type Tested (IEC 60439) by specialised builder, installed on plinth or in substation room, c/w canopy, fuel tank, batteries & charger, change over & switchgear, controller, earthing, Low Voltage (LV) switchgear, metering, internal wiring, auxiliary equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;				
B CLIENTS OBJECTIVES						
	i	Installation of new Standby Generator Unt.				
	ii	-				
C EXTENT OF WORKS						
	i	Design, manufacture & delivery of new unit;				
	ii	Construction of plinth and move unit into position;				
	iii	Installation of primary feeders (LV power cables) ;				
	iv	Earthing & all associated works;				
	v	Testing & commissioning of complete works;				
D CONTRACTOR OFFERING:						
	i	Specialized Manufacturer / Builder Offered :				
	ii	Motor Offered :				
	iii	Alternator Offered :				
	iv	Switchgear & Controller Offered :				
	v	Material Delivery Period :				
	vi	Installation Period :				
42.1 10.1 POC01 DIESEL GENERATOR OPTION 01						
	a	Standby Diesel Generator	Type	Info		
	b	0.42kV * 300kVA * 240kW (450A * 15kA)	Rating	Info		
	c	Factory Build & Wired * Motor / Control Compartment * Side Access * n/a Cable Entry * Grey * 2CR12 Corrosion Resistant Metal (2mm) * Outdoor * Water / Dust / Vermin Proof * IP65 * n/a Busbars * TNS Earthing System * 2B Form * n/a Ventilation * Plinth Mounted Installation	Spec.	Info		
	d	New Way / CAT / Diesel Innovations / Diesel Elec / Multilec;	Mfc.	Info		
	e	Technical Drawings & Schedules Issued;	Ref	Info		
	f	None;	BOQ	Info		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 183						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 42 continued Electrical works 10 - Standby Generator Supply Works						
-Schedule continued from page 182						
	10.1.1	Supply & Installation of New Standby Generator Unit:				
42.1.1	a	Canopy : Outdoor, weatherproof, sound attenuated silent canopy, complete with base frame, ventilation/cooling system, with louvers, lockable access doors, attenuation and sound proofing material;	no	1		
42.1.2	b	Motor Assembly : Supply & Assemble, c/w accessories; (<i>Perkins / Lister / Cummings / John Deere / Iveco / Duetz / MU / CAT / Volvo, similar and approved</i>)	no	1		
42.1.3	c	Alternator Assembly : Supply & Assemble, c/w accessories; (<i>Leroy Somer / Marathon / Marelli Motor / Enga / Stanford, similar and approved</i>)	no	1		
42.1.4	d	Main LV Distribution Panel : Supply & Install Main LV Circuit Breaker, c/w fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (<i>ABB / Schneider / CBI, similar & approved</i>)	no	1		
42.1.5	e	Automatic Mains Failure : Supply & Install Automatic Transfer Switch, Supporting Switchgear, c/w fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (<i>Socomoc 40 - 125A (ATyS s), 40 - 160A (ATyS d), 125 - 3200A (ATyS r, similar & approved</i>)	no	1		
42.1.6	f	Generator Controller : Supply & Install Controller Module c/w control circuits, fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (<i>DSE 6000 Series range, similar & approved</i>)	no	1		
42.1.7	f	Synchronising Controller : Supply & Install Controller Module c/w control circuits, fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (<i>DSE 8000 Series range, similar & approved</i>)	no	1		Rate Only
42.1.8	g	Controller Modem : Supply & Install Controller Modem Module c/w control circuits, fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (<i>Deep Sea Electronics range, similar & approved</i>)	no	1		
42.1.9	h	Indication : Supply & Install Current Analog, Voltage Analog, Run Counter, Oil Temp, Fuel Level, E-Stop c/w control circuits, fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories;	no	1		
42.1.10	i	Batteries : Set (<i>2 x 102Ah 625 CCA</i>) of Maintenance Free Batteries c/w charging unit;	no	1		
42.1.11	j	Day Tank : Allow for the supply and installation of a suitable steel 1000 litre diesel day tank c/w fuel level switch, water trap, filter & drain plug;	no	1		
42.2	10.2	POC01 DIESEL GENERATOR OPTION 02				
	a	Standby Diesel Generator	Type	Info		
	b	0.42kV * 175kVA * 140kW (<i>250A * 15kA</i>)	Rating	Info		
	c	Factory Build & Wired * Motor / Control Compartment * Side Access * n/a Cable Entry * Grey * 2CR12 Corrosion Resistant Metal (<i>2mm</i>) * Outdoor * Water / Dust / Vermin Proof * IP65 * n/a Busbars * TNS Earthing System * 2B Form * n/a Ventilation * Plinth Mounted Installation	Spec.	Info		
	d	New Way / CAT / Diesel Innovations / Diesel Elec / Multilec;	Mfc.	Info		
	e	Technical Drawings & Schedules Issued;	Ref	Info		
	f	None;	BOQ	Info		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 184						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 42 continued						
Electrical works 10 - Standby Generator Supply Works						
-Schedule continued from page 183						
	10.2.1	Supply & Installation of New Standby Generator Unit:				
42.2.1	a	Canopy : Outdoor, weatherproof, sound attenuated silent canopy, complete with base frame, ventilation/cooling system, with louvers, lockable access doors, attenuation and sound proofing material;	no	1		Rate Only
42.2.2	b	Motor Assembly : Supply & Assemble, c/w accessories; (Perkins / Lister / Cummings / John Deere / Iveco / Duetz / MU / CAT / Volvo, similar and approved)	no	1		Rate Only
42.2.3	c	Alternator Assembly : Supply & Assemble, c/w accessories; (Leroy Somer / Marathon / Marelli Motor / Enga / Stanford, similar and approved)	no	1		Rate Only
42.2.4	d	Main LV Distribution Panel : Supply & Install Main LV Circuit Breaker, c/w fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (ABB / Schneider / CBI, similar & approved)	no	1		Rate Only
42.2.5	e	Automatic Mains Failure : Supply & Install Automatic Transfer Switch, Supporting Switchgear, c/w fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (Socomoc 40 - 125A (ATyS s), 40 - 160A (ATyS d), 125 - 3200A (ATyS r, similar & approved)	no	1		Rate Only
42.2.6	f	Generator Controller : Supply & Install Controller Module c/w control circuits, fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (DSE 6000 Series range, similar & approved)	no	1		Rate Only
42.2.7	f	Synchronising Controller : Supply & Install Controller Module c/w control circuits, fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (DSE 8000 Series range, similar & approved)	no	1		Rate Only
42.2.8	g	Controller Modem : Supply & Install Controller Modem Module c/w control circuits, fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories; (Deep Sea Electronics range, similar & approved)	no	1		Rate Only
42.2.9	h	Indication : Supply & Install Current Analog, Voltage Analog, Run Counter, Oil Temp, Fuel Level, E-Stop c/w control circuits, fuses, terminals, relays, switches, contactors, auxiliary contacts & accessories;	no	1		Rate Only
42.2.10	i	Batteries : Set (2 x 102Ah 625 CCA) of Maintenance Free Batteries c/w charging unit;	no	1		Rate Only
42.2.11	j	Day Tank : Allow for the supply and installation of a suitable steel 1000 litre diesel day tank c/w fuel level switch, water trap, filter & drain plug;	no	1		Rate Only
42.3	10.3	CIVIL WORKS				
	10.3.1	Plinth :				
		Note : Allow for the supply and installation of a suitable concrete base, c/w soil survey, plinth design verification, excavation, supply & install of material and plinth compaction test certificate (position to be confirmed on site) ;				
	10.3.1.1	Plinth (Pre-Cast) :	no	1		
	10.3.1.2	Plinth (Cast on Site) :	no	1		Rate Only
42.3.1	a	Soil survey to confirm plinth design;	no	1		Rate Only
42.3.2	b	Plinth shall be 150mm above finished ground level;	no	1		Rate Only
42.3.3	c	25 Mpa concrete to be used and vibrated;	no	1		Rate Only
42.3.4	d	Bottom of foundation to be compacted after excavation to 95% MOD AASHTO;	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 185						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 42 continued Electrical works 10 - Standby Generator Supply Works						
-Schedule continued from page 184						
42.3.5	e	Reinforcing & Countersunk lifting eyes to be designed and detailed by manufacturer <i>(Pre-Cast)</i> ;	sum	1		Rate Only
42.3.6	f	All the steel components <i>(except the reinforcing)</i> are to be stainless steel;	sum	1		Rate Only
42.3.7	g	Concrete to be cured for 7 days with approved curing method;	sum	1		Rate Only
42.3.8	h	Steel mesh placed 50mm from bottom of slab <i>(Cast on Site)</i> ;	sum	1		Rate Only
42.3.9	i	Foundation to have a 30mm chamfer all around;	sum	1		Rate Only
42.3.10	j	MV & LV Cable Entry to have removable pre-cast concrete slab <i>(Pre-Cast)</i> ;	sum	1		Rate Only
42.3.11	k	MV & LV Cable Entry to be bricked-Up <i>(Cast on Site)</i> ;	sum	1		Rate Only
42.4	10.4	EARTHING WORKS				
		Note : Allow for the supply and installation of a suitable earthing system, c/w resistivity test, confirmation of design, excavation, supply & installation of material and earth resistivity test certificate <i>(position to be confirmed on site)</i> ;				
	10.4.1	Suitable earthing system (Equipotential & LV Earth Electrode System)	sum	1		
42.4.1	a	Allow for 3 x 16 mm ø 1,6 m earth rods;	sum	1		
42.4.2	b	Allow for 15 m x 70mm² bare copper earth wire;	sum	1		
42.4.3	c	Allow for 5 m x 16mm² insulated copper earth wire;	sum	1		
42.4.4	d	Trenching <i>(500mm wide, 1.15m deep)</i> ;	sum	1		
42.4.5	e	Horizontal Grid <i>(10mm Solid Round Copper)</i> ;	sum	1		
42.4.6	f	Earth Tails <i>(50x3mm)</i> ;	sum	1		Rate Only
42.4.7	g	Fence Tails <i>(Gates)</i> ;	sum	1		Rate Only
42.4.8	h	Vertical Rods <i>(1.5m Copper Plated Steel)</i> ;	sum	1		Rate Only
42.4.9	i	Back Filling and Compaction;	sum	1		Rate Only
42.4.10	j	Import Soil;	sum	1		Rate Only
42.4.11	k	Welding and Bonding	sum	1		Rate Only
42.4.12	l	Conductive aggregate cement <i>(Resistivity mixture <0.2 Ωm)</i> ;	sum	1		Rate Only
42.4.13	m	Soil resistivity survey & confirmation of earth design;	sum	1		
42.4.14	n	Earth resistivity Test Certificate;	sum	1		
42.5	10.5	ASSOCIATED SEQUENCE OF WORKS				
	10.5.1	Allowance for associated sequence of works;	sum	1		
42.5.1	a	Confirmation of specialised standby generator unit builder and / or supplier;	sum	1		Rate Only
42.5.2	c	Confirmation of material and equipment ratings, range and manufacturer;	sum	1		Rate Only
42.5.3	d	Detail design of diesel generator unit by specialised builder in accordance with Specifications;	sum	1		Rate Only
42.5.4	e	Submit detail design drawings and documentation to Engineer for review and approval;	sum	1		Rate Only
42.5.5	f	Ordering of material and manufacture of diesel generator unit and/or ordering and delivery of unit by specialised builder and / or supplier;	sum	1		Rate Only
42.5.6	g	Perform inspection and factory acceptance test <i>(FAT)</i> between specialist builder and / or supplier and contractor, c/w dummy load test.;	sum	1		Rate Only
42.5.7	h	Issue of factory acceptance test <i>(FAT)</i> certificate and arrange inspection with Engineer for review and approval;	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 186						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 186

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

J:\4048 Jan Kempdorp WWTW\QS\Estims\2st-Tender-Oct 2025\1.JK -WWTW -R9 - Blank.xlsx 2025/09/16

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 43						
Electrical works 11 - Earthing & Lightning Protection (ELP) Work						
A OVERVIEW OF WORKS						
	i	Design Verification, Supply, Installation and testing of earthing and lightning protection systems in accordance with the latest SANS Codes of Practice 10199 (2004) and 10313 (2008) in conjunction with SANS 62305-1-2-3-4 and IEC 62305-1-2-3-4 and installation copper earth electrodes at each earth termination based on a soil resistivity survey in order to ensure that the complete electrical installation is earthed, boded and continuity established for the purpose of people and structure protection and safety as confirmed with overall earth resistance measurement and certification;				
B CLIENTS OBJECTIVES						
	i	Minimize infrastructure damage & human injury;				
	ii	Address all building & structures within plant;				
C EXTENT OF WORKS						
	i	Site Survey & Risk Assessment;				
	ii	Soil Resistivity Test;				
	iii	ELPS Design;				
	iv	Installation of ELPS Material & Equipment;				
	v	Testing & commissioning of works;				
D CONTRACTOR OFFERING:						
	i	Specialized Sub-Contractor Offered :				
	ii	Earthing System Equipment Offered :				
	iii	Lightning System Equipment Offered :				
	iv	General Equipment Offered :				
	v	Material Delivery Period :				
	vi	Installation Period :				
43.1 D CONTRACTOR OFFERING:						
		Requirements : Earthing and Lightning protection system in accordance with the latest SANS Codes of Practice 10199 (2004) and 10313 (2008) in conjunction with SANS 62305-1-2-3-4: 2007 and IEC 62305-1-2-3-4: 2006 by a Specialist Sub-contractor;				
		Note : Aim is to achieve a desired resistance reading of less than 1Ω for the earthing of high voltage substations and switchyards and to ensure safe step and touch potentials as well as achieve a desired resistance reading of less than 10Ω for the lightning protection to exposed structures;				
43.1.1	11.1.1	Site Survey;	sum	1		
43.1.2	11.1.2	Risk Assessment (SANS 62305-2) ;	sum	1		
43.1.3	11.1.3	Soil Resistivity Test inc. issuing results / report;	sum	1		
43.1.4	11.1.4	Lightning Protection Design (SANS 62305) ;	sum	1		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 188						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 43 continued						
Electrical works 11 - Earthing & Lightning Protection (ELP) Work						
-Schedule continued from page 187						
43.1.5	11.1.5	Earthing Design (SANS 10142 & SANS 725);	sum	1		Rate Only
43.1.6	11.1.6	Earthing Design (Safety Analysis Inc. Step & Touch & GPR Calculations with CDEGS);	sum	1		Rate Only
43.1.7	11.1.7	Provisional amount for lightning protection system (Installation of a overall lightning protection system to ensure earth continuity and overall earth resistance value for the overall facility structures, less than 10 ohm.)	sum	1		Rate Only
43.1.8	11.1.8	Provisional amount for earthing protection system (Installation of a overall earthing system to ensure electrical earth continuity and overall earth resistance value for the electrical distribution network of less than 1 ohm.)	sum	1		Rate Only
43.1.9	11.1.9	Contractor's handling and profit on the above items.	%			Rate Only
43.1.10	11.1.10	Any other items the Tenderer deems necessary for the successful	sum	1		
43.2	11.2	EARTHING (CUSTOM DESIGN)				
		Note : Allowance for the material and labour for the effective earthing and bonding of the substation building as per Specification and Earthmat Design / Drawing;				
	11.2.1	Horizontal Grid - 10mm Solid Round Copper				
43.2.1	a	Supply	m	1		Rate Only
43.2.2	b	Install	m	1		Rate Only
	11.2.2	Horizontal Grid - 70mm Bear CEW				
43.2.3	a	Supply	m	1		Rate Only
43.2.4	b	Install	m	1		Rate Only
	11.2.3	Horizontal Grid - 16mm Insulated CEW				
43.2.5	a	Supply	m	1		Rate Only
43.2.6	b	Install	m	1		Rate Only
	11.2.4	Vertical Rods / Earth Electrodes - 4x16mm 3.2m Long Copper				
43.2.7	a	Supply	no	1		Rate Only
43.2.8	b	Install	no	1		Rate Only
	11.2.5	Earth & Fence Tails - 50x3mm flat copper				
43.2.9	a	Supply	no	1		Rate Only
43.2.10	b	Install	no	1		Rate Only
	11.2.6	Gate & Fence Corner Post Tails - 70mm Insulated CEW				
43.2.11	a	Supply	no	1		Rate Only
43.2.12	b	Install	no	1		Rate Only
43.2.13	a	Welding & Bonding				
43.2.14	b	Main to main (CCS - Exothermally Welded)	no	1		Rate Only
43.2.15	c	Main to tail (CCS - Exothermally Welded)	no	1		Rate Only
43.2.16	d	Tail to equipment	no	1		Rate Only
43.2.17	e	Tail to gate / fence	no	1		Rate Only
43.2.18	f	Main to main (Brazed)	no	1		Rate Only
43.2.19	g	Main to tail (Brazed)	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 189						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 43 continued						
Electrical works 11 - Earthing & Lightning Protection (ELP) Work						
-Schedule continued from page 188						
43.3	11.3	EARTHING (STANDARD DESIGNS)				
		Note : Installation of a overall earthing system to ensure electrical earth continuity and overall earth resistance value for the electrical distribution network of less than 1 ohm;				
	11.3.1	Earthing of MV Distribution Equipment				
43.3.1	a	Quantities measured elsewhere in BOQ.	no	1		Rate Only
	11.3.2	Earthing of Generator Installation				
43.3.2	a	Quantities measured elsewhere in BOQ.	no	1		Rate Only
	11.3.3	Earthing of LV Distribution Equipment				
43.3.3	a	Quantities measured elsewhere in BOQ.	no	1		Rate Only
43.4	11.4	LIGHTNING PROTECTION (YARD)				
		Note : Supply and stringing of AAC Conductor, complete as per Specification;				
	11.4.1	Hare AAC Conductor				
43.4.1	a	Supply	m	1		Rate Only
43.4.2	b	Install	m	1		Rate Only
	11.4.2	Supply and installation of hardware and clamps, complete as per Specification.				
43.4.3	a	Earth Wire Clamps	no	1		Rate Only
43.4.4	b	PG Clamps	no	1		Rate Only
43.5	11.5	LIGHTNING PROTECTION (BUILDING)				
		Note : Installation of a overall lightning protection system to ensure earth continuity and overall earth resistance value for the overall facility structures, less than 10 ohm;				
	11.5.1	Finial (±500mm)				
43.5.1	a	Supply	no	20		
43.5.2	b	Install	no	20		
	11.5.2	Air Termination Conductor, 8mmΦ Aluminium, laid in aluminium alloy guides spaced at 1m intervals.				
43.5.3	a	Supply	m	164		
43.5.4	b	Install	m	164		
	11.5.3	Down Conductor, 8mmΦ Aluminium Conductor, between air and earth terminations with conductor holders every 1m.				
43.5.5	a	Supply	m	90		
43.5.6	b	Install	m	90		
	11.5.4	Earth entry lead installed onto non-conducting structure in galvanised conduit and bonded to down conductor and earth termination assembly. As per Specification.				
43.5.7	a	Supply	no	20		
43.5.8	b	Install	ea	20		
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 190						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 43 continued						
Electrical works 11 - Earthing & Lightning Protection (ELP) Work						
-Schedule continued from page 189						
	11.5.5	Earth entry lead installed onto conducting structure in galvanised conduit and bonded to structure and earth termination assembly. As per Specification.				
43.5.9	a	Supply	no	1		Rate Only
43.5.10	b	Install	no	1		Rate Only
	11.5.6	Earth Termination Assembly. Including 1500mm x 16mmø Cu earth rod and bonding to earth entry lead. Installed 1000mm from building and 500mm below ground level. As per detailed drawing Specification				
43.5.11	a	Supply	no	1		Rate Only
43.5.12	b	Install	no	1		Rate Only
	11.5.7	Bi-metallic test joint between down conductor system and earth termination.				
43.5.13	a	Supply	no	20		
43.5.14	b	Install	no	20		
	11.5.8	25mm² Insulated Copper Earth Wire - between earth termination and main distribution board.				
43.5.15	a	Supply	m	164		
43.5.16	b	Install	m	164		
	11.5.9	Aluminium stand-off bracket inclusive of PVC backing fixed to structure.				
43.5.17	a	Supply	no	1		Rate Only
43.5.18	b	Install	no	1		Rate Only
	11.5.10	16mm diameter copper earth electrodes mechanically driven into the ground.				
43.5.19	a	Supply	no	20		
43.5.20	b	Install	no	20		
	11.5.11	600/1000V Grade 16mm² stranded bare copper earth wire.				
43.5.21	a	Supply	m	20		
43.5.22	b	Install	m	20		
	11.5.12	Brass clamp terminations to copper cable and top of earth electrode				
43.5.23	a	Supply	no	1		Rate Only
43.5.24	b	Install	no	1		Rate Only
	11.5.13	20mm PVC conduit fixed to concrete, brickwork inclusive of saddles				
43.5.25	a	Supply	m	1		Rate Only
43.5.26	b	Install	m	1		Rate Only
	11.5.14	20mm Galvanised conduit fixed to concrete, brickwork inclusive of saddles.				
43.5.27	a	Supply	m	90		
43.5.28	b	Install	m	90		
	11.5.15	Sealing of joints with Denso tape				
43.5.29	a	Supply	no	1		Rate Only
43.5.30	b	Install	no	1		Rate Only
	11.5.16	Bonding of air termination conductor between roof, gutter, etc				
43.5.31	a	Supply	no	1		Rate Only
43.5.32	b	Install	no	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 191						

Item number	Payment reference	Item Description	Unit	Quantities	Rate	Amount Rands.cents
SANS Schedule 43 continued						
Electrical works 11 - Earthing & Lightning Protection (ELP) Work						
-Schedule continued from page 190						
	11.5.17	Bonding of steel structure to structure reinforcement by installation of down conductor with conductor holders every 1m.				
43.5.33	a	Supply	no	1		Rate Only
43.5.34	b	Install	no	2		Rate Only
	11.5.18	Bonding of all metal water mains to the earth busbar in the Main Switchboard by solid 15 x 2mm copper strapping c/w brass fixing accessories.				
43.5.35	a	Supply	m	1		Rate Only
43.5.36	b	Install	m	1		Rate Only
	11.5.19	Bonding of other metal structures to the earth busbar in the nearest switchboard by solid 12 x 0.8mm perforated copper strapping c/w brass fixing accessories.				
43.5.37	a	Supply	m	1		Rate Only
43.5.38	b	Install	m	1		Rate Only
	11.5.20	Earth test point label installed at top end of each earth entry lead.				
43.5.39	a	Supply	no	20		
43.5.40	b	Install	no	20		
43.6	11.6	EXCAVATIONS				
		Excavate trenches for sleeves and conductor inclusive of backfilling with soil and compaction as per Specification and Substation Lightning Protection Drawing. Note: Contractor to make own assessment of % pickable/soft rock/hard rock. <i>(Rate per running meter)</i>				
43.6.1	11.6.1	Trenching (500mm wide, 1150mm deep);	m	90		
43.6.2	11.6.2	Vertical Rods / Earth Electrodes Drilling up to 5m;	no	20		
43.6.3	11.6.3	Conductive aggregate cement (Resistivity with mixture < 0.2 Ωm);	m³	1		Rate Only
43.6.4	11.6.4	Reinstatement of concrete after earthing installation;	no	1		Rate Only
43.7	11.7	ASSOCIATED SEQUENCE OF WORKS				
	11.7.1	Allowance for associated sequence of works;	sum	1		
43.7.1	a	Confirmation of specialised ELPS sub-contractor;	sum	1		Rate Only
43.7.2	b	Confirmation of manufacturer and range of equipment and material;	sum	1		Rate Only
43.7.3	c	Confirmation of equipment positions, route, length & quantities;	sum	1		Rate Only
43.7.4	d	Detail design of ELPS in accordance with Specifications;	sum	1		Rate Only
43.7.5	e	Submit detail design drawings and documentation to Engineer for review and approval;	sum	1		Rate Only
43.7.6	f	Supply & installation of ELPS equipment complete with accessories, wiring, etc.;	sum	1		Rate Only
43.7.7	g	Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;	sum	1		Rate Only
43.7.8	h	Measure & Test Earth Resistance and Continuity.	sum	1		Rate Only
43.7.9	i	Issuing of earthing and lighting protection system Certificate in accordance with SANS 10313 and signed by ELPA accredited installer.	sum	1		Rate Only
SCHEDULE SUB TOTAL CARRIED FORWARD TO PAGE 192						

Upgrading & Refurbishment of the Jan Kempdorp WWTW

BILL OF QUANTITIES PAGE NUMBER 192

Contractor Witness 1 Witness 2 Employer Witness 1 Witness 2

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ELECTRICAL WORKS - SCOPE OF WORKS

SUMMARY OF PHASE 4

Schedule 33	Electrical works 01 - Preliminary & General	
Schedule 34	Electrical works 02 - Medium Voltage Ddistribution (MVdx)	
Schedule 35	Electrical works 03 - Medium Voltage Reticulation Works (MVrt)	
Schedule 36	Electrical works 04 - Low Voltage Distribution (LVdx)	
Schedule 37	Electrical works 05 - Low Voltage Reticulation Work (LVrt)	
Schedule 38	Electrical works 06 - Small Power & Lighting Work (SP&L)	
Schedule 39	Electrical works 07 - Industrial Power Work (IP)	
Schedule 40	Electrical works 08 - lindrical Control Weeks (IC)	
Schedule 41	Electrical works 09 - Area Lighting Works	
Schedule 42	Electrical works 10 - Standby Generator Supply Works	
Schedule 43	Electrical works 11 - Earthing & Lightning Protection (ELP) Work	

Sub - total of **Phase 4** to be carried to summary :

Upgrading & Refurbishment of the Jan Kempdorp WWTW

PHOKWANE LOCAL MUNICIPALITY

**UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS**

CONTRACT: PLM/TREF/1409 - 2025

Section C2.3
Calculation of Bid Sum

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

PART C3
Scope of Works

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP

WASTE WATER TREATMENT WORKS

CONTRACT : PLM/TREF/1409 - 2025

INDEX

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END OF SECTION

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C3.1

Description of the Works

C 3.1 DESCRIPTION OF THE WORKS

The works specifications form an integral part of the contract documents and shall be deemed to supplement, the Standard Specifications (SANS 1200)

In the event of any discrepancy or conflict with any part or parts of the Standard Specifications (SANS 1200), the Bill of Quantities or the Drawings, the Works Specifications shall take precedence.

The Standard Specifications (SANS 1200) which form part of this Contract have been written to cover all phases of work normally required for Civil Engineering contracts and they may therefore cover items not applicable to this particular contract.

C3.1.1 Employer’s Objectives

The Employer’s objectives are to deliver public infrastructure using labour-enhanced construction methods in the execution of certain items of the Works. In this specific instance the Employer’s objective is to refurbish the existing Jan Kempdorp WWTW to fully restore operational capacity and to improve effluent quality.

The aim is to improve social health conditions and to provide temporary employment opportunities coupled with training for the communities within and in close proximity of Jan Kempdorp by introducing labour-intensive construction methods on those items of work which are suitable to be executed in this manner. The Contractor will have to provide documentation to prove his usage of local labour.

The description of the project contained in the Scope of Work is merely an outline of the Contract Works and shall not limit the work to be carried out by the Contractor under this Contract. Details of some of the major items are given in this section and approximately detailed quantities for each type of work to be carried out in accordance with the Contract Documents are included in the Bill of Quantities.

C3.1.2 Overview of the Works

The construction procedures include the handling of live sewer with the decommissioning / switch over stage. In all cases, the existing infrastructure should remain functional until full functioning of the existing Jan Kempdorp WWTW.

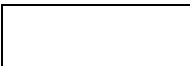
C3.1.3 Extent of the works

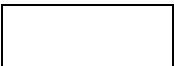
The works to be carried out by the Contractor under this Contract comprise the following:

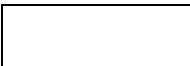
Civil, Structural & Mechanical

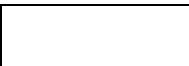
Inlet Channel

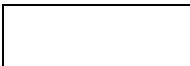
- Cleaning and rehabilitation of outfall sewer line (including dredging and debris removal).
- Repair and rehabilitation of existing manholes.
- Cleaning and refurbishment of inlet channels.
- Revisions, repairs, and replacement of pipework, valves, and sluices.
- Construction of a new grit channel on bypass pipelines.
- Supply and installation of ultrasonic flowmeters and associated instrumentation.
- Paving works, handrails, and general refurbishment.
- Provision of screenings handling infrastructure (miniskip trailer and skip bins).

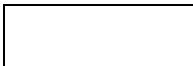

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

Primary Settling Pond No.1-3

- Vegetation clearance around the pond perimeter and within pond areas.
- Pumping of liquid contents to allow safe isolation during works.
- Sludge removal using both mechanical (excavators, dredgers) and manual/labour-intensive methods.
- Civil rehabilitation, including site preparation, sub-base layers, gravel placement, and paving.
- Repair and upgrading of concrete structures, including construction of new access ramps.
- Refurbishment and repair of valves, sluices, and associated fittings.
- Provision, installation, and commissioning of suction and discharge pipework.
- Installation and commissioning of pumps and motors (including WAS and agitation pumps).
- Electrical works for pumps, dredging equipment, and integration into control systems.
- Repair and integration of dredging devices and associated electrical components (where applicable).

Emergency pond

- Vegetation and debris removal around pond perimeter and inside pond.
- Pumping of liquid substances for pond isolation.
- Sludge removal using mechanical and manual methods.
- Provisional allowance for supply, installation, and commissioning of a new submersible pump.
- Provisional allowance for electrical components, MCC/control panel, cabling, and integration for pump installation.
- Civil rehabilitation and refurbishment of structures.

Gravity Line to Emergency Pond

- General site clearance, stripping of topsoil, and removal of trees along trench route.
- Trench excavation, bedding, and blanket works.
- Supply, laying, and bedding of 315 mm, 250 mm, and 200 mm Class 34 heavy-duty underground sewer pipes.
- Construction of manholes with bases, rings, cover slabs, lids, and step irons.
- Ancillary works, including connections to existing systems.

Biological Filter Pumping Station

- General refurbishment works (painting, plaster repairs, masonry, waterproofing, steelwork, electrical maintenance).
- Provisional allowances for civil, building, and electrical works.
- Supply, installation, and commissioning of pumps, motors, and pipework.
- Electrical upgrades including MCC refurbishment, cabling, and protective devices.

Pump Line from Biological Filter Pump Station

- Site clearance and trench excavation.
- Bedding and blanket construction with granular/crushed stone material.
- Supply and installation of 315 mm and 250 mm Class 9 uPVC pipelines.
- Pipe specials and fittings (PVC bends, tees, reducers).
- Testing, disinfection, and commissioning of new pipelines.

Biological Filter Unit

- Pumping out liquid substances from basins.
- Vegetation removal and debris clearing inside units.
- Sludge removal by mechanical and manual methods.
- Provisional allowances for repair of structural concrete and mechanical refurbishment.
- Cleaning and inspection of interconnecting pipes.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- Washing of filter media

Humus Tank

- Pumping of liquid contents for tank isolation.
- Vegetation removal and debris clearing.
- Sludge removal (mechanical and manual).
- Rehabilitation of concrete, bearings, scum baffles, weir plates, scrapers, scum boxes, and drive units.
- Cleaning and inspection of interconnecting pipes.

BNR Reactor

- Pumping out liquid substances for module isolation.
- Vegetation and debris removal inside reactor.
- Sludge removal (mechanical and manual methods).
- Provisional sum for repair of concrete structures.
- Supply and installation of pumps, suction/discharge lines, and electrical components.

MCC building at BNR

- Provisional allowance for general refurbishment (painting, plastering, waterproofing, electrical maintenance).
- Provisional sum for building extension works (excavation, foundations, masonry, roofing, finishes, doors/windows, plumbing, electrical).
- Contractor's markup on provisional sums.

RAS/WAS pumping station

- Repair of cracks in structural concrete
- Evaluation and refurbishment of pumps and motors
- Evaluation of Motor control center
- General cleaning of floors, walls, pipes, etc.
- Cleaning of pump main
- Install de-watering pumps and pump control
- Replace Damaged Instrumentation
- Refurbishment of valves
- Painting of crawl beam, window, doors, etc.

Clarifier

- Evaluation and refurbishment of clarifier bridge
- Evaluation and refurbishment of the center bearing
- Refurbishment of scum baffle
- Refurbishment of Weir plate
- Refurbishment of Scum box
- Refurbishment of Scraper
- Refurbishment of Motor and drive unit
- Replacement of conductors and installation of E-stops
- General cleaning and dredging of the clarifier tank
- Clearance of rubble and vegetation around tank
- General cleaning of interconnecting pipes

Contact Tank & Chlorine Dosing Facility

- Pumping out liquid substances and vegetation removal.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- Supply, installation, and calibration of new ultrasonic flowmeters and smart flow/level/pressure loggers.
- Installation of chlorination safety equipment (alarms, showers, extractor fans, respirator kits).
- Refurbishment of handrails and structural works.

Oxidation recycling pumping station

- Replacement of pumps
- Replacement of conductors and installation of E-stops
- Replacement of pipe works
- Replacement of valves
- General clearance/ vegetation removal
- General cleaning of pump main and sump
- Painting of crawl beam, window, doors, etc.

Oxidation Ponds

- Vegetation and Debris Removal
- Pumping of Liquid Substances
- Sludge Removal
- Isolation, cleaning, fault-finding
- Repair of concrete works
- Installation of ventury aerators
- Conversion of oxidation ponds to wetlands

Perimeter fence

- Construction of perimeter fence around the treatment plant

High mast lights

- Installation of 4 high mast lights between treatment modules

Admin Building

- Supply and install windsock
- Refurbishment of ablution facilities
- Painting of all walls, windows, frames, doors, etc.
- Replacement of all electrical fittings
- Etc.

Boundary wall

- Construction of boundary wall

Electrical

Electrical Bulk Supply Point of Connection (POC 01)

- Initial inspections indicated that the OHL pole structures, OHL Pole structure as well as TRF installed on the ground are in a fair condition and the objective is the Refurbishment, Test & Recommissioning of Existing Installation;
- Provision has been made for the construction of a TRF and Generator room;
- Allowance will be made for a new standby generator complete with changeover panel;
- All equipment to be de-commissioned, re-positioned, installed and tested;
- Inspect & test existing equipment & installation and provide a snag list for review and approval;

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- Provision has been made for the supply & installation of LV power supply cables; however, adjustments will be made by determining what existing equipment can be used;
- Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;
- Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;
- Installation, testing and commissioning of appropriate earthing system in line with industry standards.
- Complete testing and commissioning of works and submission of associated certificates and COC;

Electrical Bulk Supply Point of Connection (POC 02)

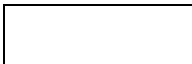
- Initial inspections indicated that the OHL pole structures as well as the OHL Pole TRF is not in a good condition and the objective is the Refurbishment, Test & Recommissioning Existing Installation;
- De-Commissioning of existing OHL Pole TRF and deliver to predetermine storage site (± 10 km);
- Refurbishment of existing overhead line (OHL) equipment connection assembly c/w equipment links & surge arrestors;
- Supply, delivery and installation of new OHL Pole TRF in accordance with OEM requirements, scope of works and specifications;
- Refurbishment of existing overhead line (OHL) structures;
- Complete earthing, testing and commissioning of works in accordance with standards and specifications;

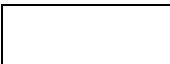
DB-Main:

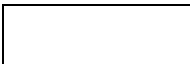
- Existing installation was vandalized and initial inspections indicated that the existing installation is not in a good condition and the objective is the Design, Manufacture, Install, Test & Commissioning of a New Installation;
- Design & Manufacture New main distribution panel complete with power factor correction panel;
- De-commissioning, removal, transport and delivery of old MCC to client storage;
- Identify optimal position in line with OEM requirements, scope of works and specifications;
- Preparation of area, in order to accommodate new MCC;
- Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;
- Delivery, rigging into position & Installation of New MCC;
- Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;
- Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;
- Supply & Installation of earthing and lightning protection system and associated certification works;
- Complete testing and commissioning of works and submission of associated certificates and COC

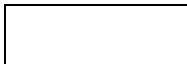
MCC-Drainage Barge:

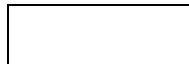
- Existing installation is in a normal condition, and the objective is the Test & Re-Commissioning of Existing Installation;
- Inspect & test existing installation;
- Provide a snag list for review and approval;
- Upon approval implement repair & refurbishment tasks;
- Complete testing and commissioning of works and submission of associated certificates and COC;

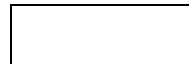

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

DB-Office

- Existing installation is in a normal condition and the objective is the Test & Re-Commissioning of Existing Installation;
- Inspect & test existing installation;
- Provide a snag list for review and approval;
- Provision has been made for the replacement of all equipment; however, adjustments will be made taking into consideration what existing equipment can be re-used;
- Upon approval implement repair and refurbishment tasks;
- Complete testing and commissioning of works and submission of associated certificates and COC;

MCC-Aerator

- Existing installation was vandalized and initial inspections indicated that the existing installation is not in a good condition, and the objective is the Design, Manufacture, Install, Test & Commissioning of a New Installation;
- Inspect & test existing installation and determine what equipment is in good condition and can be re-used;
- Provision has been made for the replacement of all equipment; however, adjustments will be made taking into consideration what existing equipment can be re-used;
- Confirm motor power and control circuit design;
- Design & Manufacture New MCC panel;
- De-commissioning, removal, transport and delivery of old MCC to client storage;
- Identify optimal position in line with OEM requirements, scope of works and specifications;
- Preparation of area, in order to accommodate new MCC;
- Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;
- Delivery, rigging into position & Installation of New MCC;
- Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;
- Supply & Installation of industrial power equipment (motor stations, run/E-stop, isolators, boxes, etc.) & associated industrial control cables in line with SOW & specifications;
- Supply & Installation of industrial instrumentation (level, pressure, flow, junction boxes, pedestals, etc.) & associated instrumentation cables in line with SOW & specifications;
- Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;
- Supply & Installation of earthing and lightning protection system and associated certification works;
- Complete testing and commissioning of works and submission of associated certificates and COC;

MCC-Main Pump Station

- Existing installation was vandalized and initial inspections indicated that the existing installation is not in good condition and the objective is the complete Design, Manufacture, Install, Test & Commissioning of New Installation;
- Inspect & test existing installation and determine what equipment is in good condition and can be re-used;
- Provision has been made for the replacement of all equipment; however, adjustments will be made taking into consideration what existing equipment can be re-used;
- Confirm motor power and control circuit design;
- Design & Manufacture New MCC panel;
- De-commissioning, removal, transport & delivery old MCC;

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- Identify optimal position in line with OEM requirements, scope of works and specifications;
- Preparation of area, in order to accommodate new MCC;
- Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;
- Delivery, rigging into position & Installation of New MCC;
- Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;
- Supply & Installation of industrial power equipment (motor stations, run/stop, E-stops, isolators, junction boxes, pedestals, etc.) and associated industrial control cables in line with scope of works and specifications;
- Supply & Installation of industrial instrumentation (level, pressure, flow, junction boxes, pedestals, etc.) & associated instrumentation cables in line with SOW & specifications;
- Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;
- Supply & Installation of earthing and lightning protection system and associated certification works;
- Complete testing and commissioning of works and submission of associated certificates and COC

Standby Generator New Installation:

- Design & Manufacturing of New Standby Generator in line with scope of works and specifications;
- Identify optimal position in line with OEM requirements, scope of works and specifications;
- Pre-prepare and cast appropriate plinth on site;
- Delivery, rigging into position & Installation of New Unit;
- Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;
- Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;
- Installation, testing and commissioning of appropriate earthing system in line with industry standards;
- Complete testing and commissioning of works and submission of associated certificates and COC;

MCC-Biofilter Pump Station:

- Initial inspections indicated that the existing installation is not in a good condition and the objective is the Refurbishment,
- Test & Recommissioning of the Existing installation;
- Inspect & test existing installation and determine what equipment is in good condition and can be re-used;
- Provision has been made for the replacement of all equipment; however, adjustments will be made taking into consideration what existing equipment can be re-used;
- Confirm motor power and control circuit design;
- Design & Manufacture New MCC panel;
- De-commissioning, removal, transport and delivery of old MCC to client storage;
- Identify optimal position in line with OEM requirements, scope of works and specifications;
- Preparation of area, in order to accommodate new MCC;
- Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;
- Delivery, rigging into position & Installation of New MCC;
- Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;
- Supply & Installation of industrial power equipment (motor stations, run/stop, E-stops, isolators, junction boxes, pedestals, etc.) and associated industrial control cables in line with scope of works and specifications;


Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

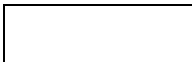
- Supply & Installation of industrial instrumentation (level, pressure, flow, junction boxes, pedestals, etc.) & associated instrumentation cables in line with SOW & specifications;
- Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;
- Supply & Installation of earthing and lightning protection system and associated certification works;
- Complete testing and commissioning of works and submission of associated certificates and COC;

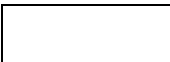
MCC-Recycling Pump Station:

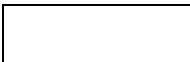
- Civil re-design of pump station with the complete plant process & the objective is the Design, Manufacture, Install, Test & Commissioning of New installation;
- Inspect & test existing installation and determine what equipment is in good condition and can be re-used;
- Provision has been made for the replacement of all equipment; however, adjustments will be made taking into consideration what existing equipment can be re-used;
- Confirm motor power and control circuit design;
- Design & Manufacture New MCC panel;
- De-commissioning, removal, transport and delivery of old MCC to client storage;
- Identify optimal position in line with OEM requirements, scope of works and specifications;
- Preparation of area, in order to accommodate new MCC;
- Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;
- Delivery, rigging into position & Installation of New MCC;
- Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;
- Supply & Installation of industrial power equipment (motor stations, run/stop, E-stops, isolators, junction boxes, pedestals, etc.) and associated industrial control cables in line with scope of works and specifications;
- Supply & Installation of industrial instrumentation (level, pressure, flow, junction boxes, pedestals, etc.) & associated instrumentation cables in line with SOW & specifications;
- Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;
- Supply & Installation of earthing and lightning protection system and associated certification works;
- Complete testing and commissioning of works and submission of associated certificates and COC;

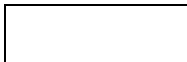
Area & Security Lighting Installation:

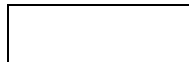
- The existing area lighting installation does not allow for sufficient safe and secure operating conditions at night and the objective is the Design, Manufacture, Install, Test & Commissioning of a New Installation;
- Verify lighting design, utilizing a specialist sub-contractor;
- Confirm lighting mast / poles positions and lighting luminaire manufacturer and type;
- Supply & Install lighting mast / poles and lighting luminaire in line with scope of works and specifications;
- Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;
- Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;
- Complete testing and commissioning of works and submission of associated certificates and COC;

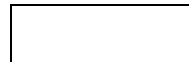

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

This description of the Works is not necessarily complete and shall not limit the work to be carried out by the Contractor under this Contract.

Approximate quantities of each type of work are given in the Bill of Quantities.

C3.1.4 Location of Site

The target community consists of the indigent households residing in Jan Kempdorp. The refurbishment of the existing WWTW will benefit all of the estimated 24 882 residents of Jan Kempdorp.

The plant is situated to the northwest of the Valspan township of Jan Kempdorp

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C3.2
Engineering

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C3.2 ENGINEERING

C3.2.1 STANDARDS AND CODES OF PRACTICE

The following design standards for civil engineering infrastructure will apply:

- i) SANS 1200
- ii) Guidelines for the provision of engineering services and amenities in residential township development by the National Housing Board (Red Book)
- iii) *General Conditions of Contract for Construction Works* (2015) (Third Edition) by the South African Institution of Civil Engineers.

C3.2.2 DESIGN AND SPECIFICATIONS

- (a) The Employer is responsible for the design of the permanent Works as reflected in the Contract Documents unless otherwise stated.
- (b) The Contractor is responsible for the temporary Works and their compatibility with the permanent Works.
- (c) The Contractor shall supply all details necessary to assist the Engineer in the compilation of the as-built drawings.
- (d) Where the Contractor is to supply the design of designated parts of the permanent Works or temporary Works, he shall supply full working drawings supported by a professional engineer's design certificate.

C3.2.3 LIST OF DRAWINGS

Drawings

The Contractor shall use only the dimensions stated in figures on the Drawings in setting out the Works, and dimensions shall not be scaled from the Drawings, unless required by the Engineer. The Engineer will, on the request of the Contractor in accordance with the provisions of the Conditions of Contract, provide such dimensions as may have been omitted from the Drawings.

The Contractor shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the Contract. The position of pipe bends, junction boxes, duct ends and all other underground infrastructure shall be given by either co-ordinates, or stake value and offset. Where necessary, levels shall be given. A marked-up set of drawings shall also be kept and updated by the Contractor. This information shall be supplied to the Engineer's Representative on a regular basis.

All information in possession of the Contractor, required by the Engineer and / or the Engineer's Representative to complete the as- built / record drawings, must be submitted to the Engineer's Representative before a Certificate of Completion will be issued.

The Drawings prepared by the Employer for Bid purposed are listed and bound at the back of this volume. The Employer reserves the right to issue amended and / or additional drawings during the Contract.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

JAN KEMPDORP WWTW REFURBISHMENT PROJECT	
C3 CONTRACT SECTION - SCOPE OF WORKS	
C3.1 DESCRIPTION OF WORKS	

A	PROJECT SPECIFICATION
#	Description
1	The Project Specification is defined as the combination of Part C.2 Pricing Data and Part C.3 Scope of Works of the Tender/Contract document.
2	Part C.2 Pricing Data and Part C.3 Scope of Works, do not constitute a specification alone, and shall be read in conjunction / combination.
3	Descriptions in Part C.2 Pricing Data are abbreviated and may differ from those in Part C.3 Scope of Works.
4	In the event that any discrepancies should exist in any part of this Project Specification as part of the Tender / Contract document, such discrepancies shall be brought to the attention of the Engineer for clarification thereof.
5	Should any requirement of Part C.2 Pricing Data be contrary to the terms of Part C.3 Scope of Works, Part C.3 Scope of Works shall prevail and the Engineer will decide whether the work, as executed, shall be re-measured on site or whether re-measurement shall be affected from the working drawings only.
7	Part C.3 Scope of Works sets out the general and specific requirements of the project as follows.
a	Description of Works C3.1
b	Engineering Specification C3.2
c	Technical Specification C3.3
d	Procurement Requirements C3.4
e	Construction Specification C3.5
f	Construction Management Requirements C3.6
g	Health & Safety Requirements C3.7

B	EMPLOYERS OBJECTIVE
#	Description
1	The Jan Kempdorp Waste Water Treatment Plant (WWTP) plays a critical role in the supply authority's service delivery infrastructure for the Jan Kempdorp area;
2	Originally upgraded in 2010, the plant has served its operational purpose until recently;
3	However, due to normal wear and tear from operational use and more recent incidents of theft and vandalism, the plant is currently non-operational;
4	In light of these challenges, the client's objective is to refurbish the existing WWTP to restore its functionality;
5	This refurbishment aims to bring the plant back into operation, thereby enabling the client to fulfil its service delivery objectives for the community;
6	The project is defined as a brown fields type project due to existing plant and furthermore as a, electrical motor control and electrical installations for machinery and equipment type of project;

JAN KEMP DORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.1 DESCRIPTION OF WORKS		

C	LOCATION OF WORKS
#	Description
1	The Waste Water Treatment Plant (WWTP) is located West of the N18 and North of the Valspan Township;
2	Co-Ordinates, 27°54'41.5"S 24°48'06.9"E;



D	SUPPLY AUTHORITY & JURISDICTION
#	Description
1	The Waste Water Treatment Plant (WWTP) is situated within the licensed supply area and jurisdiction of Phokwane Local Municipality within the Frances Baard District Municipality, in the Northern Cape province;
2	The following particulars pertain to the project's administrative context:
3	Location details: 24 Hertzog Street, Hartswater
4	Directorate: Electrical And Mechanical Engineering
5	Deputy Director: -
6	Tel : +27 53 474 9700
7	Fax : -
8	Email : info@phokwane.gov.za



JAN KEMPDORP WWTW REFURBISHMENT PROJECT	
C3 CONTRACT SECTION - SCOPE OF WORKS	
C3.1 DESCRIPTION OF WORKS	

E	OVERVIEW OF WORKS
#	Description
1	The electrical installation is approximately 15 years old;
2	Due to normal wear and tear from operational use, along with recent incidents of theft and vandalism, the plant is currently non-operational. The following key issues and proposed actions summarize the scope of work required for plant refurbishment:
3	The plant and surrounding area lack adequate lighting during nighttime, increasing the risk of theft and vandalism;
4	At the time of this document, security breaches have occurred, including the vandalism of the security fence and the main reactor control room, as well as the main pump station;
5	Although a security guard is present, the risk of further theft and vandalism remains high;
6	The exact scope of works will be finalized after contractor appointment due to the risk of further theft and vandalism during the adjudication period;
7	Due to the age and vandalism of the existing installation, the motor control centers (MCC) will be replaced to extend the installation's lifespan and reduce labour costs associated with on-site repairs;
8	Installation of small power and lighting, industrial power, industrial control equipment, and primary and secondary LV power supply cables is necessary to commission the plant;
9	An initial investigation will be required to determine which small power and lighting, industrial power and control equipment, and primary and secondary LV power supply cables can be reused;
10	The civil and operational design of the plant will remain unchanged, except for the upgrade of the outlet module to a return water pump station;
11	Improvements and upgrades to area lighting are planned, along with provisions for a standby generator to ensure power reliability;
12	The plant will use normal relay logic for control without allowances for PLC, SCADA, or telemetry functionality and provisions are made for a remote alarm monitoring system to notify operational stakeholders of any disruptions;
13	Due to the plant's critical infrastructure status, work will first focus on achieving temporary operational status to allow time for sourcing long lead items;
14	An allowance is made for total plant refurbishment. However, the scope will be finalized upon contractor appointment, inspection, testing, and report submission for Engineer review and approval;
15	The final scope of works will be confirmed after the Engineer reviews the plant's operational condition report from the Contractor, followed by the commencement of the normal construction process;
16	The scope of work based on the above definitions and statements are summarized as follows:

JAN KEMPDORP WWTW REFURBISHMENT PROJECT	
C3 CONTRACT SECTION - SCOPE OF WORKS	
C3.1 DESCRIPTION OF WORKS	

F	EXTENT OF WORKS	
#	Description	Reference
1	Electrical Bulk Supply Point of Connection (POC 01)	
	Refurbishment, Test & Recommissioning Existing	
i	Initial inspections indicated that the OHL pole structures, OHL Pole structure as well as TRF installed on the ground is in a fair condition and the objective is make use of the existing equipment;	
ii	Provision has been made for the construction of a TRF and Generator room;	
iii	Allowance will be made for a new standby generator complete with change over panel;	
iv	All equipment to be de-commissioned, re-positioned, installed and tested;	
v	Inspect & test existing equipment & installation and provide a snag list for review and approval;	
vi	Provision has been made for the supply and installation of LV power supply cables, however, adjustments will be made taking into consideration what existing equipment can be re-used;	
vii	Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;	
viii	Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;	
ix	Installation, testing and commissioning of appropriate earthing system in line with industry standards;	
x	Complete testing and commissioning of works and submission of associated certificates and COC;	
2	Electrical Bulk Supply Point of Connection (POC 02)	
	Refurbishment, Test & Recommissioning Existing	
i	Initial inspections indicated that the OHL pole structures, OHL Pole structure as well as the OHL Pole TRF is not in a good condition and the objective is the complete refurbishment of the OHL installation;	
ii	De-Commissioning of existing OHL Pole TRF and deliver to predetermine storage site (± 10 km);	
iii	Refurbishment of existing overhead line (OHL) equipment connection assembly c/w equipment links and surge arrestors;	
iv	Supply, delivery and installation of new OHL Pole TRF in accordance with OEM requirements, scope of works and specifications;	
v	Refurbishment of existing overhead line (OHL) structures;	
vi	Complete earthing, testing and commissioning of works in accordance with standards and specifications;	

JAN KEMP DORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.1 DESCRIPTION OF WORKS		

3	DB-Main	
	Design, Manufacture, Install, Test & Commissioning New	
i	Existing installation was vandalized and initial inspections indicated that the existing installation is not in a good condition and the objective is the complete refurbishment of the installation;	
ii	Design & Manufacture New main distribution panel complete with power factor correction panel;	
iii	De-commissioning, removal, transport and delivery of old MCC to client storage;	
iv	Identify optimal position in line with OEM requirements, scope of works and specifications;	
v	Preparation of area, in order to accommodate new MCC panel;	
vi	Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;	
vii	Delivery, rigging into position & Installation of New MCC Panel;	
viii	Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;	
ix	Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;	
x	Supply & Installation of earthing and lightning protection system and associated certification works;	
xi	Complete testing and commissioning of works and submission of associated certificates and COC;	
4	MCC-Aerator	
	Design, Manufacture, Install, Test & Commissioning New	
i	Existing installation was vandalized and initial inspections indicated that the existing installation is not in a good condition and the objective is the complete refurbishment of the installation;	
ii	Inspect & test existing installation and determine what equipment is in good condition and can be re-used;	
iii	Provision has been made for the replacement of all equipment, however, adjustments will be made taking into consideration what existing equipment can be re-used;	
iv	Confirm motor power and control circuit design;	
v	Design & Manufacture New MCC panel;	
vi	De-commissioning, removal, transport and delivery of old MCC to client storage;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.1 DESCRIPTION OF WORKS		

vii	Identify optimal position in line with OEM requirements, scope of works and specifications;	
viii	Preparation of area, in order to accommodate new MCC panel;	
ix	Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;	
x	Delivery, rigging into position & Installation of New MCC Panel;	
xi	Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;	
xii	Supply & Installation of industrial power equipment (motor stations, run/stop, E-stops, isolators, junction boxes, pedestals, etc.) and associated industrial control cables in line with scope of works and specifications;	
xiii	Supply & Installation of industrial instrumentation (level, pressure, flow, junction boxes, pedestals, etc.) and associated instrumentation cables in line with scope of works and specifications;	
xiv	Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;	
xv	Supply & Installation of earthing and lightning protection system and associated certification works;	
xvi	Complete testing and commissioning of works and submission of associated certificates and COC;	
5	MCC-Main Pump Station	
	Design, Manufacture, Install, Test & Commissioning New	
i	Existing installation was vandalized and initial inspections indicated that the existing installation is not in a good condition and the objective is the complete refurbishment of the installation;	
ii	Inspect & test existing installation and determine what equipment is in good condition and can be re-used;	
iii	Provision has been made for the replacement of all equipment, however, adjustments will be made taking into consideration what existing equipment can be re-used;	
iv	Confirm motor power and control circuit design;	
v	Design & Manufacture New MCC panel;	
vi	De-commissioning, removal, transport and delivery of old MCC to client storage;	
vii	Identify optimal position in line with OEM requirements, scope of works and specifications;	
viii	Preparation of area, in order to accommodate new MCC panel;	

JAN KEMP DORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.1 DESCRIPTION OF WORKS		

ix	Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;	
x	Delivery, rigging into position & Installation of New MCC Panel;	
xi	Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;	
xii	Supply & Installation of industrial power equipment (motor stations, run/stop, E-stops, isolators, junction boxes, pedestals, etc.) and associated industrial control cables in line with scope of works and specifications;	
xiii	Supply & Installation of industrial instrumentation (level, pressure, flow, junction boxes, pedestals, etc.) and associated instrumentation cables in line with scope of works and specifications;	
xiv	Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;	
xv	Supply & Installation of earthing and lightning protection system and associated certification works;	
xvi	Complete testing and commissioning of works and submission of associated certificates and COC;	
6	MCC-Biofilter Pump Station	
	Refurbishment, Test & Recommissioning Existing	
i	Initial inspections indicated that the existing installation is not in a good condition and the objective is the complete refurbishment of the installation;	
ii	Inspect & test existing installation and determine what equipment is in good condition and can be re-used;	
iii	Provision has been made for the replacement of all equipment, however, adjustments will be made taking into consideration what existing equipment can be re-used;	
iv	Confirm motor power and control circuit design;	
v	Design & Manufacture New MCC panel;	
vi	De-commissioning, removal, transport and delivery of old MCC to client storage;	
vii	Identify optimal position in line with OEM requirements, scope of works and specifications;	
viii	Preparation of area, in order to accommodate new MCC panel;	
ix	Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;	
x	Delivery, rigging into position & Installation of New MCC Panel;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.1 DESCRIPTION OF WORKS		

xi	Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;	
xii	Supply & Installation of industrial power equipment (motor stations, run/stop, E-stops, isolators, junction boxes, pedestals, etc.) and associated industrial control cables in line with scope of works and specifications;	
xiii	Supply & Installation of industrial instrumentation (level, pressure, flow, junction boxes, pedestals, etc.) and associated instrumentation cables in line with scope of works and specifications;	
xiv	Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;	
xv	Supply & Installation of earthing and lightning protection system and associated certification works;	
xvi	Complete testing and commissioning of works and submission of associated certificates and COC;	
7	MCC-Drainage Barge	
	Test & Re-Commissioning Existing	
i	Existing installation is in a normal / good condition and the objective is utilize existing installation;	
ii	Inspect & test existing installation;	
iii	Provide a snag list for review and approval;	
iv	Apon approval implement changes, repair and refurbishment tasks;	
v	Complete testing and commissioning of works and submission of associated certificates and COC;	
8	DB-Office	
	Test & Re-Commissioning Existing	
i	Existing installation is in a normal / good condition and the objective is utilize existing installation;	
ii	Inspect & test existing installation;	
iii	Provide a snag list for review and approval;	
iv	Provision has been made for the replacement of all equipment, however, adjustments will be made taking into consideration what existing equipment can be re-used;	
v	Apon approval implement changes, repair and refurbishment tasks;	
vi	Complete testing and commissioning of works and submission of associated certificates and COC;	

JAN KEMP DORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.1 DESCRIPTION OF WORKS		

9	MCC-Recycling Pump Station	
	Design, Manufacture, Install, Test & Commissioning New	
i	Objective is to re-design, upgrade and re-apply pump station with the complete plant process;	
ii	Inspect & test existing installation and determine what equipment is in good condition and can be re-used;	
iii	Provision has been made for the replacement of all equipment, however, adjustments will be made taking into consideration what existing equipment can be re-used;	
iv	Confirm motor power and control circuit design;	
v	Design & Manufacture New MCC panel;	
vi	De-commissioning, removal, transport and delivery of old MCC to client storage;	
vii	Identify optimal position in line with OEM requirements, scope of works and specifications;	
viii	Preparation of area, in order to accommodate new MCC panel;	
ix	Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;	
x	Delivery, rigging into position & Installation of New MCC Panel;	
xi	Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;	
xii	Supply & Installation of industrial power equipment (motor stations, run/stop, E-stops, isolators, junction boxes, pedestals, etc.) and associated industrial control cables in line with scope of works and specifications;	
xiii	Supply & Installation of industrial instrumentation (level, pressure, flow, junction boxes, pedestals, etc.) and associated instrumentation cables in line with scope of works and specifications;	
xiv	Supply & Installation of Small Power & Lighting equipment and associated wiring and conduit work;	
xv	Supply & Installation of earthing and lightning protection system and associated certification works;	
xvi	Complete testing and commissioning of works and submission of associated certificates and COC;	
10	Area & Security Lighting Installation	
	Design, Manufacture, Install, Test & Commissioning New	
i	Complete and/or verify lighting design, utilizing a nominated specialist sub-contractor	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.1 DESCRIPTION OF WORKS		

ii	Confirm lighting mast / poles positions and lighting luminaire manufacturer and type;	
iii	Supply & Install lighting mast / poles and lighting luminaire in line with scope of works and specifications;	
iv	Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;	
v	Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;	
vi	Complete testing and commissioning of works and submission of associated certificates and COC;	
11	Standby Generator	
	New Installation	
i	Design & Manufacturing of New Standby Generator in line with scope of works and specifications;	
ii	Identify optimal position in line with OEM requirements, scope of works and specifications;	
iii	Pre-pare and cast appropriate plinth on site;	
iv	Delivery, rigging into position & Installation of New Standby Generator;	
v	Preparation, trenching, installation of appropriate sleeves and cable racks for LV power and control cabling;	
vi	Installation, testing and commissioning of LV power and control cabling in line with scope of works and specifications;	
vii	Installation, testing and commissioning of appropriate earthing system in line with industry standards;	
viii	Complete testing and commissioning of works and submission of associated certificates and COC;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.1 DESCRIPTION OF WORKS		

G	DEVIATION DESCRIPTION		
#	Description	Ref.	Description / Deviation

H	APPROVAL OF SPECIFICATION & DEVIATIONS			
#	Designation	Description	Date	Signature
1	Contractor			
2	Client Representative			
3	Client			
4	Other			

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.2	ENGINEERING SPECIFICATION	

A	MANAGEMENT SCHEDULE (to be completed by project manager during project)		
#	Subject	Detail	Status
1	-	-	-
2	-	-	-

B	DESIGN DOCUMENTATION PROVIDED TO THE CONTRACTOR			
#	Description	Type	Size - Rev	Number
1	Project Scope of Works	SOW	-	100
i	Description of Works	SOW	A3 - Rev00	130
i	Design Brief	SOW	A3 - Rev00	140
ii	Construction Works Specification	SOW	A3 - Rev00	150
iii	Electrical Works Specification	SOW	A3 - Rev00	160
2	Site Drawings	DRW	-	200
i	Plant Overview	DRW	A3 - Rev00	210
ii	Plant Main	DRW	A3 - Rev00	220
iii	Plant Outlet	DRW	A3 - Rev00	230
3	Electrical Reduced Network Diagram	RND	-	300
i	Electrical RND - Existing	RND	A3 - Rev00	310
ii	Electrical RND - New	RND	A3 - Rev00	320
4	Electrical Network Analysis	ENA	-	400
i	Load Flow Analysis	ENA	A3 - Rev00	410
5	Technical Specifications	TS	-	500
i	Equipment Schedule	TS	A3 - Rev00	510
ii	Distribution Schedule	TS	A3 - Rev00	520
iii	Control Schedule	TS	A3 - Rev00	530
iv	Control Philosophy	TS	A3 - Rev00	540
6	Electrical Single Line Diagram	SLD	-	600
i	DB-POC 01 SLD	SLD	Not Included.	610
ii	DB-Main & MCC-Aerator SLD	SLD	A3 - Rev00	620
iv	MCC-Main PS SLD	SLD	A3 - Rev00	630
iv	MCC-Biofilter PS SLD	SLD	A3 - Rev00	640
v	MCC-Main Drainage Barge SLD	SLD	A3 - Rev00	650
vii	DB-POC 02 SLD	SLD	Not Included.	660
viii	MCC-Recycle PS SLD	SLD	A3 - Rev00	670
7	Equipment Specifications	ES	-	700
i	MV Distribution (OHL TRF)	ES	Not Included.	710
ii	MV Power Cable	ES	Not Included.	720
iii	LV Distribution (MCC)	ES	A3 - Rev00	730
iv	LV Power Cable	ES	A3 - Rev00	740
v	Light Luminaires	ES	Not Included.	750
vi	Standby Generator	ES	A3 - Rev00	760
8	Contractor Returnable Documents	RD	-	800
i	Equipment Specification	RD	Other	810
ii	Design Documentation	RD	Other	820
iii	As-Build Documentation	RD	Other	830
9	General Arrangement (GA)	GA	-	900
i	POC 01 General Arrangement	GA	Not Included.	910
ii	POC 02 General Arrangement	GA	Not Included.	920
iii	MCC-Aerator General Arrangement	GA	Not Included.	930
iv	MCC-Main PS General Arrangement	GA	Not Included.	940
v	MCC-Biofilter PS General Arrangement	GA	Not Included.	950
vi	MCC-Recycle PS General Arrangement	GA	Not Included.	960

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.2	ENGINEERING SPECIFICATION	

C	DESIGN DOCUMENTATION TO BE SUBMITTED BY CONTRACTOR			
#	Description	Size	Rev	Number
1	DB-Main (Detail Design Drawings)	DW	Contractor TBC	Contractor TBC
2	MCC-Aerator (Detail Design Drawings)	DW	Contractor TBC	Contractor TBC
3	MCC-Main PS (Detail Design Drawings)	DW	Contractor TBC	Contractor TBC
4	MCC-Biofilter PS (Wiring As-Build Drawings)	DW	Contractor TBC	Contractor TBC
5	MCC-Drainage Barge (Wiring As-Build Drawings)	DW	Contractor TBC	Contractor TBC
6	DB-Office (Wiring As-Build Drawings)	DW	Contractor TBC	Contractor TBC
7	DB-POC02 (Detail Design Drawings)	DW	Contractor TBC	Contractor TBC
8	MCC-Recycle PS (Wiring As-Build Drawings)	DW	Contractor TBC	Contractor TBC
9	Standby Generator (Detail Design Drawings)	DW	Contractor TBC	Contractor TBC
10	Site & GA As-Build Drawings	DW	Contractor TBC	Contractor TBC

D	AS-BUILD DOCUMENTATION TO BE SUBMITTED BY CONTRACTOR			
#	Description	Type	Size - Rev	Number
1	MV Equipment FAT & Type Test Certificates;	-	Contractor TBC	Contractor TBC
2	MV Equipment SAT & Type Test Certificates;	-	Contractor TBC	Contractor TBC
3	MV Equipment Earth Test Certificates;	-	Contractor TBC	Contractor TBC
4	LV Equipment FAT & Type Test Certificates;	-	Contractor TBC	Contractor TBC
5	LV Equipment SAT & Type Test Certificates;	-	Contractor TBC	Contractor TBC
6	LV Equipment Earth Test Certificates;	-	Contractor TBC	Contractor TBC
7	Building Lightning Protection Certificates;	-	Contractor TBC	Contractor TBC
8	LV Cable Test Certificates;	-	Contractor TBC	Contractor TBC
9	MV Cable Test Certificates;	-	Contractor TBC	Contractor TBC
10	Electrical Installation COCs;	-	Contractor TBC	Contractor TBC

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.2	ENGINEERING SPECIFICATION	

E	ENGINEERING REQUIREMENTS	
#	FUNCTION	DESCRIPTION
1	General :	• The Engineer is responsible for the basic engineering design, up to the tender/bid stage, of the permanent Works as reflected in the Contract Documents unless otherwise stated; • Tender drawings are included for the contractor to determine the scope of the work; • Detailed construction drawings will be made available to successful tenderers; • Where the successful tenderer have to provide detailed drawings, these will be received and approved once orders have been placed on successful tenderers; • O&M manuals shall be compiled by the Contractor and shall include all drawings and information; • The manuals shall be comprehensive and shall enable the Employer's personnel, to do the necessary maintenance and repairs to the installation; • Once the Engineer has approved the compiled documentation, the documents shall be duplicated as required by the specifications;
2	Employers Design :	• The Employer, through his appointed Consulting Engineer provide the functional design and specification for the project;
3	Contractors Design :	• The Contractor is responsible for the detail engineering design of the permanent Works as reflected in the Contract Documents unless otherwise stated; • Where contractor is to supply the design of designated parts of the permanent Works or temporary Works he shall supply full working drawings supported by a professional engineer's design certificate;
4	Drawings Tender Phase :	• One set of drawings will be issued to all tenderers during the tender phase; • These drawings are for tender purposes only and shall be handed back together with the priced tender documents;
5	Drawings - Construction Phase :	• Upon appointment of the successful Contractor, a complete set of construction drawings together with two copies thereof will be given to the Contractor; • Should any additional drawings be required the Contractor can make his own copies of the drawings or obtain such copies from the Engineers; • Costs may be charged for extra copies;
6	Drawings - Issue :	• A list of drawings is attached with the tender drawings; • A new list of drawings will be issued with the Construction drawings which will be updated during the course of the contract to indicate any revisions or new drawings that is handed out; • Whenever a new list of drawings is handed out it shall replace the previous list of drawings and only plans listed on the latest list of drawings will form part of the contract documents; • All plans replaced by revisions during the project shall be destroyed to avoid any misunderstandings;

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.2	ENGINEERING SPECIFICATION	

7	Drawings - As-Builds :	• The Contractor shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the contract; • The position of pipe bends, junction boxes, duct ends and all other underground infrastructure shall be given by either co-ordinates, or stake value and offset; • Where necessary, levels shall also be given; • A marked-up set of drawings shall also be kept and updated by the Contractor; • This information shall be supplied to the Engineer's Representative on a regular basis;
8	Drawings - Technical Information :	• All information in possession of the Contractor, required by the Engineer and/or the Engineer's Representative to complete the as-built/record drawings, must be submitted to the Engineer's Representative before a Certificate of Completion will be issued;
9	Design Procedure - General :	• The Contractor shall develop detailed designs as and where specified in full compliance with all Specifications & Standards as set out in this document; • No design changes shall be implemented unless approval is received in writing from the Engineer. Amended drawings, showing the design changes, shall be issued to all concerned, immediately after approval of such amendments; • All documentation, drawings and instructions shall be accompanied by a transmittal sheet, indicating whether it is for approval / construction / information etc.;
10	Design Procedure - Important :	• The Contractor shall ensure that all designs are signed off by respective ECSA registered Professional Engineers; • The Contractor will assume liability for the design; • The Contractor shall submit his detailed designs to the Project Engineer for review and comment prior to procurement and construction. Each document review turnaround time is 5 days. The detailed design of shall be completed and frozen not more than 30 calendar days after Contract Signature; • The Contractor shall ensure that the Works are carried out according to the Clients' Supplier Quality Requirements and general Contract Specification; • If there is a conflict of method, or level of provision, the Contractor shall adopt the specification, recommendation or regulation with the most stringent conditions. The Contractor shall submit details of any such conflicts and the provisions adopted; • The Contractor shall review, validate and subsequently assume responsibility for the scope and accuracy of any such data relevant to completion of the Works provided by the Employer and to be relied upon by the Contractor and be responsible for planning, specifying and executing any additional site investigations required in order to satisfy itself that the required level of scope and accuracy of data and analysis has been obtained, so as to not in any way affect the performance of its obligations; • The contractor shall further ensure that all equipment to be used are inter compatible and that the drawings clearly indicate how a specific piece of equipment will be integrated with another piece of equipment such as power plant equipment and control plant equipment; • The contractor may only start with the manufacturing of equipment once all the drawings have been signed off by the Engineer; • Equipment can only be delivered to site on successful approved by the Engineer of the factory acceptance test (FAT);

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.2	ENGINEERING SPECIFICATION	

F	DEVIATION DESCRIPTION		
#	Description	Ref.	Description / Deviation

G	APPROVAL OF SPECIFICATION & DEVIATIONS			
#	Designation	Description	Date	Signature
1	Contractor			
2	Client Representative			
3	Client			
4	Other			

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.3	TECHNICAL SPECIFICATION	

A	MANAGEMENT SCHEDULE (to be completed by project manager during project)		
#	Subject	Detail	Status
1	-	-	-
2	-	-	-

B	INSTALLATION SPECIFICATION			
#	Description	Type	Size - Rev	Number
1	MEDIUM VOLTAGE DISTRIBUTION (MVdx) WORK	IS	Summary provided in sub-sections.	
2	MEDIUM VOLTAGE RETCULATION (MVrt) WORK	IS		
3	LOW VOLTAGE DISTRIBUTION (LVdx) WORK	IS		
4	LOW VOLTAGE RETICULATION (LVrt) WORK	IS		
5	SMALL POWER & LIGHTING (SP&L) WORK	IS		
6	INDUSTRIAL POWER (IP) WORK	IS		
7	INDUSTRIAL CONTROL (IC) WORK	IS		
8	AREA LIGHTING (AL) WORKS	IS		
9	STANDBY GENERATOR SUPPLY (ES) WORKS	IS		
10	EARTHING & LIGHTNING PROTECTION (ELP) WORK	IS		

C	EQUIPMENT SPECIFICATION			
#	Description	Type	Size - Rev	Number
1	MV Distribution (OHL TRF)	ES	Contractor to provide technical information and datashets of all equipment that will provided by the Contractor.	
2	MV Distribution (MSS)	ES		
3	MV Power Cable	ES		
4	LV Distribution (MCC) ES	ES		
5	LV Power Cable ES	ES		
6	Light Luminaires ES	ES		
7	Standby Generator	ES		
8	-	-		
9	-	-		
10	-	-		

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
D	PRELIMINARY & GENERAL		
#	Subject	Description	
1	Scope of Works:	Provision for the establishment of construction site, for the planning and management of the project, quality and health and safety aspects, providing guarantees, training and as-build documentation and all associated work; Complete to Achieve Client / Project Objective and as per Project Specification.	
2	Contractor Responsibility:	(1) Site Establishment; (2) Quality Management; (3) Environmental Management; (4) Project Management.	
3	Sequence of Events:	(1) Site Establishment; (2) SANS 9001 / ISO 9001: Quality Management Requirements; (3) SANS 14001 / ISO 14001: Environmental Management System.	
4	Material Prerequisite:	Occupational Health and Safety Act, Act 85 of 1993; Construction Regulations, 2014; The Electricity Act, No. 40 of 1958; Fencing Act., Act no. 31; Conservation of Agricultural Resources Act, Act no. 43; Mountain Catchment areas act, Act no. 63; Environmental Conservation act, Act no. 73; Forest Act, Act no. 122.	
5	Technical Standards:	All relevant Standards, Specifications, Regulations & By-laws of the Local Fire Department & Supply Authority.	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
E	MEDIUM VOLTAGE DISTRIBUTION (MVdx) WORK		
#	Subject	Description	
1	Scope of Works:	Design, Manufacture, Supply & Installation of Medium Voltage Equipment (1kV - 52kV) including, but not limited to Miniature Substation (SANS 1029 / NRS 004), Ring Main Unit (SANS 1874 / NRS 006), Transformer (SANS 780 / NRS 054), Switchgear (IEC 62271), Factory Build & Wired, IP Rated, Installed Outdoor on a Plinth in a Outdoor Yard Substation and/or Inside a Indoor Substation Building in accordance with SANS10142-2, c/w, Earthing (SANS 1063 / 10199), Steelwork, Frames, Sub-frames, Chassis, Covers, Lockable Doors, Busbars, Internal Wiring, Auxiliary Equipment, Fixing Accessories, Labelling and Signage, Testing and Commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;	
2	Contractor Responsibility:	• Confirmation of specialised builder; • Manufacturer and range of material and equipment; • Confirmation of positions & quantities; • Submission of detailed design drawings for review & approval; • FAT & SAT tests and completion of testing scheduled; • IED Programming; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of Specialized MV Unit manufacturer and / or supplier; • Confirmation of material & equipment ratings, range & manufacturer; • Submit detail designs by specialized manufacturer and / or supplier in accordance with Specifications to Engineer for review and approval; • Ordering of material & manufacture of Medium Voltage Assembly Unit and/or ordering and delivery of unit by specialized builder / supplier; • Issue of Completed factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval; • Confirmation of equipment / unit position and cable lengths on site; • Transport / Delivery of Medium Voltage Assembly Unit to site; Rigging of Medium Voltage Assembly Unit and placing in position on site; • Plinth installation in accordance with soil survey, pre-cast / cast on site, excavation compaction & test certificates; • Soil resistivity survey and confirmation of electric earth design; • Earthing of Installation & issuing of Resistivity Test Certificates; • Connection of all MV & LV cables & making good for commissioning; • Labelling of equipment / circuits / warning signs and installation of operational information and SLD; • Configuration of IED's and/or Protection Functions; • Testing & commissioning of works & issuing of SAT certificate; • Complete, testing and certification of installation & the submission of Certificate of Compliance (COC) to Engineer for review & approval; • Preparation and submission of As-Build data pack;	
4	Material Prerequisite:	• Switchgear : Actom / Schneider / ABB; • Protection Relays : SEL / Schneider / ABB / Siemens / Thytronic; • Metering : Schneider / ABB; • BTU : Static Power / Blue Ginger; - or Similar and Approved;	
5	Technical Standards:	• IEC 62271 : Medium Voltage Switchgear; • SANS 780 : Distribution Transformers; • SANS 1029 / NRS 004 : MSS up to 1000kVA; • SANS 1874 : Metal-Enclosure RMU 1 kV up to24kV; • SANS 60282-1 : High-voltage fuses; • SANS 61330 : High/low-voltage prefabricated substations; • NRS 054 : Large Power Transformers; • IEC 62271 : High Voltage Switchgear & Control gear; • SANS 1019 : Standard Voltages, Currents & Insulation Levels;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
F	MEDIUM VOLTAGE RETCULATION (MVrt) WORK		
#	Subject	Description	
1	Scope of Works:	Supply Medium Voltage PILC (SANS 97) / XLPE (SANS 1339) 3/4 Core, Single Core Power Cables, Copper Earth Wire (SANS 1411-1) and Install in ground, wire channels, sleeves, racking (SANS 10142-2 & SANS 10198 & SANS 61386), c/w with joints, terminations, end capps, glands, shrouds, termination lugs and fixing accessories (NRS 028) and in combination with stringing OHL structures with Aluminium Conductor & Earth Wire; c/w OHL equipment (NRS 033), Links, Transformer (SANS 780 / NRS 054), Surge Arrestors (NRS 039), Theft Protection, Supporting Stay Assemblies & Strut Assemblies (NRS 022), Pole Structures, Earthing (SANS 1063 / 10199), Auxiliary Equipment, Fixing Accessories, Labelling and Signage, and all associated works, Complete to Achieve Project Objective and as per Project Specification:	
2	Contractor Responsibility:	• Confirmation of manufacturer and range of equipment and material; • Confirmation of route, length & quantities; • Cable tests and completion of testing scheduled; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of manufacturer and range of equipment and material; • Confirmation of route, length & quantities, route survey, pegging of route and distance confirmation; • Cross section excavations to verify existing services & ground type; • Excavation of underground MV cable routes and OHL pole placement as per Design Schedule and Drawings, c/w trenching, bedding; • Construction (horizontal drilling, pipe jacking or concrete culvert installation of special crossing; • Supply & installation of MV cable feeders as per Design Schedule and Drawings, complete with joints, termination, lugs, etc; • Supply & installation of accompanying earth continuity BCEW cables complete with joints, termination, lugs, etc; • Marking of MV cables by installing danger tape along the complete excavated routes & cable route markers at every joint position, road crossings, turning of cable & on straight sections longer than 200m; • Protection of MV cables by supplying and installing concrete protection slabs along the complete excavated routes where other services are crossed; • Labelling of OHL poles and MV cables using source equipment being fed to or fed from, cable size and type; • Complete testing and commissioning of all MV cable and OHL conductor work and issuing of test and compliance certificate; • Preparation and submission of As-Build data pack;	
4	Material Prerequisite:	• Cables : Aberdare / African Cables range; • Cable Rack & Channel : O-Line range; • OHL Equipment : McWade / CU Al Eng; or Similar and Approved;	
5	Technical Standards:	• SANS 1019 : Standard Voltages, Currents & Insulation Levels; • SANS 10142-2 : The Wiring of Premises – MV Installations • SANS 10198 :1-13, Installation of cables not exceeding 33 kV. • SANS 97 : Electric cables, PILC for rated voltages up to 19/33 kV; • SANS 1339 : Electric cables, XLPE rated voltages up to 19/33 kV; • SANS 1803-1 : Lugs and ferrules for insulated electric cables; • SANS 6281/4-4 : Test methods PILC & XLPE; • NRS 012 : Cable terminations up to and including 36kV; • NRS 013 : Medium-voltage cables; • NRS 028 : Cable lugs and ferrules for CU and AL conductors; • NRS053 : Accessories for medium-voltage power cables; • NRS 033 : Electricity Distribution - Guidelines for MV OHL; • NRS 022 : Electricity Distribution – Stays & Equipment; • NRS 032 : Service Distribution Boxes – Pole Mounted Type; • NRS 035 : Outdoor Distribution Cut-Outs; • NRS 039 : Surge Arrestors; • NRS 041 : OHL for Conditions Prevailing in SA; • NRS 043 : Utilization of Structures for Power & Communication; • NRS 046 : Load Break Switch Disconnectors Pole Mounted; • SABS 753/754 : Wooden Poles, Cross-Arms & Spacers for OHL;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
G	LOW VOLTAGE DISTRIBUTION (LVdx) WORK		
#	Subject	Description	
1	Scope of Works:	Design, Manufacture and Supply of Low Voltage (LV) Equipment (<1kV), Distribution Boards (DB), Distribution Kiosks (DK), Motor Control Centre (MCC), Indoor & Outdoor IP Rated Enclosures, Factory Build & Wired, Fully and/or Partially Type Tested (IEC 60439) by Specialised Panel Builder, c/w Steel Works, Frames, Sub-Frames, Chassis, Covers, Lockable Doors, Busbars, SABS approved Surge Protection, Switchgear (IEC 60947), Motor Starter / Drives, Metering, Wiring, Indication, Control & Auxiliary Circuits & Equipment, Fixing Accessories, Labelling and Signage and Installed Indoor and/or Outdoor, Plinth Mounted, Floor Standing, Flushed or Recessed Mounted in accordance with SANS10142-1, c/w Earthing, Testing and Commissioning and All Associated Work, Complete to Achieve Client / Project Objective and as per Project Specification;	
2	Contractor Responsibility:	• Confirmation of specialised builder; • Manufacturer and range of material and equipment; • Confirmation of positions & quantities; • Submission of detailed design drawings for review & approval; • FAT & SAT tests and completion of testing scheduled; • IED Programming; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of Specialized LV Unit manufacturer and / or supplier; • Confirmation of material & equipment ratings, range & manufacturer; • Detail design of Low Voltage Assembly Unit by specialized builder in accordance with Specifications; • Submit detail design drawings and documentation to Engineer for review and approval; • Ordering of material & manufacture of MV Assembly Unit and/or ordering and delivery of unit by specialized builder / supplier; • Perform inspection and factory acceptance test (FAT) between specialist builder and / or supplier and contractor.; • Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval; • Confirmation of equipment / unit position and cable lengths on site; • Transport / Delivery of Low Voltage Assembly Unit to site; • Rigging of Low Voltage Assembly Unit and placing in position on site; • Earthing of Installation & issuing of Resistivity Test Certificates; • Connection of all LV cables & making good for commissioning; • Labelling of equipment / circuits / warning signs and installation of operational information and SLD; • Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions; • Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate; • Complete, testing and certification of installation & the submission of Certificate of Compliance (COC) to Engineer for review & approval; • Preparation and submission of As-Build data pack;	
4	Material Prerequisite:	• Specialised Distribution Panel Builder : EBM; • Specialised MCC Panel Builder : Electron-SA; • Switchgear : ABB / Schneider / CBI; • Surge Protection : DEHN; • Motor Drives : ABB / Schneider; • Check Metering : Elster; • Power Metering : ABB / Scheinder; - or Similar and Approved;	
5	Technical Standards:	• SANS 10142-1 : The Wiring of Premises – Low Voltage Installations; • SANS/IEC 60439 / 61439 : Low Voltage Switchgear and control gear assemblies; • SANS/IEC 60947 : Low Voltage Switchgear and control gear;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
H	LOW VOLTAGE RETICULATION (LVrt) WORK		
#	Subject	Description	
1	Scope of Works:	Supply Low Voltage Bells & Mains, Multicore, Single Core Power Cables (SANS 1507-3), Airdac (SANS 1507-6), Arial Bundle Conductor (1418), Aluminium Conductor and Copper earth Wire (SANS 1411-1) and Install in ground, wire channels, sleeves, on racking, on pole structures and in configurations as indicated on site (SANS 10142-1 & SANS 10198 & SANS 61386), c/w with joints, terminations, end capps, glands, shrouds, termination lugs and fixing accessories and all associated works, Complete to Achieve Project Objective and as per Project Specification;	
2	Contractor Responsibility:	• Confirmation of specialised builder; • Manufacturer and range of material and equipment; • Confirmation of positions & quantities; • Submission of detailed design drawings for review & approval; • FAT & SAT tests and completion of testing scheduled; • IED Programming; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of manufacturer and range of equipment and material;□ • Route survey, confirmation of route, length & quantities, pegging of route, distance confirmation and excavation of cross sections to determine existing services and ground type; • Excavation of underground LV Power Cable routes as per Design Schedule and Drawings, complete with trenching, bedding; • Excavation & installation of OHL pole structure positions as per Design Schedules and Drawings, completed with backfilling & compaction; • Installation Cable Management systems, complete with cable racks, wiring channels, etc.; • Infrastructure crossing by way of horizontal drilling, pipe jacking or concrete culvert installation construction for these special crossing; • Supply & installation of LV Power Cables and accompanying earth continuity BCEW cables as per Design Schedules and Drawings, complete with joints, termination, lugs, etc; • Supply & installation of OHL Arial Bundle Conductor, Aluminium Conductor and Copper Earth Wire as per Design Schedules and Drawings, complete with OHL equipment, etc; • Marking of LV Power Cables by installing danger tape along the complete excavated routes and cable route markers at every joint position, road crossings, where the cable turns and on straight sections longer than 200m; • Protection of LV Power Cables by supplying and installing concrete protection slabs along the complete excavated routes where other services are crossed; • Complete testing and commissioning of all LV OHL Conductor and Power Cable work and issuing of test and compliance certificate; • Complete testing and commissioning of all LV OHL Conductor and Power Cable work and issuing of test and compliance certificate; • Preparation and submission of As-Build data pack;	
4	Material Prerequisite:	• Cables : Abedare / African Cables range; • Cable Rack & Channel : O-Line range; - or Similar and Approved;	
5	Technical Standards:	• SANS 10142-1 : The Wiring of Premises – LV Installations; • SANS 1507 : Electric cables (300/500 V to 1 900/3 300 V); • SANS 1411 : Materials of insulated cables and flexible cords. • SANS 10198 : Installation of power cables not exceeding 33kV; • SANS 61386 : Conduit Cable Management System;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
I	SMALL POWER & LIGHTING (SP&L) WORK		
#	Subject	Description	
1	Scope of Works:	Supply of Small Power & Lighting equipment (socket outlets, isolators, communication outlets, lighting switches, power cables & conductors, data cable, etc.),IP Rated, SABS tested, approved & certified and the indoor and/or outdoor installation and testing there-off with the use of wiring management systems (power skirting, power poles, sleeves, conduit, channels, cable racks & wire mesh, etc.) in accordance with SANS 10142-1, c/w wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;	
2	Contractor Responsibility:	• Confirmation of manufacturer and range of equipment and material; • Confirmation of positions & quantities; • Circuit tests and completion of testing scheduled; • As-Built Documentation.	
3	Sequence of Events:	• Site verification audit to be performed by Contractor; • Working with existing installation, it will be required by the contractor to audit, test and draft a condition report; • Determine final positions of equipment on site by the contractor; • Determine final routes of cables on site by the contractor; • Equipment quantities are verified by the Contractor based on site inspection; • Condition report and marked up drawings to be provided by the Contractor to the Engineer for review and approval; • Upon approval of Contractor feedback by Engineer, the orders can be placed for material; • Material are delivered and stored safely on site; • Materials are installed, tested and record is kept of all test results; • As-Built drawings are prepared and submitted to Engineer for review and approval; • Complete, testing and certification of installation & the submission of Certificate of Compliance (COC) to Engineer for review & approval;	
4	Material Prerequisite:	• Small Power : Clipsal, CBI, Crabtree; • Cable & Wire Management : O-Line; • Cable & Conductor : Abedare; • Luminaires : Beka; or Similar and Approved;	
5	Technical Standards:	• SANS 10142 : The Wiring of Premises; • All Equipment shall be SABC Certified;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
J	INDUSTRIAL POWER (IP) WORK		
#	Subject	Description	
1	Scope of Works:	Supply of Industrial Power & Lighting equipment (welding plugs, isolators, starters, emergency devices, stop/starts, electric motors, power & control cables, etc.), IP and/or EX rated, SABS tested, approved & certified and the indoor and/or outdoor installation in industrial areas and testing there-off with the use of wiring management systems (sleeves, conduit, channels, cable racks & wire mesh, etc.) in accordance with SANS 10142-1, c/w wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;	
2	Contractor Responsibility:	• Confirmation of manufacturer and range of equipment and material; • Confirmation of positions & quantities; • Circuit tests and completion of testing scheduled; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of material and equipment ratings, range and manufacturer; • Site verification audit to be performed by Contractor; • Working with existing installation, it will be required by the contractor to audit, test and draft a condition report; • Determine final positions of equipment on site by the contractor; • Determine final routes of cables on site by the contractor; • Equipment quantities are verified by the Contractor based on site inspection; • Condition report and marked up drawings to be provided by the Contractor to the Engineer for review and approval; • Upon approval of Contractor feedback by Engineer, the orders can be placed for material; • Material are delivered and stored safely on site; • Materials are installed, tested and record is kept of all test results; • As-Built drawings are prepared and submitted to Engineer for review and approval; • Complete, testing and certification of installation and the submission of COC to Engineer for review and approval;	
4	Material Prerequisite:	• Industrial Power : Scame, Eaton; • Enclosures : Allbro; • Junction Boxes : Pratley, Allbro, OBO; • Cable & Wire Management : O-Line; • Cable & Conductor : Abedare; • Electric Motors :WEG; • Luminaires : Beka; or Similar and Approved;	
5	Technical Standards:	• SANS 10142 : The Wiring of Premises; • All Equipment shall be SABC Certified;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
K	INDUSTRIAL CONTROL (IC) WORK		
#	Subject	Description	
1	Scope of Works:	Design, Supply, Installation and Configuration of PLC / SCADA / HMI & Telemetry systems by a specialised System Integrator Contractor and the Supply of Industrial Instrumentation (mechanical and/or digital indication and measuring devices, etc.), IP and/or EX rated, SABS tested, approved & certified and the indoor and/or outdoor installation in industrial areas and testing there-off with the use of wiring management systems (sleeves, conduit, channels, cable racks & wire mesh, etc.) in accordance with SANS 10142-1, c/w wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;	
2	Contractor Responsibility:	• Confirmation of manufacturer and range of equipment and material; • Confirmation of positions & quantities; • Circuit tests and completion of testing scheduled; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of specialized system integrator and / or supplier; • Confirmation of material and equipment ratings, range and manufacturer; • Submit detail designs by specialized system integrator in accordance with Specifications to Engineer for review and approval; • Ordering of material and building of industrial control units; • Site verification audit to be performed by Contractor; • Working with existing installation, it will be required by the contractor to audit, test and draft a condition report; • Determine final positions of equipment on site by the contractor; • Determine final routes of cables on site by the contractor; • Equipment quantities are verified by the Contractor based on site inspection; • Condition report and marked up drawings to be provided by the Contractor to the Engineer for review and approval; • Upon approval of Contractor feedback by Engineer, the orders can be placed for material; • Material are delivered and stored safely on site; • Materials are installed, tested and record is kept of all test results; • As-Built drawings are prepared and submitted to Engineer for review and approval; • Complete, testing and certification of installation and the submission of COC to Engineer for review and approval;	
4	Material Prerequisite:	• System Integrator : Iritron / Electron-SA; • Industrial Instrumentation : Wika; • Enclosures : Allbro; • Junction Boxes : Pratley, Allbro, OBO; • Cable & Wire Management : O-Line; • Cable & Conductor : Abedare; • PLC / HMI :Schneider; • SCADA : Schneider, Adroid; or Similar and Approved;	
5	Technical Standards:	• SANS 10142 : The Wiring of Premises; • All Equipment shall be SABC Certified;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
L	AREA LIGHTING (AL) WORKS		
#	Subject	Description	
1	Scope of Works:	Design (SANS 10098 & 10389), Supply (SANS 475) & Installation of Public / Area Lighting (SANS 10142-1) with the appropriate degree of protection enclosures (SANS 60529) and application (SANS 10108) in line with OHS Act environmental and lighting regulations, c/w luminaires, poles, mounting brackets, wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;	
2	Contractor Responsibility:	• Confirmation of manufacturer and range of equipment and material; • Confirmation of positions & quantities; • Circuit tests and completion of testing scheduled; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of specialized lighting designer and / or supplier; • Confirmation of material and equipment ratings, range and manufacturer; • Site verification audit to be performed by Contractor; • Working with existing installation, it will be required by the contractor to audit, test and draft a condition report; • Determine final positions of equipment on site by the contractor; • Determine final routes of cables on site by the contractor; • Equipment quantities are verified by the Contractor based on site inspection; • Condition report and marked up drawings to be provided by the Contractor to the Engineer for review and approval; • Upon approval of Contractor feedback by Engineer, the orders can be placed for material; • Material are delivered and stored safely on site; • Materials are installed, tested and record is kept of all test results; • As-Built drawings are prepared and submitted to Engineer for review and approval; • Complete, testing and certification of installation and the submission of COC to Engineer for review and approval;	
4	Material Prerequisite:	• Luminaires : Beka; - or - Similar and Approved;	
5	Technical Standards:	• SANS 10142 : The Wiring of Premises; • All Equipment shall be SABC Certified;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
M	STANDBY GENERATOR SUPPLY (ES) WORKS		
#	Subject	Description	
1	Scope of Works:	Design, Manufacture, Supply (SANS8528-1:2008) of Low Voltage (LV) Prime or Standby Diesel Generator (DG), IP Rated, Factory Build & Wired, Fully or Partially Type Tested (IEC 60439) by specialised builder, installed indoor or outdoor on plinth or in substation room in accordance with SANS 10142-1, c/w canopy, fuel tank, batteries & charger, change over & switchgear, controller, earthing, Low Voltage (LV) switchgear, metering, internal wiring, auxiliary equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;	
2	Contractor Responsibility:	• Confirmation of specialised builder; • Manufacturer and range of material and equipment; • Confirmation of positions & quantities; • Submission of detailed design drawings for review & approval; • FAT & SAT tests and completion of testing scheduled; • IED Programming; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of specialized builder and / or supplier; • Confirmation of material and equipment ratings, range and manufacturer; • Submit detail designs by specialized builder in accordance with • Specifications to Engineer for review and approval; • Ordering of material and manufacture of diesel generator unit and/or ordering and delivery of unit by specialized builder and / or supplier; • Issue of Completed factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval; • Confirmation of equipment / unit position and cable lengths on site; • Transport / Delivery of Diesel Generator Unit to site; Rigging of Diesel • Generator Unit and placing in position on site; • Excavation & installation of plinth, c/w trenching, bedding, etc., in accordance with soil survey, design (pre-cast or cast on site) and compaction & test certificates; • Earthing of Installation and issuing of Earthing Soil Resistivity Test • Certificates; • Connection of all LV cables as well as making good for commissioning; • Labelling of equipment / circuits / warning signs and installation of operational information and SLD; • Configuration of IED's and/or Protection Functions; Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate; • Completion of test schedules & certificates for approval by the • Engineer before handing-over; Preparation and submission of As-Build data pack; • Twelve (12) month guarantee; Servicing of new unit during twelve (12) months guarantee period; First Fill of Diesel (1000L);	
4	Material Prerequisite:	• Builder : New Way / CAT / Diesel Innovations / Diesel Elec / Multilec; • Controllers : Deep Sea / Levato; • Switchgear : Schneider / CBI / ABB; • Switchgear : Socomec / ABB; • Engine : Perkins / Lister / Cummings / John Deere / CAT / Volvo; • Alternator : Leroy Somer / Marelli Motor / Enga / Stanford; • Luminaires : Beka; or Similar and Approved;	
5	Technical Standards:	• SANS 10142 : The Wiring of Premises; • SANS 8528 : Engine driven alternating current generating sets; • SANS/IEC 60439 / 61439 : Low Voltage Switchgear and control gear assemblies; • SANS/IEC 60947 : Low Voltage Switchgear and control gear; • SABS 1804 : Induction Motors; • IEC 60034 : Rotating electrical machines; • SABS 1091 : National colour standards for paint;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT			
C3 CONTRACT SECTION - SCOPE OF WORKS			
C3.3 TECHNICAL SPECIFICATION			
N	EARTHING & LIGHTNING PROTECTION (ELP) WORK		
#	Subject	Description	
1	Scope of Works:	Design Verification, Supply, Installation and testing of earthing and lightning protection systems in accordance with the latest SANS Codes of Practice 10199 (2004) and 10313 (2008) in conjunction with SANS 62305-1-2-3-4 and IEC 62305-1-2-3-4 and installation copper earth electrodes at each earth termination based on a soil resistivity survey in order to ensure that the complete electrical installation is earthed, boded and continuity established for the purpose of people and structure protection and safety as confirmed with overall earth resistance measurement and certification;	
2	Contractor Responsibility:	• Confirmation of specialised builder; • Manufacturer and range of material and equipment; • Confirmation of positions & quantities; • Submission of detailed design drawings for review & approval; • FAT & SAT tests and completion of testing scheduled; • IED Programming; • As-Built Documentation.	
3	Sequence of Events:	• Confirmation of specialised contractor & manufacturer and range of material & equipment; • Perform pre and post soil resistivity surveys as per the Wenner method, evaluate soil resistivity surveys, inclusive of prospection sheets, graphs and reports by specialist contractor for each applicable area; • Confirm design and submit to Engineer for review and approval; • Installation of a overall lightning protection system to ensure earth continuity and overall earth resistance value for the overall facility structures, less than 10 ohm; • Installation of a overall earthing system to ensure electrical earth continuity & overall earth resistance value for the electrical distribution network of less than 1 ohm; • Allowance is to be made for the material and labour for the installation of an effective building lightning protection system; • Allow for the bonding of all metal cold-water mains to the earth busbar in the Main Switchboard by means of solid 15 x 2mm copper strapping, c/w brass fixing accessories; • Allow for the bonding of other metal hot and cold water pipes to the earth busbar in the nearest switchboard by solid 12 x 0.8mm perforated copper strapping c/w brass fixing accessories; • On completion issue of test certificates by specialist contractor; • Compile and/or update as-built drawings for the complete installation;	
4	Material Prerequisite:	• Specialised Contractor : HHK / RSLP; • SPD : DEHN / Schneider / O-Line; • LPS : DEHN / O-Line; or Similar and Approved;	
5	Technical Standards:	• SANS 10142 : The Wiring of Premises; • SANS 10199 : Design & Installation of Earth Electrodes; • SANS 1063 : Earth Rods & Couplers; • SANS 10292 : Earthing of Low Voltage Distribution System; • SANS 10313 : Protection Against Lightning; • SANS 62305 : Protection Against Lightning;	

JAN KEMPDORP WWTW REFURBISHMENT PROJECT	
C3 CONTRACT SECTION - SCOPE OF WORKS	
C3.4 PROCUREMENT REQUIREMENTS	

A	NOMINATED SUBCONTRACTORS & SUPPLIERS	
#	Description	Nomination
1a	Application	Motor Control Centre
i	Company	Electron-SA
ii	Address	JHB Office, Unit 42, Northlands Retail Park, Epsom Eve, Hoogland, Randburg
iii	Name	Jonathan Bertasso
iv	Tel	011 444 7635
v	Email	johnnyb@electron-sa.co.za
1b	Application	Motor Control Centre
i	Company	SWB Group
ii	Address	59 Aberdare Drive, Phoenix Industrial Park, Phoenix, Durban, South Africa, 4068
iii	Name	Denny Naidoo
iv	Tel	031 508 1520
v	Email	denny@swbgroup.co.za
2a	Application	Standby Generator
i	Company	Diesel Electric
ii	Address	27/29 Mewette Street, Ophirton
iii	Name	Hannes Steyn
iv	Tel	011 493 7070
v	Email	hanness@dieselectricalservices.co.za
2b	Application	Standby Generator
i	Company	Diesel Innovation
ii	Address	194 Nectar St, Pomona AH, Kempton Park, 1619
iii	Name	-
iv	Tel	079 882 7212
v	Email	sales@dieseli.co.za

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3 CONTRACT SECTION - SCOPE OF WORKS		
C3.4 PROCUREMENT REQUIREMENTS		

3a	Application	Area Lighting
i	Company	Beka Schreder
ii	Address	13 West View Road, Olifantsfontein
iii	Name	Heinrick Le Roux
iv	Tel	011 238 0032 / 082 214 0591
v	Email	h.leroux@beka-schreder.co.za
3b	Application	Area Lighting
i	Company	Antley Lights
ii	Address	Ewleme Road, Henley on Klip, Midvaal, 1961
iii	Name	Anthony Hawley
iv	Tel	027 880 0030 / 082 671 7061
v	Email	h.leroux@beka-schreder.co.za
4a	Application	Earthing & Lighting Protection
i	Company	RSLP
ii	Address	25 Suzet Ave, Flamwood, Klerksdorp, 2571
iii	Name	Johan Kruger
iv	Tel	011 704 1487
v	Email	info@dehn-africa.com
4b	Application	Earthing & Lighting Protection
i	Company	DEHN Africa
ii	Address	Unit 2, K101 Business Park, Capital Hill Commercial EST, Midrand
iii	Name	Johan Kruger
iv	Tel	018 468 2100 / 076 597 0332
v	Email	johann@rslp.co.za

JAN KEMPDORP WWTW REFURBISHMENT PROJECT	
C3 CONTRACT SECTION - SCOPE OF WORKS	
C3.4 PROCUREMENT REQUIREMENTS	

B	DECLARED SUBCONTRACTORS & SUPPLIERS (to be completed by contractor)		
#	Works	Company	Reference Documentation
1	LV Power Cables		
2	MV Power Cables		
3	Lighting Luminaires		
4	Small Power		
5	Industrial Power		
6	TRF		
7	Miniature Substation		
8	Distribution Boards		
9	Motor Control Centre		
10	Standby Generator		
11	Earthing & Lightning Protection		
12			
13			
14			
15			

JAN KEMPDORP WWTW REFURBISHMENT PROJECT	
C3 CONTRACT SECTION - SCOPE OF WORKS	
C3.4 PROCUREMENT REQUIREMENTS	

C	SUBCONTRACTING REQUIREMENTS	
#	Subject	Description
1	Allow :	The Contractor may subcontract portions of the Works that are needed specialist work included in the Contract to ensure that project requirements are adhered to;
2	Preference :	Subcontracting must further also comply with the conditions specified in the Preference Schedule;
2	Local :	The Client prefers the use of local Sub-contractors where possible and can provide details of local subcontractors who have worked previously on-site;
3	Approval :	Any proposed Sub-contractors however need to be approved by the Engineer before work may commence and information on prior experience should be supplied on request. The Contractor shall notify the Engineer at least 7 calendar days before the Sub-contractor moves onto site.
4	Responsibility :	The Contractor will be held responsible for any defects in the works carried out by the Sub-contractors, and he shall make his own arrangements as to maintenance by Sub-contractors. Methods of measurements and payment should be arranged between the Contractor and the Sub-contractor and no payments will be made directly to the Sub-contractors.
5	Communication :	The Engineer will not liaise directly with any subcontractors and will not issue instructions (whether verbal or written) directly to any subcontractor. All matters pertaining to the particular subcontractor will be deemed to be the responsibility of the Contractor and the Engineer will not be involved.
6	Contract :	Copies of the written Contracts with the Sub-contractors shall be made available to the Engineer on request.
7	Health & Safety :	It is important to note that all Sub-contractors have to comply with all safety and other regulations as set out by The Client, as applicable to the main Contractor.

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.4	PROCUREMENT REQUIREMENTS	

D	DEVIATION DESCRIPTION		
#	Description	Ref.	Description / Deviation

E	APPROVAL OF SPECIFICATION & DEVIATIONS			
#	Designation	Description	Date	Signature
1	Contractor			
2	Client Representative			
3	Client			
4	Other			

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.5	CONSTRUCTION SPECIFICATION	

A	MANAGEMENT SCHEDULE (to be completed by project manager during project)		
#	Subject	Detail	Status
1	-	-	-
2	-	-	-

B	SITE INFORMATION		
#	Description		
1	Access : Entrance to the site can be gained either, from the Eastern side via the R507 or Southern side via the R370, both entries leading due North, where the plant is located;		
2	Induction : Normal Access and Induction Process are required to enter the premises, signing of the access register at the gate is compulsory. Health & Safety file need to be approved and site representative present during works;		
3	Construction Services : Water and electrical supply can be made available on the construction site. An area can be designated off to establish a site and storage camp. General toilette facilities are available on site. No overnight and washing facilities available on site;		
4	Existing Services : Existing Electrical and Civil Services are located around the premises of proposed work. These services will need to be identified and the necessary precautions taken not to damage any existing serviced. Where required, wayleaves will need to be arranged;		
5	Operational Requirements : Due to critical service delivery expectation of the plant, it will be expected from the contractor to perform work after hours and over weekends while making sure that the disruptions of services are mitigated and/or kept to a minimum;		



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C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.5	CONSTRUCTION SPECIFICATION	

C	SITE ESTABLISHMENT	
#	Subject	Description
1	Contractor Provision :	Provision to be made by Contractor for the establishment of construction site, for the planning and management of the project, quality and health and safety aspects, providing guarantees, training and as-build documentation and all associated work;
2	Location :	The location of works will be defined within the Scope of Works Specification;
3	Access :	Access to the sites can be arranged with the Client;
5	Shutdown Preparation :	Planning must be done to minimize operational shutdown times for existing plants. It will be required for the Contractor to do preparation work during normal operational hours and physical installation and commissioning work after normal operational hours to minimize shutdown times. The requirements of each shutdown will be determined by the merits of operational requirements;
6	Existing Service :	All necessary precautions should be taken to identify existing services before work commences;
7	Damages :	Should the <u>Client</u> be the subject of any claims or sustain any damage or losses arising from the project and work, such amounts will be for the account of the <u>Contractor</u> ;
8	Establishment :	Site establishment can be arranged if required and will be decided upon on the merits of the works and dynamics of the site itself;
9	Services Required :	All services required for the construction work must be given through in writing to the <u>Client</u> for the necessary arrangement to be made;
10	Clean-Up :	The <u>Contractor</u> is responsible for carting away building rubble which occurs from carrying out the contract work; The <u>Contractor</u> shall clean the site and remove all excess materials, rubbish and waste arising from the work. During progress and upon completion and before acceptance and final payment is made, the <u>Contractor</u> at his own expense shall fill pits and clear the Works and all ground occupied by him in connection with the Works, of rubbish excess materials, false work, temporary structure and equipment, and all parts of the Works shall be left in a neat, presentable condition. All excess materials, soil, rocks, etc. shall be removed by the <u>Contractor</u> ; The site must be left in a clean and satisfactory state;
11	Reusable Equipment :	Reusable equipment, parts and material remain the property of the <u>Client</u> and the <u>Contractor</u> should first obtain clarity from the Project Manager which reusable equipment, parts and material may not be removed;
12	Supplied Material :	Where material is supplied by the <u>Client</u> to the <u>Contractor</u> , the <u>Contractor</u> has an obligation towards the safe keeping of these goods; Any losses of material through theft or damage will be the sole risk of the <u>Contractor</u> from the time the material is issued to him;

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C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.5	CONSTRUCTION SPECIFICATION	

D	CONSTRUCTION	
#	Subject	Description
1	Compliance :	All works shall comply with the "Standards" and "Specification" of: • The Client Engineering, Operational & Maintenance Standards; • The Statutory Regulation of RSA; • Laws & By-Laws of the Supply Authority & Fire Department; • Technical standards of IEC, SANS, NRS & ISO; • Standards and guidelines as set out by Department of Labour (DoL);
2	Responsibility :	It is the responsibility of the Client as well as the Contractor to ensure that the latest and most updated set of standards and regulations are used;
3	Electrical Works :	All "Electrical Works & Installations" shall comply as a minimum with SANS 10142-1&2: Wiring of Premises Low Voltage & Medium Voltage;
4	Construction Works :	All "Construction Works & Installations" shall comply as a minimum with SANS 10400: The Application of the National Building Regulation;
5	Civil Works :	All "Civil Works & Installations "shall comply as a minimum with SANS 1200 / 2001: Standardised Specification of Civil Engineering Construction;
6	Quality Management :	A quality management system shall be set up to assure the quality of all equipment and work. Guidance on the requirements for a quality management system may be found in the following standards: SANS 9000, SANS 9001, and SANS 9004. The details shall be subject to agreement between the purchaser and supplier.
7	Environmental Management :	The environmental management system shall be set up to assure the environmental compliance of all equipment and work throughout entire life cycle (i.e. during design, development, production, installation, operation and maintenance, decommissioning and disposal phases). Guidance on the requirements for an environmental management system may be found in SANS 14001. The details shall be subject to agreement between the purchaser and supplier. This is to ensure that the asset created conforms to environmental standards required by SANS 14001.
8	Statutory References :	• The requirements of the Occupational Health and Safety Act, Act 85 of 1993 (OHS Act) and all subsequent amendments and regulations shall be observed and adhered to except where exemptions have been obtained from the Chief Factories Inspector. • Construction Regulations, 2014. • The Electricity Act, No. 40 of 1958. • Fencing Act., Act no. 31 • Conservation of Agricultural Resources Act, Act no. 43 • Mountain Catchment areas act, Act no. 63 • Environmental Conservation act, Act no. 73 • Forest Act, Act no. 122
9	Electrical Installation :	All Electrical Installations shall comply with the " <u>Electrical Installation Regulations (EIG), 2005</u> as issued by the <u>Department of Labour (DoL)</u> ."

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.5	CONSTRUCTION SPECIFICATION	

10	Electric Machinery :	All Electrical Machinery Installations shall comply with the " <u>Electrical Machinery Regulations (EMG), 2011</u> as issued by the <u>Department of Labour (DoL)</u> ."
11	Qualified Contractor :	All "Electrical Works & Installations" shall be performed by a qualified construction entity <u>Registered as a Electrical Contractor</u> at the <u>Department of Labour (DoL)</u> , proof of this registration shall be submitted by the Contractor.
12	Supervision :	All single, two or three phase as well as DC electrical installations and works shall be carried out under the supervision of, tested, approved and signed-off by an trained and registered <u>Installation Electrician</u> ;
13	Hazardous Zones :	All electrical installations and works shall comply as a minimum with SANS 10142-1&2, 10108, 10119, 10086, 60079, 61241 and the standards and guidelines as set out by <u>Department of Labour (DoL)</u> . All hazardous zone installations and works shall be carried out under the supervision of, tested, approved and signed-off by an trained and registered <u>Master Electrician</u> ;
14	Material :	Only reputable manufacture type equipment being tested in SA industry with the necessary SABS certification and IP rating shall be accepted. Specified material and/or equipment as well as alternatives proposed by the <u>Contractor</u> shall be verified with the <u>Engineer</u> before orders can be placed;
15	Manufacturing :	The Contractor shall submit detail design documentation of all distribution equipment, if required by specialised third party sub-contractors for review and approval by the <u>Engineer</u> before manufacturing can commence. The <u>Contractor</u> shall arrange for a Factory Acceptance Test (FAT) and the signing of a FAT certificate by the <u>Engineer</u> before any manufactured distribution equipment shall leave the factory and delivered to site;
16	Sequence of Events & Holding Points :	The Contractor shall adhere to the general industry norms and project specific assigned sequence of events and holding points;
17	Making Safe :	Electrical supply will be switched off by a <u>Qualified Clients Representative</u> approved by the <u>Engineer</u> , made safe and handed over to the <u>Contractor</u> to commence with works. The same applies for switching on electrical supply;
18	Existing Services :	It is the responsibility of the <u>Contractor</u> to take the necessary precautions to identity existing services and arrange for way-leaves if necessary by way of inspections, tests and discussions with all stakeholders;
19	Equipment Positions :	Positions of equipment and identification of routes shall be determined on site by the <u>Contractor</u> and discussed with the <u>Engineer</u> before material can be ordered and commence with installation work;
20	Equipment Quantities :	Verification of quantities shall be determined on site by the <u>Contractor</u> and discussed with the <u>Engineer</u> before material can be ordered and commence with installation work;

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.5	CONSTRUCTION SPECIFICATION	

21	Earthing :	All distribution equipment as well as the complete electrical installation works shall be earthed, bonded and earth continuity shall be ensured as per standards and regulations. All distribution equipment shall have a visible and accessible earth bar installed and all earthing and bonding of equipment and panels shall be visible earthed. The Contractor shall provide earth continuity and earth resistivity test certificates to proof that the complete electrical installation is earthed according to the required standards and regulations;
22	Lightning Protection :	All installations shall be protected by a lightning protection system in accordance with SANS 10313, SANS 10199 and in conjunction with IEC 62305. All earthing conductors to be bare copper earth wire or galvanised steel except the instrument high quality earth system where PVC earth conductor should be used. The number and dept of extensible copper earth electrodes at each earth termination to be determine by a soil resistivity survey. Cable racks and gantries, etc, to be bonded to structure wherever they enter the structure perimeter. Roof steel sheeting of a structure to be securely bonded to earth at all corners of structure. Bonding to include the steel gutters, down pipes and other metallic surfaces. Lightning protection
23	Labelling :	All electrical equipment and installation work shall be labelled by the Contractor as per standards and Client requirements. Each distribution point shall be labelled, indicating the distribution point description, current and fault rating, supplied from and type & size of supply feeders. Each distribution supply feeder shall be labelled, indicating the source and/or supply point description complete with type & size of supply feeder. Each Small & Industrial Power & Lighting Equipment shall be labelled, indicating the corresponding distribution point and circuit number;
24	Commissioning :	Complete works shall be tested and commissioned by the <u>Contractor</u> and corresponding test reports and certificates submitted to the <u>Engineer</u> . The Contractor shall arrange for a Site Acceptance Test (SAT) and the signing of a SAT certificate by the <u>Engineer</u> before the installation can be accepted for complete operational purposes by the <u>Client</u> ;
25	Certificate of Compliance :	COCs shall be issued and/or updated for all new and modification of electrical installations as per the standards and guidelines of <u>Department of Labour (DoL)</u> . As per the standards and requirements of the <u>Client</u> a COC shall be written for each distribution point and shall be applicable for that specific distribution point and the feeders there-off. Such a COC will contain the single line diagram, general layout, type test, FAT and SAT certificate of that specific distribution point;
26	As-Build :	The <u>Contractor</u> shall prepare and submit an As-Build Pack, where 3 x Hard Copies and 1 x Electronic Copy is handed over to the <u>Client</u> . This As-Build Pack shall contain, but not limited to marked up schedules and drawings provided by the Client, detailed manufacturing drawings such as circuit diagrams and general layouts, equipment documentation such as manuals and software, test report and certificates, etc.

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C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.5	CONSTRUCTION SPECIFICATION	

27	Specifications & Discrepancies :	The Project Specification is defined as the combination of Part C2 (Pricing Data) and Part C3 (Scope of Works), and shall be read in conjunction / combination. Descriptions in Part C2 are abbreviated and may differ from those in Part C3. In the event that any discrepancies should exist, such discrepancies shall be brought to the attention of the Engineer for clarification thereof. Claims for additional cost as a result of discrepancies and not achieving the Engineers' Requirements shall not be entertained.

E	HANDING-OVER	
#	Subject	Description
1	Marked-Up Drawings :	The <u>Contractor</u> shall mark up all design drawings submitted to the <u>Contractor</u> after completion of the project and submit to the <u>Client</u> ;
2	As-Build :	The contractor shall provide three files in hard copies as well as three soft copies on CD after completion of the project which shall include all software files, operating manuals, service and maintenance manuals, drawings including scheme diagrams, software packages, test reports, settings etc. All diagrams shall also be in DWG or DXF format;
3	Software :	All programs and data files shall also be in the original file format. All documentation, drawings, programs, data files etc. shall together with the original file format also be in PDF format;
4	Manuals :	The <u>Contractor</u> shall also supply all Operating and Instruction Manuals, list of spare parts and contact details of suppliers, Software and Files, Special Tools needed etc. for the various Protection Panels;
5	Training :	Training shall also be provided by the <u>Contractor</u> to the <u>Client</u> staff;

JAN KEMPORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.5	CONSTRUCTION SPECIFICATION	

F	DEVIATION DESCRIPTION		
#	Description	Ref.	Description / Deviation

G	APPROVAL OF SPECIFICATION & DEVIATIONS			
#	Designation	Description	Date	Signature
1	Contractor			
2	Client Representative			
3	Client			
4	Other			

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.6	CONSTRUCTION MANAGEMENT REQUIREMENTS	

A	MANAGEMENT SCHEDULE (to be completed by project manager during project)		
#	Subject	Detail	Status
1	-	-	-
2	-	-	-

B	PROGRAM REQUIREMENTS		
#	Subject	Description	
1	Specific Requirements :	No specific program requirements, other than the normal industry expected ordering, manufacturing, delivery & installation timelines;	
2	Program Submission :	Project programme, detailing the primary, secondary and critical path construction items with corresponding duration, start and completion dates shall be submitted for review and approval by the Contractor;	

C	PROGRAM FRAMEWORK			
#	Description	Weeks	Start	Finish
1	Site visit and technical briefing;	±2 Weeks	-	-
2	Scope of works verification;	±4 Weeks	-	-
3	Submission of equipment specification and approval by Engineer;	±2 Weeks	-	-
4	Equipment specification refinement and approval with Client;	±2 Weeks	-	-
5	Verification of any provisional scope of work items;	±2 Weeks	-	-
6	Submission of detailed drawings for review and approval by Engineer;	±4 Weeks	-	-
7	Detailed drawings for review and approval by Client;	±2 Weeks	-	-
8	Manufacturing;	±8 Weeks	-	-
9	Factory Acceptance Test (FAT);	±2 Weeks	-	-
10	Construction;	±8 Weeks	-	-
11	Site Acceptance Test (SAT);	±2 Weeks	-	-
12	Completion & As-Build;	±2 Weeks	-	-

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.6	CONSTRUCTION MANAGEMENT REQUIREMENTS	

D	SEQUENCE OF EVENTS & HOLDING POINTS
#	Description
1	Preparation and making safe of construction site;
2	Confirmation of Equipment Positions & Cable Routes by Contractor on Site for Review and Approval by the Engineer;
3	Confirmation of material specification by Contractor for Review and Approval by the Engineer;
4	Proceed with the ordering of Material after Review & Approvals;
5	Proceed with civil works for the preparation of equipment & material installation;
6	Site inspections of opened cable trenches and distribution equipment foundation excavations before the closing there-off and compaction test certificates there-after;
7	Confirmation of specialized Electrical Distribution & Control Board Equipment manufacturer;
8	Confirmation of specialized Industrial Automation contractor;
9	Finalization of any industrial control philosophy with Engineers;
10	Provision of final control, I/O and PLC design documentation.;
11	Submission of Electrical Distribution & Control Board Equipment Detail Design for Approval by the Engineer;
12	Proceed with the manufacturing of Electrical Distribution & Control Board Equipment after Review & Approvals;
13	Factory Acceptance Test Certificate (FAT) to be done by Contractor and submitted to Engineer for Approval remotely or at factory, before equipment is released from the factory;
14	Installation of Primary LV Cables between Electrical Distribution & Control Boards;
15	Installation of Secondary LV Cables from Electrical Distribution & Control Boards to equipment assemblies;
16	Installation and wiring of small power and lighting;
17	Installation and cabling of field instrumentation;
18	Installation of Earthing and Lightning Protection system;
19	Installation, testing and commissioning of PLC and SCADA integration;
20	Configuration and testing of switchgear protection settings;
21	Configuration and testing of industrial control drive settings;

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.6	CONSTRUCTION MANAGEMENT REQUIREMENTS	

22	Site Acceptance Test Certificate (SAT) to be done by Contractor and submitted to Engineer for approval remotely or on site, before final testing & commissioning;
23	Complete testing and commissioning of complete installation;
24	Final Site Inspection and Completion Certificate & Snags;
25	Issuing of certificate of compliance (COC) for complete electrical installation;
26	Handing-Over of sites & As-Build;

E	PROGRAM	
#	Subject	Description
1	Commence :	The Contractor shall commence with the Project within a stated period of 14 days from site handover;
2	Submission :	Project programme, detailing the primary, secondary and critical path construction items with corresponding duration, start and completion dates shall be submitted for review and approval by the Contractor within 14 days from the date of Appointment;
3	Update :	Updated Project programme detailing the progress made and any deviation in dates shall submitted for review and approval by the Contractor on a weekly bases;
4	Notification :	The Contractor will notify the Client in writing, 4 Weeks in advanced if any defined completion date will be affected and 8 Weeks in advance if the Project completion date will be affected, proposing new completion dates and corresponding reasons for review and approval by the Client;
5	Start & Completion Date :	The Client will determine the start, duration and completion date for the Project;

F	FINANCIAL	
#	Subject	Description
1	Registration :	The <u>Contractor</u> must be registered on the Clients' database with the submission of certified company documentation and information and the completion of a registration form;
2	BOQ Control :	Project is financially controlled with the use of the Bill of Quantities (BOQ);
3	Claims :	Claim can only be approved if the project and/or progress of the project has been completed to the satisfaction of the Client and/or duly authorised representative;

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.6	CONSTRUCTION MANAGEMENT REQUIREMENTS	

4	Notification of Claim :	When main work deliverable stages are met, and the contractor would like to submit a claim, this can be processed in two ways: (1) Client representative arranges for a site inspection and completes an Inspection Certificate; (2) Contractor completes and submits a Works Report with a photo library for proof; Contractor to submit a Notice of Claim, 2 weeks before planned invoice date to the Engineer / Project Manager to make the necessary inspection arrangements;
5	Deposits :	Applicable for third party factory build and material lead time items, deposits up to a maximum of 30% can be approved by the <u>Engineer / Project Manager</u> with a <u>Cession of Rights</u> being signed by the <u>Contractor</u> ;
6	Payment Certificate :	After pre-arranged inspections has been completed and signed off by the <u>Contractor</u> , shall the <u>Engineer / Project Manager</u> issue a Payment Certificate;
7	Invoicing :	Invoice can be issued with the acceptance of the payment certificate by the Contractor and submission of an original tax invoice containing the clients' company description, VAT number, project description, claim amount and retention amount; No payment can be made if the information contained on an invoice is incorrect or incomplete. Take note of the following important issues in this regard: (1) Invoices submitted by electronic mail will be accepted (no faxed or photocopied invoices accepted); (2) The name of the contractor, the company's address as well as the VAT registration number must clearly be indicated on an invoice; (3) The Client's address and VAT number must be indicated on all invoices; (4) Invoice numbers must be displayed on invoices; (5) Please indicate the project number and/or purchase order;
8	Payment :	Payment will be made within 21 working days after the date on which an invoice is received or as per special terms accepted upon vendor registration; No payments will be made before the contract has been signed;
9	Omissions :	The Client and/or Engineer / Project Manager reserves the right to omit any portion of the work from the <u>Bills of Quantities</u> to ensure that the project is executed within budget;
10	Variations :	Any variations only forms part of the Bill of Quantities and can be claimed if approved by the <u>Engineer / Project Manager</u> ;
11	Retention :	Retention of 10% will be deducted from each payment of which 50% will be paid out on completion of works and the remaining 50% will be paid out after defects period as per the <u>Contract</u> ;

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.6	CONSTRUCTION MANAGEMENT REQUIREMENTS	

12	Provisional Amounts :	Shall only be used with the finalization and verification of specific scope of works items and corresponding quotation submission by the <u>Contractor</u> and approval from the <u>Engineer / Project Manager</u> ;
13	Contingencies :	Shall only be used with the submission of a variation order by the <u>Contractor</u> approval by the <u>Engineer / Project Manager</u> ;

G	INSURANCE	
#	Subject	Description
1	Public / Common Law Liability :	Contractor shall provide proof of having taken out common law liability insurance and general SASRIA Insurance with an insurer approved by the Client for an amount not less than defined in the Contract;
2	Contractor All Risk Insurance (Contract Works & Surrounding) :	Contractor shall provide proof of having taken out contract works insurance for an amount not less than material based % for Contract Works;

H	GUARANTEE	
#	Subject	Description
1	Warranty :	A minimum of twelve (12) months warranty on workmanship and applicable manufacturer warranty on equipment will apply, the exact warranty period will be defined within the contract;
2	Retention :	Retention of 10% will be deducted from each payment of which half will be paid out on completion of works and the remaining half will be paid out after defects period as per the <u>Contract</u> ;
3	Surety :	If retention is not deducted a surety guarantee for the contract period in the form of a bank guarantee from an approved insurance company for an amount of 10% of the contract amount will be required from the <u>Contractor</u> as per Contract;
4	Defects Period :	A minimum period for notifying defects of three (3) months will apply, the exact defects period will be defined within the contract and will start after the project has been completed and signed off;
5	Project Penalties :	Project penalties to be levied on work not completed timeously, at 1% per week of the contract price, to a maximum of 25% of that price;
6	Operational Penalties :	Operational penalties to be levied on operational damages due to work not completed timeously and/or up to standard, this amount will be determined and calculated based on operational specific requirements during the period under consideration;

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.7	HEALTH & SAFETY REQUIREMENTS	

A	MANAGEMENT SCHEDULE (to be completed by project manager during project)		
#	Subject	Detail	Status
1	-	-	-
2	-	-	-

B	HEALTH & SAFETY	
#	Subject	Description
1	Compliance :	The <u>Contractor</u> are required to ensure that all requirements of the Occupational Health and Safety and all regulations incorporated therein and the standards and guidelines as set out by Department of Labour (DoL); are complied with;
2	OHS Act :	The Contractor confirms that it is fully conversant with and will abide and implement the provisions of the Occupational Health and Safety Act, No 85 of 1993;
3	Compensation :	The Contractor will provide full details relating to its registration with the Compensation Commissioner, as well as proof that fees in terms of the Compensation Injuries and Disease Act, No. 130/1993 are fully paid up;
4	Specification :	The Health & Safety Policy, Specification and Agreement on Occupational Health & Safety shall be signed by the <u>Contractor</u> ;
5	H&S File :	Health & Safety File with a complete Risk Assessment shall be prepared and submitted for approval by the Principal Agent or his representative and no work shall commence prior to approval of this Plan;
6	H&S Representative :	A responsible health & safety representative shall be appointed by the Contractor;
7	Risk Assessment :	No anticipated dangers, hazards or risks were identified or taken into consideration during the design stage of this project. It is the responsibility of the <u>Contractor</u> to analyse & identify any potential dangers, hazards or risks and bringing it to the attention of the <u>Engineer</u> before commencing construction on site;
8	Construction Risks :	The Contractor will report to the Principal Agent in writing any hazard to health and / or safety which arise(s) during the execution of the project in the area concerned, and over which the Contractor has no control;
9	Permit :	A "Permit" shall be issued to the Contractor upon the completion and approval by the Client of all Health & Safety documentation. No work will commence on site without a valid "Permit" presented and signed-off by the "Appointed 16.2 Site Representative" and a valid "Induction" is performed;
10	Induction :	The <u>Contractor</u> will provide Health and Safety induction training to all employees entering the construction area;
11	Costs :	All costs pertaining to the implementation and maintaining of Health and Safety measures are included in the price quoted by the <u>Contractor</u> ;
12	Notice of Construction :	The <u>Contractor</u> shall issue a "Notice of Construction" to the Department of Labour (DoL);

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.7	HEALTH & SAFETY REQUIREMENTS	

C	OCCUPATIONAL HEALTH & SAFETY CONDITIONS
#	Description
1	The Chief Executive Officer of the Contractor shall assume the responsibility in terms of Section 16(1) of the Occupational Health and Safety Act (as amended). Should the Contractor assign any duty in terms of Section 16(2), a copy of such assignment shall immediately be provided to the representative of the Employer as defined in the Contract.
2	All work performed on the Employer's premises shall be performed under the supervision of the construction supervisor who understand the hazards associated with any work that the Contractor performs on the site in terms of Construction Regulations 2003.
3	The Contractor shall appoint a Competent Person who shall be trained on any occupational health and safety aspect pertaining to them or to the work that is to be performed.
4	The Contractor shall ensure that he familiarises himself with the requirements of the Occupational Health and Safety Act and that he/she, his/her employees, and any sub-contractors, comply with them.
5	Discipline in the interests of occupational health and safety shall be strictly enforced.
6	Personal protective equipment shall be issued by the Contractor as required and shall be worn at all times where necessary.
7	Written safe work procedures and appropriate precautionary measures shall be available and enforced, and all employees shall be made conversant with the contents of these practices.
8	No substandard equipment/machinery/articles or substances shall be used on the site.
9	All incidents referred to in terms of Section 24 of the Occupational Health and Safety Act shall be reported by the Contractor to the Department of Labour and the Employer.
10	The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of Section 32 of the Occupational Health and Safety Act and into any incident involving a Contractor and/or his/her employees and/or his/her sub-contractor/s.
11	No use shall be made of any of the Employer's machinery/plant/equipment/substance/personal protective equipment or any other article without prior arrangement and written approval.
12	No alcohol or any other intoxicating substance shall be allowed on the site. Any person suspected of being under the influence of alcohol or any other intoxicating substance shall not be permitted access to, or allowed to remain on the site.
13	Prior to commencement of any work, verified copies of all documents mentioned in the agreement, must be presented to the Employer.

JAN KEMPDORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.7	HEALTH & SAFETY REQUIREMENTS	

D	OCCUPATIONAL HEALTH & SAFETY AGREEMENT:	
#	Description	To be Completed
1	IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, ACT No. 85 OF 1993 AS AMENDED.	
1	Name:	
2	Capacity:	
3	Authorized to sign on behalf of:	
3	as an employer in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work will be performed, and all equipment, machinery or plant used in such a manner as to comply with the provisions of the Occupational Health and Safety Act (OHSA) and the Regulations promulgated thereunder.	
4	I furthermore confirm that I am/we are registered with the Compensation Commissioner and that all registration and assessment monies due to the Compensation Commissioner have been fully paid or that I/We are insured with an approved licensed compensation insurer.	
5	COID ACT Registration Number:	
6	OR Compensation Insurer:	
7	Policy No.:	
8	I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements of OHSA and the Regulations and to charge him/them with the duty of ensuring that the provisions of OHSA and Regulations as well as the Council's Special Conditions of Contract, Way Leave, Lock-Out and Work Permit Procedures are adhered to as far as reasonably practicable.	
9	I further undertake to ensure that any subcontractors employed by me will enter into an Occupational Health and Safety Agreement separately, and that such subcontractors comply with the conditions set.	
15	I hereby declare that I have read and understand the appended Occupational Health and Safety Conditions and undertake to comply therewith at all times.	

JAN KEMP DORP WWTW REFURBISHMENT PROJECT		
C3	CONTRACT SECTION - SCOPE OF WORKS	
C3.7	HEALTH & SAFETY REQUIREMENTS	

N	DEVIATION DESCRIPTION		
#	Description	Ref.	Description / Deviation

O	APPROVAL OF SPECIFICATION & DEVIATIONS			
#	Designation	Description	Date	Signature
1	Contractor			
2	Client Representative			
3	Client			
4	Other			

PHOKWANE LOCAL MUNICIPALITY

**UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS**

CONTRACT : PLM/TREF/1409 - 2025

Section C3.3
Procurement

C3.3 PROCUREMENT

C3.3.1 Procurement Principles

The Employer decided to adopt the Standard of Uniformity in Construction Procurement published by the Construction Industry Development Board (CIDB) for his procurement process.

The Standard for Uniformity in Construction Procurement establishes minimum requirements that:

- promote cost efficiencies through the adoption of a uniform structure for procurement documents, standard component documents and generic solicitation procedures;
- provide transparent, fair and equitable procurement methods and procedures in critical areas in the solicitation process;
- ensure that the forms of contract that are used are fair and equitable for all the parties to a contract; and
- enable risk, responsibilities and obligations to be clearly identified.

C3.3.2 Preference Point Scoring System

The Preference Points Scoring system will be applied as indicated in Part T1.2, 3.11.3 Method 4.

C3.3.3 Sub-contractors

The Contractor shall sub-contract targeted enterprises directly in the performance of the contract to the extent that the total financial value of such sub-contracts, in accordance with all the requirements of this document, is sufficient to achieve the contract participation goal provided for in the contract.

The Contractor will be required to sub-contract the any specialised works to a specialist Sub-contractor, familiar with the type of work.

C3.3.4 Participation of Targeted Enterprises

3.3.4.1 Introduction

This document provides for the setting of participation targets (contract participation goal) for a contract and the measurement of key participation indicators to be used in the audit of compliance with set contract participation goals during the execution of the contract. The Phokwane Local Municipality has determined the minimum Contract Participation Goal (CPG) for this contract to be **30%**.

3.3.4.2 Requirements

- a) The Contractor shall subcontract targeted enterprises directly in the performance of the contract to the extent that the total financial value of such sub-contracts, in accordance with all the requirements of this document, is sufficient to achieve the contract participation goal provided for in the contract.
- b) The Contractor must submit to the principal Agent / Engineer details of his plan to achieve the minimum contract participation goal in the Contract Participation Goal

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- c) The Contractor must enter into written contractual agreements with all the targeted enterprises cited in the Contract Participation Goal Implementation Plan and shall, as soon as is practicable, but not later than the commencement of such subcontracted works and / or services, furnish the principal Agent / Engineer with copies of such agreements and the written acceptances thereof.
- d) Such written contractual agreements **must not contain** any of the following:
 - i) a right to set off in favour of the employing Contractor not provided for by law;
 - ii) arbitrary decision-making powers in favour of the employing Contractor or his agent, with no recourse to independent adjudication in the event of a dispute arising;
 - iii) payment procedures based on a pay-when-paid system;
 - iv) retention percentages and periods of retention after completion, which are greater than percentages and periods provided for in the contract; or
 - v) conditions which are more onerous than those which exist in the contract.
- e) The sub-contracts to be performed by the targeted enterprises shall thereafter neither be reduced in scope, nor terminated without prior written notification to the employer.
- f) **Verification of the status of targeted enterprises:** The Contractor must submit to the Principal Agent / Engineer completed Targeted Enterprise Declaration Affidavits (see **Annexure B**), together, where required, with Letters of Undertaking to act as Sub-contractors (see **Annexure C**), in respect of each and every targeted enterprise whose contribution shall be counted towards the offered contract participation goal. These documents must be submitted before or with the submission of the first claim for payment, or as otherwise agreed in writing with the Employer.

3.3.4.3

Substitutions

- a) In the event that a contracted targeted enterprise is found:
 - i) to be unable to perform, or to perform on time;
 - ii) to be unable to produce acceptable work;
 - iii) to be unwilling to perform work required;
 - iv) not to be fit to perform the services; or
 - v) not to be creditable towards contract participation goals;

the Contractor shall notify the Employer in writing of the apparent necessity to reduce or terminate such a targeted enterprise's sub-contract, citing the reasons therefore, as well as new measures to be implemented by the contractor to achieve the offered contract participation goal.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- #### 3.3.4.4 *Bona fides* of targeted enterprises

3.3.4.5 Records

- a) The Contractor shall submit all the documentation required in terms of 4.3.4.2(b), 4.3.4.2(c) 4.3.4.2(f) and 4.3.4.3(b) timeously as well as a schedule clearly indicating the commencement and completion dates of works and / or services to be performed by all the contracted targeted enterprises, for the purpose of securing credits towards the offered contract participation goal. This schedule shall be submitted together with his programme which is required in terms of the relevant conditions of contract and shall be updated by the Contractor whenever a change in date occurs.
- b) The Contractor shall prepare and attach to his claim for payment, in a form approved by the Employer, the following:
 - i) a brief report which describes the commercially useful functions performed by the targeted enterprises in the performance of the contract, both over the interim period and on a cumulative basis; and
 - ii) a schedule reflecting the total value of the sub-contracts, the cumulative value of the sub-contracts and the value of works and / or services performed over the period for which payment is claimed in respect of each and every targeted enterprise.
- c) Should random inspections conducted by the Principal Agent / Engineer on targeted enterprise activities indicate that such enterprises are not performing in accordance with the requirements of this document, the Contractor shall provide, in addition to the requirements of 4.3.4.5(b), separate weekly resource returns and

Witness 2

- d) The Principal Agent / Engineer shall certify the value of work completed towards the offered contract participation goal whenever a claim for payment is issued and shall notify the contractor of this amount.
- e) The Contractor shall, upon completion of each individual targeted enterprise's sub-contract, issue a completion certificate and certify the amount paid to such targeted enterprises. The Contractor shall submit the certificates, counter-certified by the relevant targeted enterprises, to the Principal Agent / Engineer for record-keeping purposes and for purposes of verifying compliance with the offered contract participation goal.
- f) The Contractor's claims for payment may be rejected as being incomplete should all appropriate supporting documentation described in 4.3.4.5(b), 4.3.4.5(c), and 4.3.4.5(e) not be provided.
- g) The Contractor's final claim for payment may be considered only after the certificates described in 4.3.4.5(e) are received.

a) In the event that the contractor fails to substantiate that any failure to achieve the offered contract participation goal was due to quantitative underruns, the elimination of items contracted to targeted enterprises, or any other reason beyond the contractor's control which may be acceptable to the Employer, the penalties provided for in 3.3.4.6(a) (i) below shall apply:

i) The Contractor shall be liable to the Employer for the payment of a penalty amount equal to 0.05% of the financial value of contracts not awarded to targeted enterprises required to have achieved the minimum contract participation goal.

Witness 2

Contract Participation Goal Implementation Plan

Employer:	
Project Description:	
Bid Number:	
Project Reference Number:	

Contract Participation Goal applicable to the contract:	%
Contract sum at the time of award (Exclusive of value added tax)	R
Less: Preliminaries	R
Less: Contingencies & Escalation	R
Net Amount	R (1)

I / We commit to achieve the contract participation goal (CPG) by subcontracting to targeted enterprises.

In support of my / our contract participation goal requirements, I / we submit the following documents:

(List all documents accompanying this form viz: Targeted Enterprise Declaration Affidavits; Letters of Undertaking to perform as Subcontractors) *

* Contractors are responsible for the reproduction of sufficient number of copies of these forms for the purpose of this contract.

A.3.1.

A.3.2.

A.3.3.

A.3.4.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

A.4. Contracting of targeted enterprises as subcontractors

Note: The financial value of the participation aimed towards the contract participation goal shall exclude preliminaries, contingencies, escalation and value added tax.

I / we certify that I / we will be contracting the following targeted enterprises as sub-contractors:

A.4.1

Name of targeted enterprise	
Address	
Contact Person	
Telephone	
Fax	
Service / work to be performed	
Company / enterprise income tax reference number	
CIDB Registration Number	
CIDB Contractor Grading Designation	
Financial value of participation claimed towards contract participation goal	R
Percentage participation claimed towards contract participation goal	%

A.4.2

Name of targeted enterprise	
Address	
Contact Person	
Telephone	
Fax	
Service / work to be performed	
Company / enterprise income tax reference number	
CIDB Registration Number	
CIDB Contractor Grading Designation	
Financial value of participation claimed towards contract participation goal	R
Percentage participation claimed towards contract participation goal	%

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

A.4.3

Name of targeted enterprise	
Address	
Contact Person	
Telephone	
Fax	
Service / work to be performed	
Company / enterprise income tax reference number	
CIDB Registration Number	
CIDB Contractor Grading Designation	
Financial value of participation claimed towards contract participation goal	R
Percentage participation claimed towards contract participation goal	%

A.4.4

Name of targeted enterprise	
Address	
Contact Person	
Telephone	
Fax	
Service / work to be performed	
Company / enterprise income tax reference number	
CIDB Registration Number	
CIDB Contractor Grading Designation	
Financial value of participation claimed towards contract participation goal	R
Percentage participation claimed towards contract participation goal	%

(Continue as required for other targeted enterprises)

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

A.5. Summary of targeted enterprise participation

Name of contracted targeted enterprise	Financial value of subcontracts	Percentage participation claimed towards contract participation goal
	R	%
	R	%
	R	%
	R	%
	R	%
	R	%
	R	%
	R	%
	R	%
Total contribution towards CPG	R	% (2)

Targeted Contract Participation Goal:

Ng = (2) / (1) x 100 = R..... / R..... x 100 =.....%

A.6. Undertaking

I / We hereby certify to the best of my / our knowledge that the above information, facts and representations are correct and that the proposed targeted enterprises named are able to perform commercially useful functions in the performance of the contract and are *bona fide* targeted enterprises.

SIGNED FOR THE CONTRACTOR:

Name of Contractor	Signature	Date

WITNESSED BY:

Name of Witness	Signature	Date

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Annexure B

Targeted Enterprise Declaration Affidavit

Employer:	
Project Description:	
Bid Number:	
Project Reference Number:	

B.1. Name of targeted enterprise

B.2. Legal Entity

Company or Close Corporation:	OR	Natural Person or Partnership:
Registration number:		Identity Number(s) is / are:
Income Tax Reference Number:		Income Tax Reference Number(s) is / are:

B.3. And who is:

Represented herein, and who is duly authorized to do so, by: Mr / Mrs / Ms:	Note: A Resolution / Power of Attorney, signed by all the Directors / Members / Partners of the Legal Entity <u>must</u> accompany this Affidavit, authorizing the representative to make this affidavit.
In his / her capacity as:	

B.4. Principle business activities

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

B.5. *Domicilium citandi et executandi*

The targeted enterprise elects as its <i>domicilium citandi et executandi</i> in the Republic of South Africa, where any and all legal notices may be served, as (physical address):

B.6. Other contact details of the targeted enterprise are:

Telephone No:	
Cellular Phone No:	
Fax No:	
Postal address:	
Bank:	
Branch:	
Account number:	
CIDB Registration Number:	
CIDB Contractor Grading Designation:	

B.7. List a minimum of three (03) contracts which you are presently engaged in and have not yet completed:

Contract description	Location	Employer	Contract amount	Expected completion date (month and year)

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Work performed	Employer	Contact person & telephone number	Contract amount

.....; and

(b) confirm that the contents of this Affidavit are within my personal knowledge, and are, save where stated otherwise, to the best of my knowledge and belief both true and correct.

Date

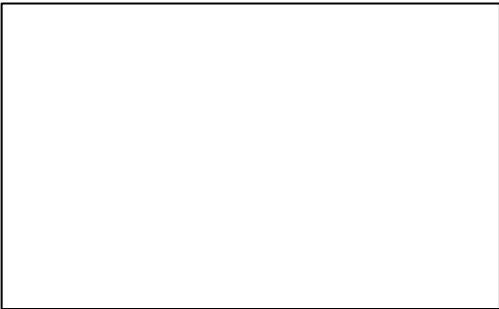
Telephone:

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

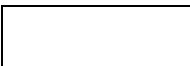
Signed and sworn to before me at on this
..... day of 20..... by the Deponent, who has acknowledged that
he/she knows and understands the contents of this Affidavit, that it is true and correct to the best of
his/her knowledge and that he/she has no objection to taking the prescribed oath, and that the
prescribed oath will be binding on his/her conscience.

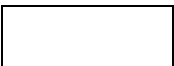
Signed:
Commissioner of Oaths

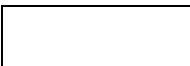
Official Stamp:

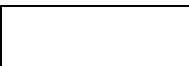


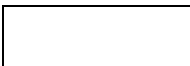
**NOTE: All pages of this Affidavit must be initialed by both the Deponent and the
Commissioner of Oaths**

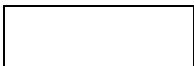

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

Letter of Undertaking from a Targeted Enterprise to act as a Subcontractor

Employer:	
Project Description:	
Bid Number:	
Project Reference Number:	

Name:	
Address:	

Name:	
Address:	

The undersigned undertakes to perform the following works and/or provide the following services in connection with the above-mentioned contract:

.....

.....

.....

for an estimated amount of R excluding preliminaries, contingencies, escalation and value added tax subject to the terms of any agreement made between us for the purposes of the contract.

The status of the undersigned as a targeted enterprise is confirmed in the attached targeted enterprise declaration affidavit who duly warrants that he/she is authorized to sign this letter.

Name	Signature	Designation	Date

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

**UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS**

CONTRACT : PLM/TREF/1409 - 2025

Section C3.4
Construction

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C3.4 CONSTRUCTION

C3.4.1 STANDARD SPECIFICATIONS

The standard specifications on which the civil works in this contract is based are **Standards South Africa's Standardized Specifications for Civil Engineering Construction SANS 1200**.

Although not bound in nor issued with this Document, the following Sections of the Standardized Specifications of SANS 1200 shall form part of this Contract:

SANS 1200 A	:	General
SANS 1200 AB	:	Engineer's office
SANS 1200 AH	:	General (structural)
SANS 1200 C	:	Site clearance
SANS 1200 D:		Earthworks
SANS 1200 DB	:	Earthworks (pipe trenches)
SANS 1200 DM	:	Earthworks (roads, subgrade)
SANS 1200 G	:	Concrete (structural)
SANS 1200 GA	:	Concrete (small works)
SANS 1200 GB	:	Concrete (ordinary buildings)
SANS 1200 H	:	Structural steelwork
SANS 1200 HB	:	Cladding and sheeting
SANS 1200 L	:	Medium-pressure pipe lines
SANS 1200 LB	:	Bedding (pipes)
SANS 1200 LC	:	Cable ducts
SANS 1200 LD	:	Sewers
SANS 1200 LE	:	Storm water drainage
SANS 1200 M	:	Roads (general)
SANS 1200 ME	:	Subbase
SANS 1200 MF	:	Base
SANS 1200 MFL	:	Base (light pavement structures)
SANS 1200 MJ	:	Segmented paving
SANS 1200 MK	:	Kerbing and channelling
SANS 1200 MM	:	Ancillary roadworks
SANS 10142	:	Electrical Standard Specification

The following SANS specifications are also referred to in this document and the Contractor is advised to obtain them from Standards South Africa (a division of SABS) in Pretoria.

SANS 1921 (2004) : Construction and Management Requirements for Works Contracts

Part 1 : General Engineering and Construction Works;
 Part 2 : Accommodation of Traffic on Public Roads Occupied by the Contractor; and,
 Part 5 : Earthworks activities which are to be performed by hand

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C3.4.2 PROJECT SPECIFICATIONS

STATUS

The Project Specification, consisting of two parts, forms an integral part of the contract and supplements the Standard Specifications.

Part A contains a general description of the works, the site and the requirements to be met.

Part B contains variations, amendments and additions to the Standardized Specifications and, if applicable, the Particular Specifications.

In the event of any discrepancy between a part or parts of the Standardized or Particular Specifications and the Project Specification, the Project Specification shall take precedence. In the event of a discrepancy between the Specifications, (including the Project Specifications) and the drawings and/or the Bill of Quantities, the discrepancy shall be resolved by the Engineer before the execution of the work under the relevant item.

A. GENERAL

PS1 PROJECT DESCRIPTION

The project scope entails the full refurbishment and upgrading of the existing Jan Kempdorp WWTW to 100% operating capacity and condition. The works mostly involves the refurbishment/ replacement of mechanical and electrical components with minor additional civil works and refurbishments to existing buildings.

The extend of the works and specific parameters are defined in the Bid Bills of Quantities in Section C2.2 of this document.

PS2 OVERVIEW AND DETAILS OF CONTRACT

Refer Paragraph PS1 above as well as Bid Drawings and Bid Bills of Quantities contained in this document.

PS3 DESCRIPTION OF SITE AND ACCESS

The site is located within the existing Jan Kempdorp Township and access is readily available.

PS4 NATURE OF GROUND AND SUBSOIL CONDITIONS

The Bidder must acquaint himself with all the conditions on site as stated in the “General Conditions of Contract,” Clause 3(2). The site inspection is therefore compulsory and the Bid may not be accepted without the site inspection certificate.

Since the works involve the upgrading of existing infrastructure, no geotechnical investigation is conducted. Allowance is made for excavations in all conditions where required.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PS5 CONSTRUCTION AND MANAGEMENT REQUIREMENTS

PS5.1 General

The Contractor is referred to SANS 1921: 2004 – Construction and Management Requirements for Works Contracts, Part 1: General Engineering and Construction Works and Part 2: Accommodation of Traffic on Public Roads. These specifications shall be applicable to the contract under consideration and the Contractor shall comply with all requirements relevant to the project.

Certain aspects however require further attention as described hereafter.

PS5.2 Quality Assurance (QA) *(Read with SANS 1921 – 1: 2004 Clause 4.4)*

The Contractor will be solely responsible for the production of work that complies with the Specifications to the satisfaction of the Engineer. To this end it will be the full responsibility of the Contractor to institute an appropriate Quality Assurance (AQ) system on site. The Engineer will audit the Contractor’s quality assurance (QA) system on a regular basis to verify that adequate independent checks and tests are being carried out and to ensure that the Contractor’s own control is sufficient to identify any possible quality problems which could cause a delay or failure.

The Contractor shall ensure that efficient supervisory staff, the required transport, instruments, equipment and tools are available to control the quality of his own workmanship in accordance with his QA-system. His attention is drawn to the fact that it is not the duty of the Engineer or the Engineer’s representative to act as foreman or surveyor.

PS5.3 Management and disposal of water *(Read with SANS 1921 – 1: 2004 Clause 4.6)*

The Contractor shall pay special attention to the management and disposal of water and storm water on the site. It is essential that all completed works or parts thereof are kept dry and properly drained. Claims for delay and for repair of damage caused to the works as a result of the Contractor’s failure to properly manage rain and surface water, will not be considered.

PS5.4 Disposal of spoil or surplus material *(Read with SANS 1921 – 1: 2004 Clause 4.10)*

The Contractor shall dispose all surplus and unsuitable material in legal spoil areas of his own choice, or as directed by the Engineer. He shall be responsible for all arrangements necessary to obtain such spoil sites.

PS5.5 Testing *(Read with SANS 1921 – 1: 2004 Clause 4.11)*

PS5.5.1 Process Control

The Contractor shall arrange for all tests required for process control to be done by a laboratory acceptable to and approved by the Engineer.

The Contractor may establish his own laboratory on site or he may employ the services of an independent commercial laboratory. Whatever method is used,

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

the Contractor must submit the results of tests carried out on materials and workmanship when submitting work for acceptance by the Engineer. The costs for these tests shall be deemed to be included in the relevant rates, and no additional payment will be made for testing as required.

The Contractor shall make suitable arrangements for process control prior to commencement with the Works. Should he intend using site personnel for this purpose he shall ensure that suitably trained and competent personnel take charge of the necessary test work, and that the necessary equipment is at their disposal prior to commencement of the Works. Failure to comply with these requirements shall be just cause for the Engineer to order suspension of the Works without additional remuneration in terms of Clause 9.2.1.3.5 of the Conditions of Contract, or for him to recommend determination to the Employer in terms of Clause 10.3 thereof.

PS5.5.2 Acceptance Control

The process control test results submitted by the Contractor for approval of materials and workmanship may be used by the Engineer for acceptance control. However, before accepting any work, the Engineer may have further control tests carried out by a laboratory of his choice. The cost of such additional tests will be covered by a provisional sum provided in the schedule of quantities, but tests that failed to confirm compliance with the specifications, will be for the account of the Contractor.

PS5.6 Survey Beacons *(Read with SANS 1921 – 1: 2004 Clause 4.15)*

The Contractor shall take special precautions to protect all permanent survey beacons or pegs such as bench-marks, stand boundary pegs and trigonometrically beacons, regardless of whether such beacons or pegs were place before or during the execution of the Contract. If any such beacons or pegs have been disturbed by the Contractor or his employees, the Contractor shall have them replaced by a registered land surveyor at his own cost.

PS5.7 Existing Services *(Read with SANS 1921 – 1: 2004 clause 4.17)*

The Contractor shall make himself acquainted with the position of all existing services before any excavation or other work likely to affect the existing services is commenced.

The Contractor will be held responsible for any damage to known existing services caused by or arising out of his operations and any damage shall be made good at his own expense. Damage to unknown services shall be repaired as soon as possible and liability shall be determined on site when such damage should occur.

PS5.8 Management of the environment *(Read with SANS 1921 – 1: 2004 clause 4.19)*

The Contractor shall pay special attention to the following:

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

(a) Natural Vegetation

The Contractor shall confine his operation to as small an area of the site as may be practical for the purpose of constructing the works.

Only those trees and shrubs directly affected by the works and such others as the Engineer may direct in writing shall be cut down and stumped. The natural vegetation, grassing and other plants shall not be disturbed other than in areas where it is essential for the execution of the work or where directed by the Engineer.

(b) Fires

The Contractor shall comply with the statutory and local fire regulations. He shall also take all necessary precautions to prevent any fires. In the event of fire, the Contractor shall take active steps to limit and extinguish the fire and shall accept full responsibility for damages and claims resulting from such fires which may have been caused by him or his employees.

PS5.9 Overhaul

No payment will be made for overhaul on this contract unless provision is made therefore in specific items.

PS5.10 Security

The Contractor shall provide security watchmen for the contract as he deems fit at no extra cost for the Employer. The Contractor must ensure that all his employees as well as the employees of his sub-contractors are able to identify themselves as members of the construction team.

PS6 CONSTRUCTION PROGRAMME

PS6.1 Preliminary Programme

The Contractor shall include with his Bid a preliminary programme on the prescribed form to be completed by all Bidders. The programme shall be in the form of a simplified bar chart with sufficient details to show clearly how the works will be performed within the time for completion as stated in the Contract Data.

Bidders may submit Bids for an alternative Time for completion in addition to a Bid based on the specified Time for completion. Each such alternative Bid shall include a preliminary programme similar to the programme above for the execution of the works and shall motive his proposal clearly by stating all the financial implications of the alternative completion time.

The Contractor shall be deemed to have allowed fully in his Offered rates and price as well as in his programme for all possible delays due to normal adverse weather conditions and special non-working days as specified in the Special Conditions of Contract, in the Project Specifications and in the Contract Data.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PS6.2 Programme in terms of Clause 5.6.2 of the General Conditions of Contract (GCC 2015)

It is essential that the construction programme, which shall conform in all respects to Clause 5.6.2 of the General Conditions of Contract (GCC 2015), be furnished within the time stated in the Contract Data. The preliminary programme to be submitted with the Bid shall be used as basis for this programme.

PS7 SITE FACILITIES REQUIRED

PS7.1 Contractor's camp site and depot *(Read with SANS 1921 – 1: 2004 Clause 4.14)*

The Contractor is responsible to provide a suitable site for his camp and to provide accommodation for his personnel and labourers. If the Employer can make any specific site available to the Contractor, such sit will be pointed out to the Contractor.

PS7.2 Accommodation of Employees

No employees except for security guards will be allowed to sleep or be accommodated on the site in urban areas.

No housing is available for the Contractor's employees, and the Contractor shall make his own arrangements to house his employees and to transport them to site.

No informal housing or squatting will be allowed.

The Contractor shall provide the necessary ablution facilities at his camp site and the site of the works for the use of his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

PS7.3 Power supply, water and other services

The Contractor shall make his own arrangements concerning the supply of electrical power, water and all other services. No direct payment will be made for the provision of electricity, water and other services. The cost thereof shall be deemed to be included in the rates and amounts Offered for the various items of work for which these services are required, or in the Contractor's preliminary and general items as the case may be.

PS8 SITE FACILITIES REQUIRED

PS8.1 Temporary offices

The Contractor shall supply his own facilities as will be required.

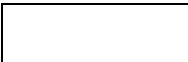
PS8.2 Laboratory facilities will not be required.

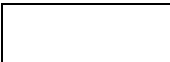
PS8.3 Sanitary facilities as required by Contractor.

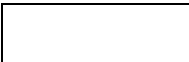
PS8.4 Telephone facilities as required by Contractor.

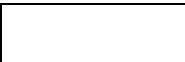
PS8.5 Housing for the Engineer and his staff – Not required.

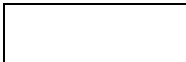
PS8.6 Parking facilities – Not required.

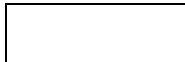

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

PS10 OCCUPATIONAL HEALTH AND SAFETY (Read with SANS 1921-1: 2004 Clause 4.14)

PS10.1 General Statement

It is a requirement of this contract that the Contractor shall provide a safe and healthy working environment and to direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. To this end the Contractor shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act No. 85 and Amendment Act No.181 of 1993 and the OHSA 1993 Construction Regulations 2003 issued on 18 July 2001 by the Department of Labour.

For the purpose of this contract the Contractor is required to confirm his status as mandatory and employer in his own right for the execution of the contract by entering into an agreement with the Employer in terms of the Occupational Health and Safety Act by executing the Agreement form appended under the POHS Specifications in Section C3.3.

PS10.2 Health and Safety Specifications and Plans to be submitted at BID stage

(a) Employer's Health and Safety Specification

The Employer's Health and Safety Specification will be included in the Bid documents as part of the Project Specifications.

(b) Bidder's Health and Safety Plan

The successful Bidder shall, on receipt of notification that he has been awarded the contract, submit without delay his own documented Health and Safety Plan for the execution of the work under the contract. His Health and Safety Plan must at least cover the following:

- (i) a proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 7 to 28;
- (ii) pro-active identification of potential hazards and unsafe working conditions;
- (iii) provision of a safe working environment and equipment
- (iv) statements of methods to ensure the health and safety of sub-contractors, employees and visitors to the site, including safety training in hazards and risk areas (Regulation 5);
- (v) monitoring health and safety on the site of works on a regular basis and keeping of records and registers as provided for in the Construction Regulations;
- (vi) details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 6 and other applicable regulations; and
- (vii) details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2003.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment, if necessary, before commencement of construction work.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim for extension of time or standing time and related costs.

The rates and prices Offered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract. Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

PS11 ADVERSE WEATHER CONDITIONS

In terms of the Additional Data provided under Clause 5.12.2 of the Contract Specific Data, extension of time will be considered for abnormal climatic conditions. For the purpose of this contract "abnormal climatic conditions" is defined as conditions such as excessive rainfall that may disrupt and delay the work beyond the control of the Contractor, and which could reasonably lead to a claim for extension of time.

- if no work was possible on the relevant working day on any item which is on the critical path according to the latest approved construction programme; or
- if less than 30% of the work force and plant on site could work during that specific working day.

Delays due to abnormal climatic conditions, which the Contractor may claim as extension of time, must be determined when such conditions occur and must be recorded on a monthly basis. Adjustments to the General items in terms of Clause 5.12.3 of the General Conditions of Contract for approved extension of time will only be applied at the end of the contract when the final completion date has been established.

Witness 2

PS12 SITE CORRESPONDENCE

PS12.1 Instructions by the Engineer

Site instructions by the Engineer, addressed to the Contractor at his office on the Site, will be numbered consecutively and will be deemed to have been received by the Contractor's Representative unless a break in the sequence of numbers is brought to the notice of the Engineer in writing immediately.

PS12.2 Site Diary

A site diary, which will be supplied by the Engineer, must be filled in on a daily basis and submitted to the Engineer on a monthly basis. No claims will be considered without the site diary's schedule properly completed (on a daily basis) and submitted.

PS13 SITE MEETINGS

The Contractor and his authorised representative shall attend all meetings held on the Site with the Employer and the professional team at dates and times to be determined by the Engineer. Such meetings will be held to evaluate the progress of the Contract, and to discuss matters pertaining to the Contract which any of the parties represented may wish to rise. It is not the intention to discuss day-to-day technical matters at such meetings.

PS14 FREEHAUL AND OVERHAUL

The free haul distance for transportation of all imported and spoil material on this project shall be 10 km.

All borrow pit and spoil sites shall be approved by the Engineer before the use of such by the contractor.

All haulage related to imported commercial materials shall be regarded as free haul and haulage costs related to such shall be considered included in the pay item.

PS15 BORROW PITS AND COMMERCIAL OFF-SITE SOURCES

It is to be noted that no extra over payment will be affected for intermediate or hard rock excavations in borrow pits and commercial off-site sources. Excavation of such materials shall be avoided at all costs.

PS16 SITE SUPERVISION

Bidders should note that all Bids in excess of R1 000 000.00 in value will have the following requirements:

- (a) A full time on site, qualified Site Manager who will also be the nominated responsible person on site. This person will not be permitted to work on any other contract unless the prior written permission from the Employer is obtained.
- (b) After appointment of the successful Bidder a Curriculum Vitae of the Site Manager will be required before commencement of the works.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PS17 TRAINING OF BIDDER'S PERSONNEL AND SUB-CONTRACTORS

Work will be expected to be carried out, as far as possible, by means of local expertise and hand labour.

Bidder's must therefore make adequate provision in their Offered rates for taking special care for liaison and consulting frequently with the local community, sub-contractors, local workforce, as well as the Consulting Engineers and the Employer, in order that the required standard of work is understood and achieved and that rejection of unacceptable work is avoided.

PS18 SUB-CONTRACTORS

- a) Sub-contracting to local emerging entrepreneurs is encouraged.
- b) Sub-contracting is restricted to a maximum of 30% of the total contract value.
- c) No sub-contractors are to further sub-contract any portion of the works without disclosing details to the employer for approval prior to commencement of works.

PS19 COMMUNITY LIAISON OFFICER

A Community Liaison Officer (CLO) from the beneficiary community will be nominated before commencement of construction.

The CLO will be employed by the Contractor and remunerated **R 5 000.00 per month** for the duration of the construction period, which starts on the date of Site Handover to the Contractor and ends on the date of signing of the Completion Certificate. The payment of the CLO will be calculated pro-rata and no bonuses or overtime will be paid.

A provisional cost allowance has been made in the Schedule of Quantities for such remuneration of the CLO.

The CLO will attend all site meetings and will be closely involved in the managing and handling of the project to ensure complete co-operation from the community. All hiring, retrenching and disputing of labour is to be referred for his/her attention.

PS20 PROJECT STEERING COMMITTEE (PSC)

The Steering Committee for the project will attend all site meetings and will consist of:

- Relevant Ward Councillor(s)
- Nominated member(s) of the Ward Committees
- Officials responsible for specific service

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Steering Committee members except officials and councillors will be remunerated **R 150.00 / month** on condition that they attend the monthly Steering Committee meetings.

A provisional cost allowance has been made in the Schedules of Quantities for such remuneration of the PSC.

The functions of the PSC are to create awareness of the project at community level, report to the community about the project in respect of employment policy, labour desk effectiveness, wages, production and working hours and to assist with any task delegated to individual members.

PS21 REMUNERATION OF LABOUR

The following labour rates will be applicable to this contract:

- (a) General Worker - As per the minimum wages payable to labourers in the Civil Engineering Industry determined by the Labour Act for the PHOKWANE Municipal Area - based upon a measurable production quota.
- (b) Trainee artisan remuneration to be on a sliding scale as per CEITS recommendation. Increased remuneration will be effected within 1 (one) month after completion of modules to give the contractor opportunity to assess effectiveness of training undertaken.
- (c) Artisans as per Manpower requirements.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C3.4.3 STANDARD SPECIFICATIONS

ELECTRICAL

This Project Specification must not be read in isolation, due to the fact that cross reference is given to the General Technical Specification for the Electrical Works.

This part of the specification shall have preference to any other part of the specification.

The General Technical Specification is generally applicable, but is over ridden by any particular specification applicable on a specific piece of equipment.

MEASUREMENT OF ELECTRICAL EQUIPMENT

The unit of measurement for the individual items of electrical equipment shall be as specified in the detail specification of each item.

The different items shall generally be included in the Schedule of Quantities for different stages of the Contract, viz:

- Manufacture, Supply and Delivery on Site
- Erection, installation, site testing and Commissioning

PAYMENT FOR THE MANUFACTURE, SUPPLY AND DELIVERY ON SITE AT POINT OF INSTALLATION

This item shall be applicable to all sections.

The offered rate shall cover the cost of manufacture, procurement, supply, loading, off-loading, carnage in the place of manufacture and on site, transport storage and delivery on the site, including all costs for labour, plant, equipment, tools, consumables attendance, overheads, profit and all other costs to execute all the work as specified in the particular specifications.

In respect of all amounts offered against the relevant items of the priced Schedule of Quantities, payment will be made as follows:

- (a) 80% (eighty percent) of the amount offered against each item when the equipment and materials under each item have been delivered to the site, including copies in triplicate of Packing lists, Shipping Documents as referred to in the Special Conditions of Contract and Consignment Notes, railing or transport specifications all to the satisfaction of the Engineer;
- (b) 20% (twenty percent) of the amount offered against each item when the Certificate of Completion is issued; and
- (c) 10% (ten percent) Retention Money will be withheld on the above and will be paid out as Specified in the Conditions of Contract.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PAYMENT FOR THE ERECTION, INSTALLATION, TESTING ON SITE AND COMMISSIONING

This item shall be applicable to all sections.

The offered rate shall cover the costs of loading, offloading, storage on site, transport on site, hoisting, erection, installation, painting, grouting, liaison, testing on site, commissioning and production of both the raft and final Operation and Maintenance manuals, as well as maintenance, if no separate item is scheduled, including all cost as for labour, plant, equipment, tools, consumables, attendance, overheads, profit, additional site visits and all other costs to execute all the work as specified in Particular Specifications.

In respect of the amounts offered against the relevant items of the priced Schedule of Quantities, payment will be made as follows:

- (a) in respect of the amounts offered against each item in accordance with the progress of the work on a pro rata basis of the value of the work carried out to the total value of the work in completion of such other basis as the Engineer may determine up to a maximum of eighty (80) per cent of the amount offered against each item on completion of Site testing;
- (b) twenty (20) percent of the total amount offered against each item when the Certificate of Completion is issued; and
- (c) ten (10) percent Retention Money will be withheld on the above and will be paid out as specified in the Conditions of Contract.

MEASUREMENT AND PAYMENT

The contractor will quote on his product on a normal 12-month guarantee. As per the conditions of contract the contractor will be paid 95% of all monies due to him on the date when the installation is commissioned and the 5% retention will be released 12 months later.

Should the guaranteed plant fail and the contractor does not rectify the situation within 7 days, the client reserves the right to call upon the guarantees to pay for the repair to be done.

SCOPE

The work covered by this contract comprises the complete electrical installation in working order, as shown on the drawings and according to this specification. It includes the supply and installation of all materials and equipment according to the Schedule of Quantities.

SITE

The site is the Jan Kempdorp WWTW in the Phokwane Local Municipality area. Bidders must, before submitting their bids, acquaint themselves with the local conditions, accessibility of the sites, soil conditions, availability of labour and labour conditions, transport, off-loading store and custody conditions for materials and equipment necessary for the completion of the total contract.

INFORMATION

The bidder's attention is drawn to the fact that if the schedules of this document are not complete, his bid cannot be adjudicated and may be disqualified.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

SPECIFICATION AND DRAWINGS

General

The specification and drawings generally show the character and extent of the proposed work and shall not be held as showing every minute detail of the work to be executed.

Bidders must ensure that their copy of the specification is complete and that all drawings as listed, have been received.

Any discrepancy must immediately be brought to the attention of the Consulting Engineer.

Contract Drawings

The layout and extent of the electrical installation are shown on the drawings that form part of this document.

The positions of all street light poles that may affect other services must be reported by the Electrical Contractor to the Consulting Engineer for re-designing of routes.

As-built drawings

The Electrical Contractor shall at the completion of the contract supply a complete set of as-built drawings.

SUPERVISION

Work must under all circumstances be supervised by a qualified and experienced representative of the Electrical Contractor who must be registered as an accredited person.

The representative must be authorized by the Electrical Contractor and must be able to receive instructions on behalf of the Electrical Contractor.

MEDIUM VOLTAGE DISTRIBUTION (MVdx) WORK

Scope of Works

Design, Manufacture, Supply & Installation of Medium Voltage Equipment (1kV - 52kV) including, but not limited to Miniature Substation (SANS 1029 / NRS 004), Ring Main Unit (SANS 1874 / NRS 006), Transformer (SANS 780 / NRS 054), Switchgear (IEC 62271), Factory Build & Wired, IP Rated, Installed Outdoor on a Plinth in a Outdoor Yard Substation and/or Inside an Indoor Substation Building in accordance with SANS10142-2, c/ w, Earthing (SANS 1063 / 10199), Steelwork, Frames, Sub-frames, Chassis, Covers, Lockable Doors, Busbars, Internal Wiring, Auxiliary Equipment, Fixing Accessories, Labelling and Signage, Testing and Commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;

Contractor Responsibility & Sequence of Events

- Confirmation of Specialized Medium Voltage Assembly Unit manufacturer and / or supplier; Confirmation of material & equipment ratings, range and manufacturer;
- Submit detail designs by specialized manufacturer and / or supplier in accordance with Specifications to Engineer for review and approval;

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- Ordering of material and manufacture of Medium Voltage Assembly Unit and/or ordering and delivery of unit by specialized builder and / or supplier;
- Issue of Completed factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;
- Confirmation of equipment / unit position and cable lengths on site;
- Transport / Delivery of Medium Voltage Assembly Unit to site; Rigging of Medium Voltage Assembly Unit and placing in position on site.
- Excavation & installation of plinth, c/w trenching, bedding, etc., in accordance with soil survey, design (pre-cast or cast on site) and compaction & test certificates;
- Soil resistivity survey and confirmation of electric earth design; Earthing of Installation and issuing of Earthing Soil Resistivity Test Certificates;
- Connection of all MV & LV cables as well as making good for commissioning;
- Labelling of equipment / circuits / warning signs and installation of operational information and SLD;
- Configuration of IED's and/or Protection Functions; Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;
- Completion of test schedules & certificates for approval by the Engineer before handing-over; Preparation and submission of As-Build data pack;

Material Prerequisite

- Switchgear: Actom / Schneider / ABB;
- Protection Relays: SEL / Schneider / ABB / Siemens / Thytronic;
- Metering: Schneider / ABB;
- BTU: Static Power / Blue Ginger;
- Or Similar and Approved;

Technical Standards

- NS 780: Distribution Transformers;
- SANS 1029 / NRS 004: MSS up to 1000kVA;
- SANS 1874: Metal-Enclosure RMU 1 kV up to 24kV;
- SANS 60282-1: High-voltage fuses;
- SANS 61330: High/low-voltage prefabricated substations;
- NRS 054: Large Power Transformers;
- IEC 62271: High Voltage Switchgear & Controlgear;
- SANS 1019: Standard Voltages, Currents & Insulation Levels;

MEDIUM VOLTAGE RETCULATION (MVrt) WORK

Scope of Works

Supply Medium Voltage PILC (SANS 97) / XLPE (SANS 1339) 3/4 Core, Single Core Power Cables, Copper Earth Wire (SANS 1411-1) and Install in ground, wire channels, sleeves, racking (SANS 10142-2 & SANS 10198 & SANS 61386), c/w with joints, terminations, end capps, glands, shrouds, termination lugs and fixing accessories (NRS 028) and in combination with stringing OHL structures with Aluminium Conductor & Earth Wire; c/w OHL equipment (NRS 033), Links, Transformer (SANS 780 / NRS 054), Surge Arrestors (NRS 039), Theft Protection, Supporting Stay Assemblies & Strut Assemblies (NRS 022), Pole Structures, Earthing (SANS 1063 / 10199), Auxiliary Equipment, Fixing Accessories, Labelling and

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Signage, and all associated works, Complete to Achieve Project Objective and as per Project Specification;

Contractor Responsibility & Sequence of Events

- Confirmation of manufacturer and range of equipment and material;
- Confirmation of route, length & quantities, route survey, pegging of route and distance confirmation;
- Excavation of cross sections to determine existing services and ground type;
- Excavation of underground MV cable routes and OHL pole placement as per Design Schedule and Drawings, complete with trenching, bedding;
- Construction (horizontal drilling, pipe jacking or concrete culvert installation) of special crossing;
- Supply & installation of MV cable feeders as per Design Schedule and Drawings, complete with joints, termination, lugs, etc;
- Supply & installation of accompanying earth continuity BCEW cables complete with joints, termination, lugs, etc;
- Marking of MV cables by installing danger tape along the complete excavated routes and cable route markers at every joint position, road crossings, where the cable turns and on straight sections longer than 200m;
- Protection of MV cables by supplying and installing concrete protection slabs along the complete excavated routes where other services are crossed;
- Labelling of OHL poles and MV cables using source equipment being fed to or fed from, cable size and type;
- Complete testing and commissioning of all MV cable and OHL conductor work and issuing of test and compliance certificate; As-Built Documentation;

Material Prerequisite

- Cables: Aberdare / African Cables range;
- Cable Rack & Channel: O-Line range;
- OHL Equipment: McWade / CU Al Eng;
- Or Similar and Approved;

Technical Standards

- SANS 1019: Standard Voltages, Currents & Insulation Levels;
- SANS 10142-2: The Wiring of Premises – MV Installations
- SANS 10198 :1-13, Installation of cables not exceeding 33 kV.
- SANS 97: Electric cables, PILC for rated voltages up to 19/33 kV;
- SANS 1339: Electric cables, XLPE rated voltages up to 19/33 kV;
- SANS 1803-1: Lugs and ferrules for insulated electric cables;
- SANS 6281/4-4: Test methods PILC & XLPE;
- NRS 012: Cable terminations up to and including 36kV;
- NRS 013: Medium-voltage cables;
- NRS 028: Cable lugs and ferrules for CU and AL conductors;
- NRS053: Accessories for medium-voltage power cables;
- NRS 033: Electricity Distribution - Guidelines for MV OHL;
- NRS 022: Electricity Distribution – Stays & Equipment;

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- NRS 032: Service Distribution Boxes – Pole Mounted Type;
- NRS 035: Outdoor Distribution Cut-Outs;
- NRS 039: Surge Arrestors;
- NRS 041: OHL for Conditions Prevailing in SA;
- NRS 043: Utilization of Structures for Power & Communication;
- NRS 046: Load Break Switch Disconnectors Pole Mounted;
- SABS 753/754: Wooden Poles, Cross-Arms & Spacers for OHL;

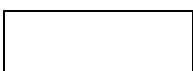
LOW VOLTAGE DISTRIBUTION (LVdx) WORK

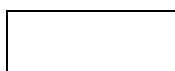
Scope of Works

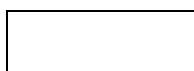
Design, Manufacture and Supply of Low Voltage (LV) Equipment (<1kV), Distribution Boards (DB), Distribution Kiosks (DK), Motor Control Centre (MCC), Indoor & Outdoor IP Rated Enclosures, Factory Build & Wired, Fully and/or Partially Type Tested (IEC 60439) by Specialised Panel Builder, c/w Steel Works, Frames, Sub-Frames, Chassis, Covers, Lockable Doors, Busbars, SABS approved Surge Protection, Switchgear (IEC 60947), Motor Starter / Drives, Metering, Wiring, Indication, Control & Auxiliary Circuits & Equipment, Fixing Accessories, Labelling and Signage and Installed Indoor and/or Outdoor, Plinth Mounted, Floor Standing, Flushed or Recessed Mounted in accordance with SANS10142-1, c/w Earthing, Testing and Commissioning and All Associated Work, Complete to Achieve Client / Project Objective and as per Project Specification;

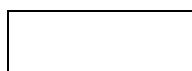
Contractor Responsibility & Sequence of Events

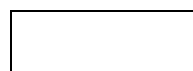
- Confirmation of specialized Low Voltage Assembly Unit manufacturer and / or supplier; Confirmation of material and equipment ratings, range and manufacturer;
- Detail design of Low Voltage Assembly Unit by specialized builder in accordance with Specifications;
- Submit detail design drawings and documentation to Engineer for review and approval;
- Ordering of material and manufacture of Medium Voltage Assembly Unit and/or ordering and delivery of unit by specialized manufacture and / or supplier;
- Perform inspection and factory acceptance test (FAT) between specialist builder and / or supplier and contractor.;
- Issue of factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;
- Confirmation of equipment / unit position and cable lengths on site;
- Transport / Delivery of Low Voltage Assembly Unit to site; Rigging of Low Voltage Assembly Unit and placing in position on site;
- Earthing of Installation and issuing of Earthing Soil Resistivity Test Certificates; Connection of all LV cables as well as making good for commissioning;
- Labelling of equipment / circuits / warning signs and installation of operational information and SLD;
- Programming, Setting, Testing and Commissioning of IED's and/or Protection Functions;
- Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;
- Complete testing and commissioning of all works and issuing of test and compliance certificate; As-Built Documentation;

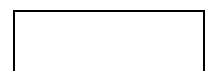

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

Material Prerequisite

- Specialised Distribution Panel Builder: EBM;
- Specialised MCC Panel Builder: Electron-SA;
- Switchgear: ABB / Schneider / CBI;
- Surge Protection: DEHN;
- Motor Drives: ABB / Schneider;
- Check Metering: Elster;
- Power Metering: ABB / Schneider;
- Or Similar and Approved;

Technical Standards

- SANS 10142-1: The Wiring of Premises – Low Voltage Installations;
- SANS/IEC 60439 / 61439: Low Voltage Switchgear and control gear assemblies;
- SANS/IEC 60947: Low Voltage Switchgear and controlgear;

LOW VOLTAGE RETICULATION (LVrt) WORK

Scope of Works

Supply Low Voltage Bells & Mains, Multicore, Single Core Power Cables (SANS 1507-3), Airdac (SANS 1507-6), Aerial Bundle Conductor (1418), Aluminium Conductor and Copper earth Wire (SANS 1411-1) and Install in ground, wire channels, sleeves, on racking, on pole structures and in configurations as indicated on site (SANS 10142-1 & SANS 10198 & SANS 61386), c/w with joints, terminations, end capps, glands, shrouds, termination lugs and fixing accessories and all associated works, Complete to Achieve Project Objective and as per Project Specification;

Contractor Responsibility & Sequence of Events

- Confirmation of manufacturer and range of equipment and material;
- Excavation of underground LV cable routes as per Power Cable Schedule and Drawings, complete with trenching, bedding;
- Supply & installation of LV cable feeders as per Power Cable Schedule and Drawings, complete with joints, termination, lugs, etc;
- Supply & installation of accompanying earth continuity BCEW cables complete with joints, termination, lugs, etc;
- Marking of LV cables by installing danger tape along the complete excavated routes and cable route markers at every joint position, road crossings, where the cable turns and on straight sections longer than 200m;
- Protection of LV cables by supplying and installing concrete protection slabs along the complete excavated routes where other services are crossed;
- Labelling of LV cables using the street name of the equipment being fed to or fed from, the cable size and type;
- Complete testing and commissioning of all LV cable work and issuing of test and compliance certificate;

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Material Prerequisite

- Cables: Abedare / African Cables range;
- Cable Rack & Channel: O-Line range;
- Or Similar and Approved;

Technical Standards

- SANS 10142-1: The Wiring of Premises – LV Installations;
- SANS 1507: Electric cables (300/500 V to 1 900/3 300 V);
- SANS 1411: Materials of insulated cables and flexible cords.
- SANS 10198: Installation of power cables not exceeding 33kV;
- SANS 61386: Conduit Cable Management System;

SMALL POWER & LIGHTING (SP&L) WORK

Scope of Works

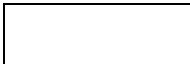
Supply of Small Power & Lighting equipment (socket outlets, isolators, communication outlets, lighting switches, power cables & conductors, data cable, etc.), IP Rated, SABS tested, approved & certified and the indoor and/or outdoor installation and testing thereof with the use of wiring management systems (power skirting, power poles, sleeves, conduit, channels, cable racks & wire mesh, etc.) in accordance with SANS 10142-1, c/w wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;

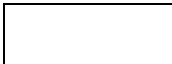
Contractor Responsibility & Sequence of Events

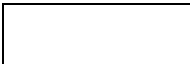
- Site verification audit to be performed by Contractor;
- Working with existing installation, it will be required by the contractor to audit, test and draft a condition report;
- Determine final positions of equipment on site by the contractor; Determine final routes of cables on site by the contractor;
- Equipment quantities are verified by the Contractor based on site inspection;
- Condition report and marked up drawings to be provided by the Contractor to the Engineer for review and approval;
- Upon approval of Contractor feedback by Engineer, the orders can be placed for material;
- Material is delivered and stored safely on site; Materials are installed, tested and record is kept of all test results;
- As-Build drawings are prepared and submitted to Engineer for review and approval;
- Complete, testing and certification of installation and the submission of COC to Engineer for review and approval;

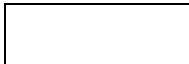
Material Prerequisite

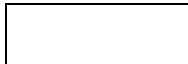
- Small Power: Clipsal, CBI, Crabtree;
- Cable & Wire Management: O-Line;
- Cable & Conductor: Abedare;
- Luminaires: Beka;
- Or Similar and Approved;

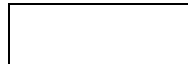

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

Technical Standards

- SANS 10142: The Wiring of Premises;
- All Equipment shall be SABC Certified;

INDUSTRIAL POWER (IP) WORK

SCOPE OF WORKS

Supply of Industrial Power & Lighting equipment (welding plugs, isolators, starters, emergency devices, stop/starts, electric motors, power & control cables, etc.), IP and/or EX rated, SABS tested, approved & certified and the indoor and/or outdoor installation in industrial areas and testing there-off with the use of wiring management systems (sleeves, conduit, channels, cable racks & wire mesh, etc.) in accordance with SANS 10142-1, c/w wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;

Contractor Responsibility & Sequence of Events

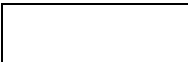
- Confirmation of material and equipment ratings, range and manufacturer; Site verification audit to be performed by Contractor;
- Working with existing installation, it will be required by the contractor to audit, test and draft a condition report;
- Determine final positions of equipment on site by the contractor; Determine final routes of cables on site by the contractor;
- Equipment quantities are verified by the Contractor based on site inspection;
- Condition report and marked up drawings to be provided by the Contractor to the Engineer for review and approval;
- Upon approval of Contractor feedback by Engineer, the orders can be placed for material;
- Material is delivered and stored safely on site; Materials are installed, tested and record is kept of all test results;
- As-Build drawings are prepared and submitted to Engineer for review and approval;
- Complete, testing and certification of installation and the submission of COC to Engineer for review and approval;

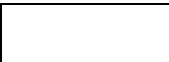
Material Prerequisite

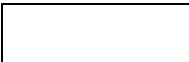
- Industrial Power: Scame, Eaton;
- Enclosures: Allbro;
- Junction Boxes: Pratley, Allbro, OBO;
- Cable & Wire Management:
- Line;Cable & Conductor : Abedare;
- Electric Motors: WEG;
- Luminaires: Beka;
- Or Similar and Approved;

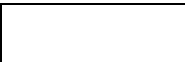
Technical Standards

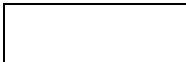
- SANS 10142: The Wiring of Premises;
- All Equipment shall be SABC Certified;

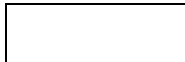

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

INDUSTRIAL CONTROL WORK (IC)

Scope of Works

Design, Supply, Installation and Configuration of PLC / SCADA / HMI & Telemetry systems by a specialised System Integrator Contractor and the Supply of Industrial Instrumentation (mechanical and/or digital indication and measuring devices, etc.), IP and/or EX rated, SABS tested, approved & certified and the indoor and/or outdoor installation in industrial areas and testing there-off with the use of wiring management systems (sleeves, conduit, channels, cable racks & wire mesh, etc.) in accordance with SANS 10142-1, c/w wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;

Contractor Responsibility & Sequence of Events

- Confirmation of specialized system integrator and / or supplier;
- Confirmation of material and equipment ratings, range and manufacturer;
- Submit detail designs by specialized system integrator in accordance with Specifications to Engineer for review and approval;
- Ordering of material and building of industrial control units;
- Site verification audit to be performed by Contractor;
- Working with existing installation, it will be required by the contractor to audit, test and draft a condition report;
- Determine final positions of equipment on site by the contractor;
- Determine final routes of cables on site by the contractor;
- Equipment quantities are verified by the Contractor based on site inspection;
- Condition report and marked up drawings to be provided by the Contractor to the Engineer for review and approval;
- Upon approval of Contractor feedback by Engineer, the orders can be placed for material;
- Material is delivered and stored safely on site;
- Materials are installed, tested and record is kept of all test results;
- As-Build drawings are prepared and submitted to Engineer for review and approval;
- Complete, testing and certification of installation and the submission of COC to Engineer for review and approval;

Material Prerequisite

- System Integrator: Iritron / Electron-SA;
- Industrial Instrumentation: Wika;
- Enclosures: Allbro;
- Junction Boxes: Pratley, Allbro, OBO;
- Cable & Wire Management:
- Line;Cable & Conductor : Abedare;
- PLC / HMI: Schneider;
- SCADA: Schneider, Adroid;
- Or Similar and Approved;

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Technical Standards

- SANS 10142: The Wiring of Premises;
- All Equipment shall be SABC Certified;

AREA LIGHTING (AL) WORKS

Scope of Works

Design (SANS 10098 & 10389), Supply (SANS 475) & Installation of Public / Area Lighting (SANS 10142-1) with the appropriate degree of protection enclosures (SANS 60529) and application (SANS 10108) in line with OHS Act environmental and lighting regulations, c/w luminaires, poles, mounting brackets, wiring, equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Client / Project Objective and as per Project Specification;

Contractor Responsibility & Sequence of Events

- Confirmation of specialized lighting designer and / or supplier; Confirmation of material and equipment ratings, range and manufacturer;
- Site verification audit to be performed by Contractor;
- Working with existing installation, it will be required by the contractor to audit, test and draft a condition report;
- Determine final positions of equipment on site by the contractor; Determine final routes of cables on site by the contractor;
- Equipment quantities are verified by the Contractor based on site inspection;
- Condition report and marked up drawings to be provided by the Contractor to the Engineer for review and approval;
- Upon approval of Contractor feedback by Engineer, the orders can be placed for material;
- Material is delivered and stored safely on site; Materials are installed, tested and record is kept of all test results;
- As-Build drawings are prepared and submitted to Engineer for review and approval;
- Complete, testing and certification of installation and the submission of COC to Engineer for review and approval;

Material Prerequisite

- Luminaires: Beka;
- Or Similar and Approved;

Technical Standards

- SANS 10142: The Wiring of Premises;
- All Equipment shall be SABC Certified;

STANDBY GENERATOR SUPPLY (ES) WORKS

Scope of Works

Design, Manufacture, Supply (SANS8528-1:2008) of Low Voltage (LV) Prime or Standby Diesel Generator (DG), IP Rated, Factory Build & Wired, Fully or Partially Type Tested (IEC 60439) by specialised builder, installed indoor or outdoor on plinth or in substation room in

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

accordance with SANS 10142-1, c/w canopy, fuel tank, batteries & charger, change over & switchgear, controller, earthing, Low Voltage (LV) switchgear, metering, internal wiring, auxiliary equipment, fixing accessories, labelling and signage, testing and commissioning and all associated work, Complete to Achieve Project Objective and as per Project Specification;

Contractor Responsibility & Sequence of Events

- Confirmation of specialized builder and / or supplier; Confirmation of material and equipment ratings, range and manufacturer;
- Submit detail designs by specialized builder in accordance with Specifications to Engineer for review and approval; Ordering of material and manufacture of diesel generator unit and/or ordering and delivery of unit by specialized builder and / or supplier;
- Issue of Completed factory acceptance test (FAT) certificate and arrange inspection with Engineer for review and approval;
- Confirmation of equipment / unit position and cable lengths on site;
- Transport / Delivery of Diesel Generator Unit to site; Rigging of Diesel Generator Unit and placing in position on site;
- Excavation & installation of plinth, c/w trenching, bedding, etc., in accordance with soil survey, design (pre-cast or cast on site) and compaction & test certificates;
- Earthing of Installation and issuing of Earthing Soil Resistivity Test Certificates; Connection of all LV cables as well as making good for commissioning; Labelling of equipment / circuits / warning signs and installation of operational information and SLD;
- Configuration of IED's and/or Protection Functions; Complete testing and commissioning of all work and issuing of site acceptance test (SAT) certificate;
- Completion of test schedules & certificates for approval by the Engineer before handing-over; Preparation and submission of As-Build data pack;
- Twelve (12) month guarantee; Servicing of new unit during twelve (12) months guarantee period; First Fill of Diesel (1000L);

Material Prerequisite

- Builder: New Way / CAT / Diesel Innovations / Multilec;
- Controllers: Deep Sea / Levato;
- Switchgear: Schneider / CBI / ABB;
- Switchgear: Socomec / ABB;
- Engine: Perkins / Lister / Cummings / John Deere / CAT / Volvo;
- Alternator: Leroy Somer / Marelli Motor / Enga / Stanford;
- Luminaires: Beka;
- Or Similar and Approved;

Technical Standards

- SANS 10142: The Wiring of Premises;
- SANS 8528: Engine driven alternating current generating sets;
- SANS/IEC 60439 / 61439: Low Voltage Switchgear and control gear assemblies;
- SANS/IEC 60947: Low Voltage Switchgear and controlgear;
- SABS 1804: Induction Motors;
- IEC 60034: Rotating electrical machines;
- SABS 1091: National colour standards for paint;

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

EARTHING & LIGHTING PROTECTION (ELP) WORK

Scope of Works

Design Verification, Supply, Installation and testing of earthing and lightning protection systems in accordance with the latest SANS Codes of Practice 10199 (2004) and 10313 (2008) in conjunction with SANS 62305-1-2-3-4 and IEC 62305-1-2-3-4 and installation copper earth electrodes at each earth termination based on a soil resistivity survey in order to ensure that the complete electrical installation is earthed, boded and continuity established for the purpose of people and structure protection and safety as confirmed with overall earth resistance measurement and certification;

Contractor Responsibility & Sequence of Events

- Confirmation of specialised contractor & manufacturer and range of material & equipment;
- Perform pre and post soil resistivity surveys as per the Wenner method, evaluate soil resistivity surveys, inclusive of prospection sheets, graphs and reports by specialist contractor for each applicable area;
- Confirm design and submit to Engineer for review and approval;
- Installation of an overall lightning protection system to ensure earth continuity and overall earth resistance value for the overall facility structures, less than 10 ohm;
- Installation of an overall earthing system to ensure electrical earth continuity & overall earth resistance value for the electrical distribution network of less than 1 ohm;
- Allowance is to be made for the material and labour for the installation of an effective building lightning protection system;
- Allow for the bonding of all metal cold-water mains to the earth busbar in the Main Switchboard by means of solid 15 x 2mm copper strapping, c/w brass fixing accessories;
- Allow for the bonding of other metal hot and cold-water pipes to the earth busbar in the nearest switchboard by solid 12 x 0.8mm perforated copper strapping c/w brass fixing accessories;
- On completion issue of test certificates by specialist contractor;
- Compile and/or update as-built drawings for the complete installation;

Material Prerequisite

- Specialised Contractor: HHK / RSLP;
- SPD: DEHN / Schneider / O-Line;
- LPS: DEHN / O-Line;
- Or Similar and Approved;

Technical Standards

- SANS 10142: The Wiring of Premises;
- SANS 10199: Design & Installation of Earth Electrodes;
- SANS 1063: Earth Rods & Couplers;
- SANS 10292: Earthing of Low Voltage Distribution System;
- SANS 10313: Protection Against Lightning;
- SANS 62305: Protection Against Lightning;

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

MCC PANELS

MCC panels shall be manufactured as per design and specifications of the Electrical Engineer.

Bidders must base their tariffs for manufacture, transporting to site, installation, testing and commissioning of MCC panel.

Labelling

All outlets especially the terminals associated with the incoming and feeder conductors must be labelled as such.

Circuits removed from distribution boards must be marked "SPARE" on the distribution boards.

All outlets especially the terminal boxes associated with the signal cabling must be labelled as such.

Labels indicating the supply point and size of the supply cable must be provided on each panel of the MCC.

Suitable approved electrical danger signs shall be displayed on the doors of the MCC.

CABLES

General

Supply, install and connect all the low voltage cables specified in this document. The cables must comply with the requirements in Section 2 of this document. Bare hard drawn copper earth continuity conductors are to run with all four core underground cables constituting part of the low voltage distribution system. The earth conductors must be bound to the cables at intervals not exceeding 1 meter.

Conductor insulation, which is colour coded by a line only, will not be accepted. The total insulation must have the phase colour.

Installation

a) Testing

All low voltage cables must be tested on site, in the presence of the Engineer or his representative. All test results must be submitted to the Engineer.

On each completed section of the laid cable, the insulation resistance shall be tested to approval with an approved "Megger" type instrument of not less than 500 V for low voltage cables.

b) Depth of Trenches

All low voltage cables must be installed 600 mm to the top of the cable, below ground level.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Backfilling of trenches may commence after the trenches have been approved and shall be compacted in layers of 150 mm. Sufficient allowance must be made for final settlement. For the first layer of 150 mm, sifted soil of which 75 mm must be below and 75 mm must be above the cable, must be used. Where no suitable soil is available on site, the Contractor shall import fill from elsewhere and make all the necessary arrangements to do so.

The Contractor shall be responsible for taking the necessary precautions where excavations may be dangerous. Refer to the Machinery and Occupational Safety Act 1983, Reg. 13 of the General Safety Regulations. The Contractor must ensure that all buildings, sewers, etc., are protected against caving.

The cable trenches shall be excavated to be 300 mm wide for one to three cables and the width shall be increased where more than three cables are laid together so that the cables may be placed at least two cable diameters apart throughout the run.

Payment will be made on a cubic excavation rate based on the basis of the given maximum dimensions or the actual dimensions, whichever is the lesser. The only exception shall be in cases of additional excavations caused by obstructions such as water pipes, drains, large rocks, etc., in which case the length of the additional excavation must be agreed upon on site by the Engineer.

Joints

Joints in cable runs shall not be allowed unless specified or authorised in writing, by the Engineer. Where cable joints are to be made, a joint hole must be excavated of sufficient size to enable the cable jointer to work efficiently and unimpeded.

Each cable end must be left in a loop of 0.9 m to prevent any tension on the joint.

During backfilling the section supporting the joint must be compacted to the extent that no movement will take place after the trenches have been backfilled.

All joints in underground cables and terminations shall be made either by means of compound filled boxes according to the best-established practice by competent cable jointers using first class materials or by means of approved epoxy-resin pressure type jointing kits such as "Scotchcast". Epoxy resin joints must be made entirely in accordance with the manufacturer's instructions and with materials stipulated in such instructions. Low voltage PVC cables are to be made off with sealing glands and materials designed for this purpose which must be of an approved make.

Where cables are cut and not immediately made off, the ends are to be sealed without delay.

Cable laying

Cables must be removed from the drums in such a manner that the cable is not subjected to mechanical damage, twisting or tension exceeding that stipulated by the cable manufacturer.

The laying of cables shall not commence until the trenches have been inspected and approved. The cables must be adequately supported at intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after drawing in of the cables.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Sleeves

All sleeves indicated on the drawings will be supplied and installed by the Electrical Contractor. It shall be the responsibility of the Electrical Contractor to liaise with the builder to ensure that all the sleeves are correctly installed.

Before backfilling the ends of all sleeves must be sealed with paper and a weak cement mixture.

Cable markers

Cable markers must be provided on all cable runs at 50 m intervals on straight runs and at all bends. The position of cable markers must be confirmed on site.

Cable markers must consist of 150 mm x 150 mm x 300 mm high concrete blocks with aluminium or other rust-free metal plates marked with arrows to indicate the route.

Finishing and Tidying

Finishing and tidying must not simply be left to the end of the contract. The specified period of maintenance in respect of any specific section of the work will commence on the date on which the section concerned is accepted by the Engineer and by the Employers Representative(s) as being fully completed, including finishing and tidying.

All finishing and tidying shall be carried out to the best advantage of the project as a whole and in co-operation with other Contractors.

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Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C3.4.4 STANDARD SPECIFICATIONS

MECHANICAL

PARTICULAR SPECIFICATION PM: MECHANICAL EQUIPMENT

PM 1 SCOPE

- PM 1.1 This specification covers the general requirements for the detail design, manufacture, supply, delivery, erection, installation, testing on site, commissioning and maintaining of the mechanical equipment specified under this Contract. The complete installation shall comply with this Specification.
- PM 1.2 Should there be any discrepancy between this specification and the Project Specification PSPM: Mechanical Equipment, the requirements of the latter shall prevail.

PM 2 GENERAL REQUIREMENTS

PM 2.1 Tender information and Requirements

In addition to the technical particulars to be submitted by the Tenderer as specified in the Project Specification PSPM ; Mechanical Equipment, the Tenderer shall submit with his Tender particulars, such as outline drawings, relevant technical leaflets and brochures of all equipment offered, results of any tests on similar equipment, reference to and information on similar equipment supplied and installed by the Tenderer which have been proved satisfactory by actual use and operation, supplementary specifications and other technical information as are necessary to fully illustrate and describe the equipment offered, so that a proper assessment can be made of the equipment included in the Tender.

The Tenderer shall also include with his Tender, full details with regard to electrical wiring, diagrams, electrical cabling and inter-connections between all electrical components to be supplied and erected under this Contract and electrical requirements of all motors, switchgear, cabling and other items to be provided by others.

PM 2.2 DETAIL DESIGN, PLANNING AND DRAWING

PM 2.2.1 Detail Design and Planning

After the award of Tender, the Contractor shall be fully responsible for the detail design and drawing of all the equipment under this contract. The Contractor shall also be responsible for the programming and planning of the design, manufacturing, delivery, erecting, installation, testing and commissioning of all equipment under this contract.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Programme and Progress

Contractor's Drawings

The Contractor shall not proceed with the purchasing, manufacturing and/or acquisition of any particular mechanical equipment item, prior to the final approval by the Engineer of all drawings, detailing the specific mechanical equipment item.

The approval of drawings by the Engineer, as specified above, shall not relieve the Contractor of any responsibility in terms of the Contract.

The Contractor shall be responsible for any discrepancies, errors or omissions in the drawings and other particulars supplied by him, whether such drawings and/or particulars have been approved by the Engineer or not, provided that such discrepancies, errors or omissions are not due to inaccurate information or particulars furnished in writing to the Contractor by the Engineer.

(b) As-built Drawings

Upon completion of the erection and installation, the Contractor shall supply one set of reproducible drawings, detailing the equipment as erected and installed, including complete parts lists.

The cost of drawings, calculations, reproductions, etc, as set out in this clause shall, be deemed to be included in the Contract Price under the item Detail Design, Planning and Drawings in the Schedule of Quantities.

PM 2.3 MANUFACTURE, SUPPLY AND DELIVERY ON SITE AT POINT OF INSTALLATION

PM 2.3.1 Inspection and Testing at the place of manufacture and supply

The quality of materials, workmanship and performance of all items of equipment shall be thoroughly tested at the place of manufacture and supply, test certificates, in triplicate in the ruling language shall be submitted to the Engineer, prior to the shipment, railing or transport of the equipment concerned.

The Contractor shall give reasonable notice in writing of the time and place of tests to enable the Engineer to inspect and witness tests of materials and equipment.

The acceptance by the Engineer of any plant item, following such inspection and tests at the place of manufacture and supply, shall not relieve the Contractor of any obligations under this Contract.

All costs of such tests and inspections and the necessary testing facilities, shall be deemed to be included in the Contract Price under the item Manufacture, Supply and Delivery on Site in the Schedule of Quantities.

PM 2.3.2 Storage

Equipment and materials to be supplied under the Contract, shall, on completion of fabrication, be stored at the Contractor's factory, store or yard until it is required for incorporation in the works.

The Contractor shall ensure that the items are fully protected from the weather and damage of any kind. The cost of repair of any damage shall be for the Contractor's account.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Loading, Transport and off-loading

On completion of erection and installation, the Site shall be cleaned of all surplus material and debris and left in a clean and tidy condition.

The test on Site after completion of the erection and installation of the equipment shall include the following:

Witness 2

- (a) All electrical and electronic equipment and installations shall be tested for correct connection, installation, insulation, losses, output, earthing and overheating, whichever may be applicable for the part of installation to be tested.
- (b) All electrical and electronic equipment and installations shall be subjected to a complete operational test to check the correct operation thereof in terms of the operational requirements specified in the Project Specification PSPM: Mechanical Equipment.
- (c) All mechanical equipment and installations shall be tested for correct positioning, alignment, fixing and all such items which may affect the satisfactory operation thereof.
- (d) All mechanical equipment and installations shall be subjected to a complete operational test to check the correct operational requirements specified in the Project Specification PSPM: Mechanical Equipment.
- (e) Complete operational tests of hydraulic equipment shall include for effective, efficient and adequate performance of each component individually and in concert according to the operation requirements specified.

PM 2.4.3 Commissioning

At the completion of all work in the plant and after the successful testing of all civil, electrical and mechanical work, the complete plant shall be commissioned. The Contractor will be responsible for the commissioning of all equipment supplied, erected and installed by him at a time arranged by the Engineer to enable the plant as a whole to be put into operation.

It is unlikely that the scheduling for the commissioning of the plant will follow directly after the completion of the erection and installation phase. The Contractor shall, therefore, allow for the return to site for commissioning, as well as the adequate protection for equipment in the interim period between erection and installation and commissioning shall be deemed to be included into the Contract Price.

The Contractor shall, at his own cost, render all assistance and supply all labour, appliances and any other materials, excluding power, water and chemicals, such as may be required during commissioning. Power, water and chemicals required during the commissioning period will be supplied by the Employer.

At the commencement of and during the commissioning period, the Contractor shall have available on Site, all essential spares and tools considered necessary to enable repairs of defective parts or be carried out immediately in the event of a breakdown.

On completion of the commissioning of equipment, the plant shall be put into normal operation, and the final adjustments of the equipment shall be made. Thereafter, the Tests on Completion shall be carried out in the presence of the Engineer to ensure that the plant will fulfil the functions for which it has been supplied.

Such Tests on Completion shall include the following:

- (a) Simulated tests for all alarm and safety cut-out equipment to prove the operation of the equipment.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- (b) Simulated tests on automatic controls to prove the ability of the controls to rectify conditions which are outside the required design conditions. The test shall be carried out by manually changing the desired values to produce an incorrect condition and then re-setting the controls to the design conditions and checking the operation of valves, etc. to restore the design conditions.
- (c) Operational tests on the plant to demonstrate that it is giving the rated output and efficiency.
- (d) After the plant as a whole has been put into a condition of smooth operation, the Contractor shall operate the plant for a further 36-hour continuous test run.

The Contractor shall provide all necessary temporary measuring and recording equipment. The equipment shall be of a type generally used for this type of testing, and shall be approved by the Engineer. All instruments shall be accurately calibrated before the tests commence.

On completion of the commissioning of all the mechanical equipment and provided the Contractor is satisfied that the entire plant is operating satisfactorily and will fulfil the function for which it has been supplied, he shall submit to the Engineer duplicate copies on all the tests called for in the Specifications. The Engineer shall reserve the right to ask for any reasonable additional tests in order to prove that the operation of the plant is satisfactorily and in accordance with the Specifications and Drawings.

During the commissioning and 36-hour test run, the Contractor shall train and instruct the personnel as appointed by the Employer as plant supervisors in the correct working and operation of the equipment supplied by him. The Contractor shall, however, be responsible for the proper operation and maintenance of the plant throughout the period of the testing.

The Engineer will only issue a Completion Certificate after all aspects of the commissioning procedures have been complied with to his satisfaction.

PM 2.4.4 Operating and Maintenance Manuals

The Contractor shall provide complete and adequate Operating and Maintenance Manuals in duplicate. The manuals shall be made up in book form with loose pages and shall include

drawings, diagrams and cross-sectional drawings specially prepared and coloured in and marked to indicate relevant details.

The Operating and Maintenance Manuals shall be compiled in an orderly and logical manner following, as far as possible, the sequence below and containing at least the information indicated.

- (a) Index
- (b) Components and functions of equipment
- (c) Normal operation
- (d) Guidelines and rules for abnormal operation:

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- variations in raw water quality;
- low flows;
- high flows;
- emergencies
- components out of operation, bypassing certain components, etc.

(e) Maintenance

- routine maintenance and lubrication instructions;
- major maintenance;
- detailed instructions;
- list of spare parts that should be held in stock
- complete schedule of all spare parts for use when ordering;
- address, fax and telephone numbers of all equipment suppliers;
- technical brochures of individual items.

The text of the instructions, notations and titling of drawings shall be in English.

Draft manuals shall be available at commencement of site testing of the equipment, and two copies shall be submitted to the Engineer for approval. The Engineer shall return to the Contractor, one copy of the draft manual on which amendments regarded as essential have been indicated, and which is marked "Approved in Principle".

The Contractor shall update the manuals before commissioning and deliver two copies of the final manual to the Engineer.

No separate item for payment for Operating and Maintenance Manuals is included in the Schedule of Quantities, but payment for these will be deemed to be included in the item for "Erection, Installation, Site Testing and Commissioning".

PM 2.5 Maintenance Period

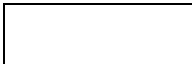
The maintenance period will commence with the issue of a Completion Certificate. The maintenance period shall be 12 months, and the Contractor shall be responsible for all preventative maintenance, as well as the repair of any defects and/or malfunctioning of the mechanical equipment, during this period of time.

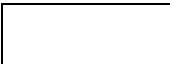
Repairs to any mechanical equipment shall be carried out promptly and at least within one week after receiving written notification from the Engineer. Repairs will be carried out by the Employer at the expense of the Contractor, if the abovementioned conditions are not fulfilled.

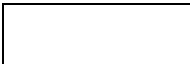
The maintenance period will be extended by a proportional period of time if the mechanical equipment was not in a fully operational condition for at least 10 months of the maintenance period. The Contractor shall not have any claim for interest payment on retention money, surety, etc. during such an extended maintenance period.

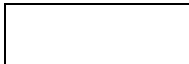
PM 2.6 Measurement and Payment

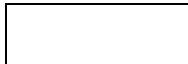
Measurement and payment shall be as detailed in the Project Specification PSPM - Mechanical Equipment.

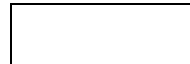

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

PM 3 GENERAL REQUIREMENTS FOR MANUFACTURING, SUPPLY, ERECTION AND INSTALLATION

PM 3.1 GENERAL

PM 3.1.1 Unit of Measurements

All dimensions, masses, etc, shall be in S.I. metric units.

PM 3.1.2 Applicable Standards and Regulations

The general requirements of the following Standards and Regulations apply to this Contract:

- (a) The Machinery and Occupational Safety Act (Act No 6 of 1983 of the Republic of South Africa).
- (b) The SABS Code of Practice 0142-1973 for the Wiring of Premises.
- (c) The standards and regulations of the Post Office, the electricity supply authority and/or the relevant Municipality, Government Department or public authority, as applicable.
- (d) The General Specification for Manufacturing, Erection and installation of Mechanical Equipment in Pump Stations and Water and Waste-water treatment plants, as compiled by the Engineer. The relevant sections of this document applicable to this contract are bound in with this document as Particular Specifications.

PM 3.1.3 Arrangements with Supply Authorities

The Contractor shall be responsible to arrange with the relevant supply authorities, with regards to inspection of the installation and he shall supply all labour and equipment, at his cost, as required to conduct such inspections in accordance with the requirements of those authorities.

The Contractor shall supply and erect all notices and warnings signs in accordance with the applicable laws and regulations of the relevant authorities and as specified in the Contract Document.

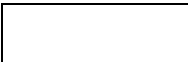
PM 3.1.4 Payment of Fees and Duties.

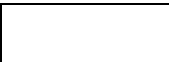
The Contractor shall be responsible for the payment of all fees and duties required by law or the regulations of relevant supplier authorities, with regard to the supply and installation of the equipment and to protect the Employer against any losses, claims, penalties, costs or expenditure that may arise from the Contractor's negligence to comply with these requirements.

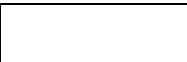
PM 3.2 QUALITY REQUIREMENTS

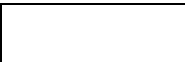
PM 3.2.1 Quality of Materials and General Design

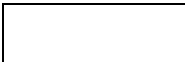
All materials used in manufacture and erection of the equipment to be supplied shall be new, of the respective classes best suited for the intended duty, and of the best quality, to the approval of the Engineer. Moving parts shall operate reasonably silently and shall be so arranged as to be easily and readily accessible for removal, maintenance and repair. Adequate protection shall be provided, to the satisfaction of

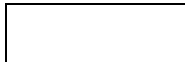

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

Belts, bolts, nuts and other devices for clamping and fixing of renewable parts and stainless-steel parts shall be made of stainless steel. Corrosion-resisting steel shall be used for all bolts and nuts when either or both are subject to contact with water and/or frequent adjustment or removal, and for bolts projecting from concrete with nuts subject to removal. Split pins or other approved locking devices shall be provided by the Contractor for nuts which may be come loose after erection and during operation of the equipment. All grease nipples shall be of the hexagonal hook-on type and shall, where necessary, be fitted with adaptors or bushings. A grease gun, for each appropriate type of grease to be used shall be provided by the Contractor.

adequate and satisfactory permanent installation at the site, as well as the operation and maintenance thereof, even though some such parts may not be listed specifically or separately in the Specifications, Drawings or Schedule of Quantities.

Witness 2

PM 3.2.3 Numbering and Marking of Materials, Equipment and Parts

All items of the equipment, parts and materials to be supplied under this Contract shall be clearly numbered and marked to ensure the correct assembling and erection thereof on Site.

PM 3.3 Spares and Tools

The Tenderer shall submit with his Tender a complete list with prices of all the essential spares to be kept ready at the site to ensure continuity of operation and satisfactory maintenance of the equipment. These spares shall be supplied as part of the Contract and the prices quoted shall include for packing, for permanent storage and for protecting the spares against corrosion and damage. Larger spares may be packed individually or by grouping in adequately strong boxes with labels indicating the contents thereof for bulk storage, but smaller spares shall preferably be stored in suitable steel cabinets, provided by the Contractor, which are protected against corrosion, and fitted with locks.

PM 3.3.1 Interchangeability of parts

The interchange ability of original and spare parts shall be ensured by manufacturing all parts which may require renewal or replacement to template, gauge or jig.

All records and patterns of parts which may require repair, or replacement shall be retained by the Contractor for a period of at least five (5) years free of extra cost to the Employer.

PM 3.3.2 Tools, lifting devices and similar equipment

The Contractor shall supply a complete set of hardened spanners and tools and other implements necessary for the maintenance and adjustment of the equipment supplied under the Contract and the Tenderer shall submit with his Tender a complete list thereof together with prices. The spanners and tools shall be mounted in suitable steel cabinets which are protected against corrosion and fitted with locks, the position of the various spanners and tools shall be clearly marked.

PM 3.3.3 Supply on site of spare parts and special tools

Spare parts and special tools shall be supplied on the site after successful testing and before commissioning of the mechanical equipment on site, and the tools or spare-part cabinets shall be installed in positions indicated by the Engineer. The special tools are defined as tools required for normal maintenance, but do not form part of the contents of a normal tool box.

The Contractor shall also be responsible for the training of operation and maintenance personnel in the use of special tools if such tools are provided by him.

The costs for the installation of tools and spare part cabinets, as well as the training of operational and maintenance personnel shall be deemed to be included in the items for the supply of tools and spare parts.

PM 3.4 Site Work by the Contractor

All site work necessary for the complete and satisfactory erection and operation of all mechanical and electrical equipment shall be executed by the Contractor and shall be

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PM 3.4.1 Holding down bolts

PM 3.4.2 Pipes and other equipment through walls of structure

PM 3.4.3 Excavation and backfill

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

**UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS**

CONTRACT: PLM/TREF/1409 - 2025

Section C3.5

Particular Specifications and Variations & Additions to the
Standard Specifications

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C3.5.1 PARTICULAR SPECIFICATIONS AND VARIATIONS & ADDITIONS TO THE STANDARD SPECIFICATIONS

B AMENDMENTS TO THE STANDARD AND PARTICULAR SPECIFICATIONS

INTRODUCTION

In certain clauses the standard, standardized and particular specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternative or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains additional specifications required for this particular contract.

The number of each clause and each payment item in this part of the project specifications consists of the prefix PS followed by a number corresponding to the number of the relevant cause or payment item in the standard specifications. The number of a new clause or payment item, which does not form part of a clause or a payment item in the standard specifications, and which is included here, is also prefixed by PS, but followed by a new number which follows on the last clause or item number used in the relevant section of the standard specifications.

PSA GENERAL

PSA3 MATERIALS

PSA3.1 Quality

Where there is a standardization mark programme for any material, all such material supplied shall bear the official standardization mark.

Alternative materials or equipment proposed by the Contractor shall be tested. The test, as well as the materials or equipment, shall be approved by the Engineer prior to any such materials or equipment being built into the works and all costs involved in testing shall be deemed to be included in the rates offered.

PSA3.3 Applicable Standards for Cement

The standard cement specifications SABS 471, SABS 626, SABS 831 and SABS 466, referred to in Clause 3.3, have been withdrawn and are replaced by the new SANS 50197-1 and -2: Common cements and SANS 50413-1 and -2: Masonry cement. These specifications will be applicable to this contract and the descriptions and types of cements specified, will be based on the designations as defined in these specifications.

PSA4 PLANT

PSA4.2 Contractor's Office, Stores and Services

The Contractor's camp shall be kept neat and clean at all times, and all surplus or rejected material shall be removed from the site.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PSA5 CONSTRUCTION

PSA5.1 Survey

PSA5.1.1 Setting out of the Works

For any new work the Contractor shall establish his own reference lines from which the work can be set out.

PSA5.8 Ground and access to works

- **Add the following:**

“On completion of operations the Contractor shall restore the ground surface, wherever it may have been disturbed, to its original condition by filling in all ruts with material similar to the material within the rut and levelling the ground and where necessary, planting grass and shrubs as may be required. Any boundary fences which have been removed or damaged by his operations and activities shall be repaired and/or reinstated at the Contractor’s expense”.

PSA5.9 Accommodation of Traffic

Where construction work has to be carried out on or near public roads, the Contractor shall deal with traffic as specified in SANS 1921-2 (2004): Construction and Management Requirements for Works Contracts, Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor. The Contractor is also referred to Project Specification PS-9.

PSA8 MEASUREMENT AND PAYMENT

PSA8.3 Scheduled fixed-charge and value-related items

PSAB ENGINEERS OFFICE

PSAB3.1 Name boards (Sub-clause 3.1)

Details of the Name Board and holding structure can be found in C3.4.3 of this document. The rate shall cover the cost of two (2 No) name boards to be supplied, erected and maintained for the duration of the contract.

PSAB4 Telephone (Sub-clause 4.1)

Replace the content of sub-clause 4.1 of SABS 1200AB with the following:

The contractor shall provide a lump sum measured in the BOQ for on-site telephone facilities for the Engineer.

PSAB5.5 Survey assistants (Sub-clause 5.5)

One full-time competent assistant shall be provided at all times to assist the Engineer’s Representative in his duties for the duration of the Contract. When required the Contractor shall provide a second survey labourer to assist the Engineer’s Representative.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PSAB5.6 Survey equipment

The Contractor shall provide the following survey equipment on site from the commencement to the completion of the works:

- 1 x Automatic Levelling Machine with tripod and two-level staffs complete with protective cover bags
- 1 x Steel measuring tape of length 100m
- 1 x Steel measuring tape of length 5m
- 1 x 2kg hammer
- 6 x ranging rods
- 2 x survey assistants

The equipment shall be available for use by the Engineer or his representative whenever required. The Contractor shall keep the equipment continuously insured against loss, damage or breakage and shall indemnify the Engineer and the Employer against any claims in this regard.

Upon completion of the whole of the works, the ownership of the equipment shall revert to the Contractor.

The Contractor shall maintain the equipment in good working order and keep it clean throughout the contract period.

PSAB8 MEASUREMENT AND PAYMENT

PSAB8.3 Scheduled items

PSAB8.3.2.1(c) Establishment of Facilities on the Site

The rate Offered shall cover all costs as specified in sub-clause 3.1 of SABS 1200AB. The rate shall also include the maintenance of the board/s for the full duration of the contract including the maintenance period as specified in the contract data as well as the cost of removing the board/s upon final handover of the contract or as and when instructed by the Engineer.

Although two boards are specified in sub-clause 3.1 of SABS 1200AB, the Engineer may order the erection of only one or no contract name boards, and the Bidders rate shall therefore provide for such condition.

PSDB EARTHWORKS (Pipe Trenches)

PSDB6 CONSTRUCTION

PSDB5.1 Precautions

PSDB5.1.5 Trench Excavations

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

The precautions for excavations as specified in Clause 5.1.1 of Section 1200D, 1200DA, and the relevant clauses in PSD and PSDA, shall also apply to all trench excavations.

The Contractor shall take all the steps necessary to ensure that no person is required or allowed to work in a trench or any other unsupported overhanging excavation which is more than 1,5m deep and any excavation which has not been adequately supported, shored or braced if there is any danger whatsoever of the sides of the excavation collapsing. The support, shoring or bracing to be designed and constructed by the

Contractor shall be strong and sturdy enough to support the sides of the excavation in question.

PSDB5.9 REINSTATEMENT OF ROAD SURFACES (SUB-CLAUSE 5.9)

All crossings of existing roads and tracks are to be reinstated after the trench has been backfilled. All the new backfilling in road reserves must be executed with soilcrete (ratio 1: 10) properly mixed in a concrete mixer and backfilled in layers not thicker than 150 mm to a density of 95% MOD AASHTO.

PSG CONCRETE (STRUCTURAL)

PSG1 STORAGE OF CEMENT (Clause 3.2.3)

A first-in-first-out circulation shall be followed to ensure that no cement for

- (i) reinforced concrete shall be older than three months from the date of manufacture; and
- (ii) mass concrete shall be older than six months from the date of manufacture.

PSG2 PIPES AND CONDUITS EMBEDDED IN CONCRETE (Clause 5.4)

Except with the written approval of the Engineer, no pipes other than those shown on the drawings shall be embedded in concrete and the approval of the Engineer for the position of all services to be embedded shall be obtained before concreting commences. The clear space between pipes of any kind embedded in reinforced concrete and the clear space between such pipes and reinforcement shall not at any point be less than:

- a) 40mm or
- b) 5mm plus the maximum size of coarse aggregate.

Whichever is the greater.

PSG3 ANCHOR BLOCKS: MEASUREMENT AND PAYMENT

PSG3.1 General

Anchor or thrust blocks used are normally mass concrete structures. A small amount of formwork is also used and as such these concrete blocks are normally measured per unit or per volume.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PSG3.2 Normal thrust block

A thrust block will be regarded as a normal thrust block when no reinforcing is to be included in the structure.

Measurement and payment shall be according to Clause 8.2.11 or SABS 1200L: Medium Pressure Pipelines.

PSG3.3 Reinforced concrete thrust blocks

These thrust blocks will be scheduled separately.

Measurement and payment shall be in accordance with the relevant terms of Clause 8 of SABS 1200 G and GA.

PSLB BEDDING (PIPES)

PSLB1 MATERIAL

PSLB1.1 Selected Granular Material

Selected granular material shall be regarded as clean rivers and or any other granular, non-cohesive material of an acceptable nature and a P.I. less than 6. Stones shall not be in excess of 20mm. Selected granular material might occur in-situ, be imported or selected from trench excavation.

PSLB1.2 Selected Fill Material

Selected fill material shall be material that has a P.I. less than 10 and does not contain vegetation or stones exceeding 30mm. Selected fill material might occur in-situ, be imported or selected from trench excavations.

PSLB1.3 Ordinary Backfilling

Ordinary backfilling shall be material less than 150mm in diameter, excavated and if so, approved by the Engineer, of material imported from other parts of the trench or borrowed from adjacent to the trench on the downhill side. All material above the selected fill blanket (drawing SABS LB-1) will be measured as ordinary backfill.

PSLB2 BEDDING (Sub-Clause 3.3)

PSLB2.2 Rigid Pipes

All steel; clay and concrete pipes shall be laid on a class C bedding as shown on Drawing LB-1 of SABS 1200LB.

PSLB2.3 Flexible pipes

uPVC, mPVC and polyethylene pipes will be regarded as being flexible and shall be bedded as per Drawing LB-2 of SABS 1200 LB.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C3.5.4 PARTICULAR SPECIFICATIONS

PM MECHANICAL EQUIPMENT

PM 1 SCOPE

PM 1.1 This specification covers the general requirements for the detail design, manufacture, supply, delivery, erection, installation, testing on site, commissioning and maintaining of the mechanical equipment specified under this Contract. The complete installation shall comply with this Specification.

PM 1.2 Should there be any discrepancy between this specification and the Project Specification PSPM: Mechanical Equipment, the requirements of the latter shall prevail.

PM 2 GENERAL REQUIREMENTS

PM 2.1 Bid information and Requirements

In addition to the technical particulars to be submitted by the Bidder as specified in the Project Specification PSPM : Mechanical Equipment, the Bidder shall submit with his Bid particulars, such as outline drawings, relevant technical leaflets and brochures of all equipment offered, results of any tests on similar equipment, reference to and information on similar equipment supplied and installed by the Bidder which have been proved satisfactory by actual use and operation, supplementary specifications and other technical information as are necessary to fully illustrate and describe the equipment offered, so that a proper assessment can be made of the equipment included in the Bid.

The Bidder shall also include with his Bid, full details with regard to electrical wiring, diagrams, electrical cabling and inter-connections between all electrical components to be supplied and erected under this Contract and electrical requirements of all motors, switchgear, cabling and other items to be provided by others.

PM 2.2 DETAIL DESIGN, PLANNING AND DRAWING

PM 2.2.1 Detail Design and Planning

After the award of Bid, the Contractor shall be fully responsible for the detail design and drawing of all the equipment under this contract. The Contractor shall also be responsible for the programming and planning of the design, manufacturing, delivery, erecting, installation, testing and commissioning of all equipment under this contract.

PM 2.2.2 Programme and Progress

A detail Contract programme shall be submitted by the Contractor to the Engineer, for his approval, within 14 days after the Contractor has been notified in writing of the acceptance of his Bid. The programme shall list each scheduled equipment item and indicate periods and deadlines for:

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- The Contractor shall allocate to a senior member of his staff, the responsibility to monitor and evaluate the progress of the Works in relation to the approved programme, to devise methods to overcome or prevent delay and to co-operate with the Engineer. He shall report to the Engineer and draw his attention timeously to anything which may cause any delay in the execution of the Works.

The approval of drawings by the Engineer, as specified above, shall not relieve the Contractor of any responsibility in terms of the Contract.

Witness 2

The Contractor shall be responsible for any discrepancies, errors or omissions in the drawings and other particulars supplied by him, whether such drawings and/or particulars have been approved by the Engineer or not, provided that such discrepancies, errors or omissions are not due to inaccurate information or particulars furnished in writing to the Contractor by the Engineer.

(b) As-built Drawings

Upon completion of the erection and installation, the Contractor shall supply one set of reproducible drawings, detailing the equipment as erected and installed, including complete parts lists.

The cost of drawings, calculations, reproductions, etc., as set out in this clause shall, be deemed to be included in the Contract Price under the item Detail Design, Planning and Drawings in the Schedule of Quantities.

PM 2.3 MANUFACTURE, SUPPLY AND DELIVERY ON SITE AT POINT OF INSTALLATION

PM 2.3.1 Inspection and Testing at the place of manufacture and supply

The quality of materials, workmanship and performance of all items of equipment shall be thoroughly tested at the place of manufacture and supply, test certificates, in triplicate in the ruling language shall be submitted to the Engineer, prior to the shipment, railing or transport of the equipment concerned.

The Contractor shall give reasonable notice in writing of the time and place of tests to enable the Engineer to inspect and witness tests of materials and equipment.

The acceptance by the Engineer of any plant item, following such inspection and tests at the place of manufacture and supply, shall not relieve the Contractor of any obligations under this Contract.

All costs of such tests and inspections and the necessary testing facilities, shall be deemed to be included in the Contract Price under the item Manufacture, Supply and Delivery on Site in the Schedule of Quantities.

PM 2.3.2 Storage

Equipment and materials to be supplied under the Contract, shall, on completion of fabrication, be stored at the Contractor's factory, store or yard until it is required for incorporation in the works. The Contractor shall ensure that the items are fully protected from the weather and damage of any kind. The cost of repair of any damage shall be for the Contractor's account.

PM 2.3.3 Loading, Transport and off-loading

The loading, transport to, and off-loading at the Site of all equipment and materials supplied by him, shall be the responsibility of the Contractor.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Items shall be handled with proper care at all times. Sufficient labour and equipment shall be on hand before loading and unloading is commenced. Under no circumstances shall items be dropped from vehicles, large or heavy items shall be lifted or lowered only by means of suitable hoisting equipment. Loading or unloading shall be carried out under proper supervision. Ropes, chains, slings, etc. shall be attached at the correct lifting points and care shall be taken to ensure that no damage is caused by them.

During transport, all materials shall be properly placed in the vehicle to prevent undue movement and coverings, padded supports, packing or damage shall be provided as necessary to prevent damage from either the weather or the motion of the vehicle. All packing materials shall remain the property of the Contractor and shall be removed from the site by him.

Breakage, damage or loss in transporting, handling, etc. shall be for the account of the Contractor.

An item shall be off-loaded at a locality and on a date and time arranged with the Engineer.

All costs in connection with loading transport and off-loading of the equipment shall be deemed to be included in the contract price for Manufacture, Supply and Delivery on Site in the Schedule of Quantities.

PM 2.4 ERECTION, INSTALLATION, SITE TESTING AND COMMISSIONING

PM 2.4.1 Erection and Installation

The Contractor shall supply everything required for erecting, installation and handling on Site of the mechanical equipment. The Contractor shall supply everything required for the protection of persons on the Site, the equipment and materials supplied and the civil works during the period of erection and installation.

All equipment shall be erected by or under the direction of experienced and competent fitters. It shall be accurately placed and shall be true to line and level.

Drift pins, jacking equipment and the like, shall not be used to bring improperly fabricated pipework and mechanical equipment items into place. A moderate degree of cutting and reaming may be employed to correct minor misfits only if, in the opinion of the Engineer, this will not be detrimental to the appearance or strength of the installation. Burning of holes will not be permitted without the written approval of the Engineer.

Pipework shall, before installation, be checked to ensure that it is in good order and condition and each item shall be thoroughly cleaned inside and outside. Any pipes showing cracks, blowholes, broken flanges or other defects shall be set aside and the Engineer called upon to determine whether they are to be repaired or replaced, all at the Contractor's expense.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

The fitting of all pipe-work shall be carried out by skilled and experienced pipe-layers. Pipes shall be fixed accurately to line and level, and vertical pipes shall be truly plumb. Rubber joint rungs shall be placed without distortion and pipes drawn together without straining. No flange bolts shall be omitted, and all shall be fully tightened.

On completion of erection, the Contractor shall paint or repaint all parts of the equipment, steelwork, pipe-work, etc. on the Site. The colours used shall be as specified by the Engineer. The work shall be executed in accordance with this Specification.

All paintwork shall be neatly finished off, free from defects and to the satisfaction of the Engineer, or it shall be made good or removed and repainted, as required. Care shall be taken to protect other parts of the plant and structure from spillage, drips, etc. and on completion all paint marks, spots and the like on other surfaces shall be carefully removed.

On completion of erection and installation, the Site shall be cleaned of all surplus material and debris and left in a clean and tidy condition.

PM 2.4.2 Testing on Site

At completion of erection and installation of all mechanical equipment and before commissioning of the plant, all components of mechanical installation, included in this Contract will be subjected to testing in the presence of the Engineer and to his satisfaction. All cost of such testing as outlined below and specified in the Project Specification PSPM:

Mechanical Equipment shall be deemed to be included into the Contract Price.

The Contractor shall give reasonable notice in writing of the time of testing to enable the Engineer to inspect and witness tests of materials and equipment.

The Contractor shall, at his own cost, render all assistance and supply all labour, appliances and any other materials, including power, water and chemicals, as the Engineer may require, to check the setting out, to measure, inspect and test any portions of the Works at any stage during construction, erection, installation or painting. During such operations, the Contractor shall, if required by the Engineer, suspend any or all of the Works without having a claim for loss or damage, as a result thereof.

At the commencement of and during the whole of the testing, the Contractor shall have available on Site all essential spares and tools considered necessary to enable repair of defective parts to be carried out immediately in the event of a breakdown. The Contractor shall be responsible for the proper operation and maintenance of the plant throughout the period of the testing. Acceptance by the Engineer of any plant item, following such inspection or tests, shall not relieve the Contractor of any obligations under this Contract.

The test on Site after completion of the erection and installation of the equipment shall include the following:

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- (a) All electrical and electronic equipment and installations shall be tested for correct connection, installation, insulation, losses, output, earthing and overheating, whichever may be applicable for the part of installation to be tested.
- (b) All electrical and electronic equipment and installations shall be subjected to a complete operational test to check the correct operation thereof in terms of the operational requirements specified in the Project Specification PSPM: Mechanical Equipment.
- (c) All mechanical equipment and installations shall be tested for correct positioning, alignment, fixing and all such items which may affect the satisfactory operation thereof.
- (d) All mechanical equipment and installations shall be subjected to a complete operational test to check the correct operational requirements specified in the Project Specification PSPM: Mechanical Equipment.
- (e) Complete operational tests of hydraulic equipment shall include for effective, efficient and adequate performance of each component individually and in concert according to the operation requirements specified.

PM 2.4.3 Commissioning

At the completion of all work in the plant and after the successful testing of all civil, electrical and mechanical work, the complete plant shall be commissioned. The Contractor will be responsible for the commissioning of all equipment supplied, erected and installed by him at a time arranged by the Engineer to enable the plant as a whole to be put into operation.

It is unlikely that the scheduling for the commissioning of the plant will follow directly after the completion of the erection and installation phase. The Contractor shall, therefore, allow for the return to site for commissioning, as well as the adequate protection for equipment in the interim period between erection and installation and commissioning shall be deemed to be included into the Contract Price.

The Contractor shall, at his own cost, render all assistance and supply all labour, appliances and any other materials, excluding power, water and chemicals, such as may be required during commissioning. Power, water and chemicals required during the commissioning period will be supplied by the Employer.

At the commencement of and during the commissioning period, the Contractor shall have available on Site, all essential spares and tools considered necessary to enable repairs of defective parts or be carried out immediately in the event of a breakdown.

On completion of the commissioning of equipment, the plant shall be put into normal operation, and the final adjustments of the equipment shall be made. Thereafter, the Tests on Completion shall be carried out in the presence of the Engineer to ensure that the plant will fulfil the functions for which it has been supplied.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Such Tests on Completion shall include the following:

- (a) Simulated tests for all alarm and safety cut-out equipment to prove the operation of the equipment.
- (b) Simulated tests on automatic controls to prove the ability of the controls to rectify conditions which are outside the required design conditions. The test shall be carried out by manually changing the desired values to produce an incorrect condition and then re-setting the controls to the design conditions and checking the operation of valves, etc. to restore the design conditions.
- (c) Operational tests on the plant to demonstrate that it is giving the rated output and efficiency.
- (d) After the plant as a whole has been put into a condition of smooth operation, the Contractor shall operate the plant for a further 36-hour continuous test run.

The Contractor shall provide all necessary temporary measuring and recording equipment. The equipment shall be of a type generally used for this type of testing and shall be approved by the Engineer. All instruments shall be accurately calibrated before the tests commence.

On completion of the commissioning of all the mechanical equipment and provided the Contractor is satisfied that the entire plant is operating satisfactorily and will fulfil the function for which it has been supplied, he shall submit to the Engineer duplicate copies on all the tests called for in the Specifications. The Engineer shall reserve the right to ask for any reasonable additional tests in order to prove that the operation of the plant is satisfactorily and in accordance with the Specifications and Drawings.

During the commissioning and 36-hour test run, the Contractor shall train and instruct the personnel as appointed by the Employer as plant supervisors in the correct working and operation of the equipment supplied by him. The Contractor shall, however, be responsible for the proper operation and maintenance of the plant throughout the period of the testing.

The Engineer will only issue a Completion Certificate after all aspects of the commissioning procedures have been complied with to his satisfaction.

PM 2.4.4 Operating and Maintenance Manuals

The Contractor shall provide complete and adequate Operating and Maintenance Manuals in duplicate. The manuals shall be made up in book form with loose pages and shall include

drawings, diagrams and cross-sectional drawings specially prepared and coloured in and marked to indicate relevant details.

The Operating and Maintenance Manuals shall be compiled in an orderly and logical manner following, as far as possible, the sequence below and containing at least the information indicated.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PM 2.6 Measurement and Payment

PM 3 GENERAL REQUIREMENTS FOR MANUFACTURING, SUPPLY, ERECTION AND INSTALLATION

PM 3.1.1 Unit of Measurements

PM 3.1.2 Applicable Standards and Regulations

- (a) The Machinery and Occupational Safety Act (Act No 6 of 1983 of the Republic of South Africa).
- (b) The SABS Code of Practice 0142-1973 for the Wiring of Premises.
- (c) The standards and regulations of the Post Office, the electricity supply authority and/or the relevant Municipality, Government Department or public authority, as applicable.
- (e) The General Specification for Manufacturing, Erection and installation of Mechanical Equipment in Pump Stations and Water and Waste-water treatment plants, as compiled by the Engineer. The relevant sections of this document applicable to this contract are bound in with this document as Particular Specifications.

PM 3.1.3 Arrangements with Supply Authorities

The Contractor shall be responsible to arrange with the relevant supply authorities, with regards to inspection of the installation and he shall supply all labour and equipment, at his cost, as required to conduct such inspections in accordance with the requirements of those authorities.

The Contractor shall supply and erect all notices and warnings signs in accordance with the applicable laws and regulations of the relevant authorities and as specified in the Contract Document.

PM 3.1.4 Payment of Fees and Duties.

The Contractor shall be responsible for the payment of all fees and duties required by law or the regulations of relevant supplier authorities, with regard to

Witness 2

PM 3.2 QUALITY REQUIREMENTS

Belts, bolts, nuts and other devices for clamping and fixing of renewable parts and stainless-steel parts shall be made of stainless steel. Corrosion-resisting

Witness 2

steel shall be used for all bolts and nuts when either or both are subject to contact with water and/or frequent adjustment or removal, and for bolts projecting from concrete with nuts subject to removal. Split pins or other approved locking devices shall be provided by the Contractor for nuts which may come loose after erection and during operation of the equipment. All grease nipples shall be of the hexagonal hook-on type and shall, where necessary, be fitted with adaptors or bushings. A grease gun, for each appropriate type of grease to be used shall be provided by the Contractor.

PM 3.2.2 Equipment and material to be complete

The equipment and materials to be supplied by the Contractor shall be complete in respect of all parts, fixing bolts, anchorages, controls and all other items so as to ensure a complete adequate and satisfactory permanent installation at the site, as well as the operation and maintenance thereof, even though some such parts may not be listed specifically or separately in the Specifications, Drawings or Schedule of Quantities.

PM 3.2.3 Numbering and Marking of Materials, Equipment and Parts

All items of the equipment, parts and materials to be supplied under this Contract shall be clearly numbered and marked to ensure the correct assembling and erection thereof on Site.

PM 3.3 Spares and Tools

The Bidder shall submit with his Bid a complete list with prices of all the essential spares to be kept ready at the site to ensure continuity of operation and satisfactory maintenance of the equipment. These spares shall be supplied as part of the Contract and the prices quoted shall include for packing, for permanent storage and for protecting the spares against corrosion and damage. Larger spares may be packed individually or by grouping in adequately strong boxes with labels indicating the contents thereof for bulk storage, but smaller spares shall preferably be stored in suitable steel cabinets, provided by the Contractor, which are protected against corrosion, and fitted with locks.

PM 3.3.1 Inter changeability of parts

The interchange ability of original and spare parts shall be ensured by manufacturing all parts which may require renewal or replacement to template, gauge or jig.

All records and patterns of parts which may require repair, or replacement shall be retained by the Contractor for a period of at least five (5) years free of extra cost to the Employer.

PM 3.3.2 Tools, lifting devices and similar equipment

The Contractor shall supply a complete set of hardened spanners and tools and other implements necessary for the maintenance and adjustment of the equipment supplied under the Contract and the Bidder shall submit with his Bid

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

a complete list thereof together with prices. The spanners and tools shall be mounted in suitable steel cabinets which are protected against corrosion and fitted with locks, the position of the various spanners and tools shall be clearly marked.

PM 3.3.3 Supply on site of spare parts and special tools

Spare parts and special tools shall be supplied on the site after successful testing and before commissioning of the mechanical equipment on site, and the tools or spare-part cabinets shall be installed in positions indicated by the Engineer. The special tools are defined as tools required for normal maintenance, but do not form part of the contents of a normal tool box.

The Contractor shall also be responsible for the training of operation and maintenance personnel in the use of special tools if such tools are provided by him.

The costs for the installation of tools and spare part cabinets, as well as the training of operational and maintenance personnel shall be deemed to be included in the items for the supply of tools and spare parts.

PM 3.4 Site Work by the Contractor

All site work necessary for the complete and satisfactory erection and operation of all mechanical and electrical equipment shall be executed by the Contractor and shall be deemed to be included in the Contract Price. The Contractor shall be responsible for the delivery and storage of equipment on site and for handling and transporting thereof to positions of permanent erection or storage. The Contractor shall provide all the necessary plant and appliances for the erection of the equipment, and he shall be responsible for the safety and adequacy of such erection plant and appliances.

PM 3.4.1 Holding down bolts

Pockets and recesses will be left by the Civil Engineering Contractor. The Contractor shall be responsible for the provision of, alignment, grouting in and tightening up all holding down bolts.

PM 3.4.2 Pipes and other equipment through walls of structure

Holes and recesses will be left by the Civil Engineering Contractor in brick walls, floors and concrete structures to accommodate items of equipment to be built in.

The Contractor shall be responsible for the positioning, alignment, anchoring, levelling and fixing of equipment to be built in, where-after grouting and making good will be carried out by the Civil Engineering Contractor.

PM 3.4.3 Excavation and backfill

Excavation, backfill and compaction work required in connection with the installation of mechanical and electrical equipment shall be carried out by the Contractor.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C3.5.4 PARTICULAR SPECIFICATIONS

PMC PROTECTIVE COATING SYSTEMS FOR MECHANICAL EQUIPMENT AND PIPE INSTALLATIONS IN WATER AND WASTE WATER TREATMENT PLANTS

PMC 1 SCOPE

This specification covers the coating systems for corrosion protection of mechanical equipment and pipe installations in pump stations and in water and waste-water treatment plants.

The specification covers coatings for equipment or elements of equipment operating below or above water including steel pipe sections.

PMC 2 DEFINITIONS

For the purpose of this specification the following definitions shall apply:

- Coat: A single layer of corrosion protection material;
- Coating system: The method and degree of surface preparation, the type of coating, the number of coats and their thickness, the method of application of the coats and the requirements of the completed system.

PMC 3 MATERIALS

PMC 3.1 General

The coating systems described in this specification is based on an epoxy generic and “chalking” of areas exposed to sunlight can be anticipated. For this reason, ultra-violet light resistant polyurethane enamel is prescribed as a finishing coat for such areas.

Product names are quoted in this specification, but approved equivalent products may be used.

PMC 3.2 Primers

Primers are not specified for the specified three coating systems approved by the Engineer; it shall be applied in accordance with the suppliers specifications.

PMC 3.3 Intermediate Coats

Intermediate and final coats are specified in paragraph PMC4.3 below.

PMC 4 APPLICATION

PMC 4.1 Surface Preparation

The steel surfaces to be coated shall have all projections, sharp edges, laminations and tool marks removed to provide a smooth surface. All oil and grease shall be removed using solvent or alkali cleaners. Blast cleaning media and air used for blowing out dust and debris shall be free from oil and grease.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Sharp tools shall not be used for hand cleaning and where possible, abrasive pads shall be used. Wire brushes shall not be allowed for final surface cleaning and burnished or polished finishes will not be allowed. The acceptance standard for hand and power tool cleaning shall be in accordance with Swedish Standard SIS 05 59 00 ST3.

No coating shall be applied during frost, mist rain or when there is a likelihood of such weather condition occurring before the coating will have had time to dry or cure. No coating shall be applied on metal surfaces less than 2° above dew point or when humidity in the in the immediate vicinity is greater than 85%. Two pack catalysed coatings shall not be applied when the ambient temperature is below 10° or above 40° unless otherwise recommended in writing by the coating manufacturer.

Witness 2

PMC 4.3 COATING SYSTEMS

PMC 4.3.2 COATING SYSTEM SELECTION

Where there is a differentiation between submerged and non-submerged areas on the same element of item, the non-submerged area shall receive the treatment as specified for submerged areas.

PMC 4.3.3 COATING SYSTEMS ON PROPRIETARY EQUIPMENT

The coating systems on proprietary equipment differing from the coating systems specified above will be subject to the Engineer's approval. Where such coating system is regarded as inadequate, a specially designed over coating system may be required.

PMC 4.4 REMEDIAL PROCEDURES

PMC 4.4.1 General

Completed or partly completed coating systems which are damaged or show any defects, shall be thoroughly examined, and all such defective areas shall be rectified and fully restored to its original condition.

PMC 4.4.2 Coating damage not exposing steel surface

The damage areas not exposing the steel surface shall be washed down with a water emulsifiable or water rinse-able solution, (Plascon Aquasolve Degreaser or equivalent) to remove all contamination, followed by copious rinsing, using clean fresh water and allowed to dry before re-coating the damaged area to the original condition.

PMC 4.4.3 Coating damage exposing steel surface

The damaged area shall be thoroughly cleaned using mechanical or hand wire-brushes and/or abrasive paper to remove all loose paint and foreign matter to achieve a bright metal surface. The sound coating adjacent to the damaged area

Witness 2

shall be feathered back to firm paint for a minimum distance of 25 mm using abrasive paper.

The feathered-back existing coating shall be solvent-wiped with epoxy thinners (Plascon product code EPT, or equivalent) before re-coating the damaged area with the coating system specified for the particular element or item.

PMC 4.4.4 Inadequate coating thickness

When the dry film thickness is less than the thickness specified, extra material shall be applied. The surface shall be thoroughly cleaned using mechanical or hand wire-brushes and/or abrasive paper prior to the application of the extra material.

PMC 4.4.5 Repair of pinholes

If pinholes are few and local, the area shall be rubbed down with abrasive paper and an additional coat or coats shall be applied by brush.

If the affected areas are extensive, the coating of the areas shall be removed and re-coated at the contractor's expense.

PMC 5 TESTING

The continuity of all coatings or immersed equipment shall be tested for pinholes with a high voltage spark test. The pinhole detection equipment shall be calibrated against a coated steel panel to provide minimum 5 V per micron of average film thickness. The test equipment shall be a low-pulse direct-current detector of an approved type. The equipment manufacturer's recommended and approved procedure for the calibration and use of the equipment shall be followed.

PMC 6 MEASUREMENT AND PAYMENT

No additional payment will be made for the specified protective coating systems as the coating forms part of the mechanical equipment and pipe installations specified for this contract. Equipment with non-approved coating systems will be regarded as not conforming to the specifications.

RESILIENT SEAL GATE VALVES

PRSV 1 GENERAL REQUIREMENTS

All Resilient Seal Gate Valves shall be capable of being opened or shut in an emergency under an unbalanced pressure equal to 100% of the specified test pressure and shall be designed to seal drop tight from 0 – 100% of the designed test pressure.

All pressure components (Body, Bonnet, Seals etc.) will be legibly marked in a permanent way. Design and manufacture must take place under a Certified Quality System in accordance with ISO 9001 requirements.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PRSV 2 MATERIAL & DESIGN SPECIFICATIONS

PRSV 2.1 Body and Bonnet

The valves shall be available in flanged, plain ended and socketed connections and the casting from ductile iron ggg-50 to din 1693.

PRSV 2.2 Wedge:

- 1) The wedge shall be ductile iron (ggg-50)
- 2) The wedge shall be fully encapsulated in EDK 70 (EPDM) rubber internally and externally.
- 3) The valve shall have a tongue and groove guide system, with the groove component located in the wedge. The groove shall be fitted with plastic shoe.
- 4) The wedge rubber shall have a shore hardness of seventy (70) and the rubber shall be a minimum of five millimeters (5mm) thick throughout.
- 5) The wedge shall be clearly and permanently marked to indicate date of manufacture and rubber material used.
- 6) The wedge shall have a drain hole with a diameter no less than 125% of the spindle diameter

PRSV 2.3 Wedge Nut

Must be of the “Fixed” type, press fit into the wedge, allowing no movement and manufactured from dezincification resistant high tensile navy brass.

PRSV 2.4 Guides

The wedge shall be supported by a tongue and groove guide system; the tongue component being located in the side of the valve body. No metal-to-metal contact between gate and guides will be accepted.

PRSV 2.5 Rubber

- 1) All rubber shall be ozone stabilized and UV-Resistant.
- 2) All rubber shall be approved water works

PRSV 2.6 Stem

Spindle shall be Cold Rolled stainless steel, DIN x 20 CR 13

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PRSV 2.7 Stem Sealing

- 1) The primary seal shall be a NBR rubber hydraulic seal (manchette type), and the secondary seal at least two NBR O Rings on the inside and two on the outside of a nylon bush. The stem sealing arrangement shall include a UV resistant wiper ring to prevent the ingress of dirt from the outside.
- 2) The entire sealing arrangement shall be factory fitted and be maintenance free.

PRSV 2.8 Thrust collar

The valve shall have a Thrust Collar of Dezincification Resistant Brass C132 to BS 2874.

Bonnet Bolts: Bonnet Bolts shall be entirely sunk into the body casting, sealed and protected by reusable hot wax melt. Bolts to be grade 8.8 high tensile steel, zinc coated.

PRSV 2.9 Bonnet Gasket

The valve shall have a preformed NBR rubber gasket, O-ring type, set in a recess between the Bonnet and Body. The gasket must encircle each bonnet bolt.

PRSV 3 Coating

The valve shall be fusion bonded epoxy coated to DIN 30677 – internally and externally, prior to assembly.

The coating shall have an average thickness of 250 microns. Manufacturer will have a total corrosion protection plan for their product which will include:

- Grit blasting prior to coating
- Records of coating conditions for every batch
- Full traceability of products used
- Final dry film thickness tests
- Cross cut and impact resistance test results will be available for every batch.

PRSV 4 Hydraulic Tests

Every valve shall be tested (no batch testing allowed) prior to shipping.

Body test: 1.5 x nominal pressure rating.

Seat test: 1.1 x nominal pressure rating.

PRSV 5 Approvals

The valve shall be SABS 664 Approved and carry the SABS mark. The manufacturer shall have The SABS 3000 cycle test done and have a Test Certificate to verify that their product passed the test.

PRSV 6 Warranty

The valve shall be backed by a written fifteen (15) year replacement warranty when used under normal working conditions.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

OPEN CHANNEL FLOW METER

PFM 1.1 General Description

The flow meter will consist of a transducer (in open channel channel) that transmits information to a controller (mounted to wall).

PFM 1.2 Function

- The transducer as well as controller will perform the following functions:
- The transducer will measure the height of the flow inside the channel located at the Chlorination contact channels
 - The controller will convert transmission to a digital interface to produce a flow meter reading

PFM 1.3 Manufacture Specifications

Transducer	Range = 6 metres Cable = 5 metres Inc Bracke7 in 304 SS / 150 mm reach
Controller	Supply = 110/220 V AC OR 11-28 V DC Output = 4-20mA Relays = 2 x programmable

PFM 1.4 Guarantee against flow meter failure

A guarantee will be granted for a period of 2 years from the date of delivery that it will either exchange or repair any part of this product

PFM2 NON-INVASIVE FLOW METER

PFM 2.1 General Description

The flow meter is non-invasive and attached to a pipe as it fires ultrasounds through the pipe. A controller is mounted against the wall.

PFM 2.2 Function

- The pipe mounted transducer as well as controller will perform the following functions:
- The transducer mounted onto the pipe will transmit ultrasound information to the controller based on the flow inside the pipe
 - Information is converted and displayed on a wall mounted controller

PFM 2.3 Manufacture Specifications

Outside dimensions	120 x 65 x 65 mm
Weight	Nominal 1.5 kg

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Cable entry detail	1 cable entry M20 x 1.5mm gland
Signal processing	RSSA (Refractive Spread Spectrum Analysis)
Analogue output	4-20 mA into a 1k Ω load (when supply voltage is 22 VDC or greater) with 20 μ A resolution and user programmable span.
Digital output	Full Duplex RS232 to PC software, Half Duplex RS485 to PC software, Half Duplex RS485 with Modbus RTU
Power Supply	18 - 28V DC
Power Consumption	2.4W @ 24V typical, 3W @24V maximum

PFM 2.4 Guarantee against flow meter failure

A guarantee will be granted for a period of 2 years from the date of delivery that it will either exchange or repair any part of this product

PMU MIXER UNIT

PMU 1	General Description

The Mixer unit consists of a planetary in line gearbox coupled to a 3 kW electric motor. The mixer unit to be installed and utilized in the Biological Nutrient Removal (BNR) basin.

PMU 2	Function

The mixer unit will perform the following functions:

- The motor will utilize electrical inputs to drive the coupled gearbox
- The gearbox will transmit mechanical rotation to output shaft which consists of blades
- The rotating blades mixes and stirs the water preventing settling to take place

PMU 3 Manufacture Specifications

Electrical motor	3 kW -4P-380V motor
Gearbox	Helical drive gearbox
	Flange mounted output shaft – h6 x 120mm
	Flange – 350 x 300 x 250mm

PMU 4 Guarantee Against mixer motor and gearbox failure

A one-year guarantee will be provided for an electrical or mechanical fault on the unit that is considered to be the responsibility of the supplier

Contractor
 Witness 1
 Witness 2
 Employer
 Witness 1
 Witness 2

PAU

AERATOR UNIT

PAU 1

General Description

The Aerator unit consist of a parallel shaft gearbox coupled to a 30-kW electric motor. The aerator unit to be installed and utilized in the Biological Nutrient Removal (BNR) basin

PAU 2

Function

The aerator unit will perform the following functions:

- The motor will utilize electrical inputs to drive the coupled gearbox
- The gearbox will transmit mechanical rotation to output shaft which consists of blades
- The rotating blades being half submerged will create great disturbances in the water allowing air to dissolve in the water

PAU 3

Manufacture Specifications

Electrical motor	30 kW -4P-380V motor
Gearbox	parallel shaft – 90 3 25.4 LP LR GR 225 V5
	MDP F550L
	Flange – 350 x 300 x 250mm

PAU 4

Guarantee against aerator motors or gearboxes failures

A one-year guarantee will be provided for an electrical or mechanical fault on the unit that is considered to be the responsibility of the supplier

PAPU

AXIALPUMP UNIT

PAPU 1

General Description

The Axial flow pumps consist of a motor that drives a helical shaft in order to displace water in a vertical direction

PAPU 2

Function

The axial flow pump will perform the following functions:

PAPU 3 Manufacture Specifications

Electrical motor	7.5kW 4P 380v B3 electric motor, V-drive and guard
Rotor	All wetted parts S20 ceramic epoxy coated 250mm

PSGV SLUICE GATE VALVE

PSGV 1 General Description

The sluice gate valve contained within the BNR must consist of a DN 150 (150 mm) diameter.

PSGV 2 Function

- The valve will perform the following functions:
- Open or close valve to control sludge withdrawal from the BNR

PSGV 3 Manufacture Specifications

Size	DN150, PN 6 (150 mm)
Seal	J-type
Spindle	Stainless steel
Hand wheel	SG Iron (cast); Mild steel (fabricated)
Gates and frames	Stainless steel

PCDU CLARIFIER DRIVE UNIT

PCDU 1 General Description

The drive unit must consist of a double reduction gearbox which propels the bridge to rotate. The gearbox will be supplied by a 1.1 kW motor

PCDU 2 Function

- The drive unit will perform the following functions:
- Drive the bridge to rotate

PCDU 3 Manufacture Specifications

Motor	0.55 kW 4 pole 380V B5
Gearbox	double reduction gearbox

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PESP1 3” END SUCTION PUMP

PESP 1.1 General Description

The end suction pump sets (self-priming pumps) must be able to convey sewerage and handle solids. The pump sets must have a dual bearing and mechanical seal protection, light weight inspection back cover, eradicator ware plate. The pump sets, consisting of a 3-kW motor, must be mounted on a mild steel fabricated and galvanized base frame with v-drive and fiberglass guard.

PESP 1.2 Function

The pump sets will perform the following functions:

- Convey wastewater from one treatment module to the next
- The unit must be able to handle solids (sludge, plastics, rocks, etc.)

PESP 1.3 Manufacture Specifications

Type	3” self-priming centrifugal pump
Electrical motor 1	3 kW 4P 380v B3 IP66
RSV gate valve	4” DN100 PN16 flanged
NRV valve	4” DN100 PN16 ball type flanged

PESP 1.4 Guarantee Against Leakage

Pump sets to have a 5-year warranty for fabrication faults

PESP2 6” END SUCTION PUMP

PESP 1.1 General Description

The end suction pump sets (self-priming pumps) must be able to convey sewerage and handle solids. The pump sets must have a dual bearing and mechanical seal protection, light weight inspection back cover, eradicator ware plate. The pump sets, consisting of 15 kW motors, must be mounted on a mild steel fabricated and galvanized base frame with v-drive and fiberglass guard.

PESP 1.2 Function

The pump sets will perform the following functions:

- Convey wastewater from one treatment module to the next
- The unit must be able to handle solids (sludge, plastics, rocks, etc.)

PESP 1.3 Manufacture Specifications

Type	6” self-priming centrifugal pump
Electrical motor 2	15 kW 4P 380v B3 IP66
RSV gate valve	6” DN100 PN16 flanged
NRV valve	6” DN100 PN16 ball type flanged

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PESP3 Gorman-Rupp VA6 EchoStorm™ Venturi Aeration System

PESP 3.1 General Description

The Gorman-Rupp VA6 EchoStorm™ is a static venturi aeration device designed for integration with Gorman-Rupp centrifugal pump systems. Installed in-line on the discharge side of the pump, the EchoStorm introduces dissolved oxygen into wastewater streams using the Venturi Effect, which draws in and disperses ambient air into the liquid. The unit is designed with no moving parts, ensuring high reliability and minimal maintenance requirements. It shall be capable of handling municipal, industrial, and agricultural wastewater applications, including wet well influent aeration, lagoon aeration, oxidation ditch aeration, effluent polishing, odor and corrosion control, sludge digestion, and algae control. The VA6 model (6" / 150 mm) is rated for flow ranges of 800–1 300 GPM (3 028–4 921 lpm), at operating pressures between 14–30 psi (0.96–2.07 bar), with a maximum available oxygen transfer capacity of 857 lbs/day (389.5 kg/day).

PESP 3.2 Function

The unitl perform the following functions:

- Oxygenation of wastewater: Dissolved oxygen is introduced to support aerobic biological activity, reduce odors, and minimize corrosion.
- Reduction of organic solids: The Venturi Effect disperses and reduces the size of organic solids, accelerating aerobic digestion.
- Degassing of wastewater: Confined gas bubbles are released, separating solids, gases, and grease to enhance primary clarifier performance and effluent quality.
- Operational flexibility: The unit may be installed in multiple configurations, including flooded suction, submerged discharge, or surface discharge, to suit site-specific requirements.
-

PESP 3.4 Guarantee Against Leakage

Unit to have a 5-year warranty for fabrication faults

PCDS CHLORINE DISINFECTION SYSTEM

PCDS 1 General Description

A disinfection unit that is low tech and sustainable. Utilizes calcium hypochlorite chlorine chips as disinfection consumable

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PCDS 2 Function

The chlorine unit will perform the following functions:

- The unit will be installed at the contact channels before treated water is discharged into the water course
- The unit will dose treated water with chlorine in order to disinfect microbiological elements in the water

PCDS 3 Manufacture Specifications

Refill load	100 kg
Theoretical capacity	40 ML at 1ppm
Operation	Automated, semi-automated and manual
Disinfectant	Calcium hypochlorite chlorine chips

PCDS 4 Guarantee for chlorine unit

Unit will not be installed by supplier. A guarantee of 6 3 months will be granted only if it can be determined that unit was faulty

PDWP DE-WATERING PUMP

PDWP 1 General Description

The de-watering pump must be suitable to pump sewerage and consist which will be installed inside the pumping stations

PDWP 2 Function

The de-watering pump will perform the following functions:

- The pump will be installed in a small sump that collects overflow or spilled water in the pumping station
- The pump must be able to pump water to the outside sump

PDWP 3 Manufacture Specifications

Power	0.55 kW/ 0.75 HP
Max flow	15 m³/h
Max head	10 m
Pipe diameter	2 inches

PDWP 4 Guarantee for de-watering pump unit

The unit must have a guarantee of one year which will exclude wear-and tear of unit.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

Section C3.6
Occupational Health and Safety

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C3.6 HEALTH AND SAFETY

Specification AO

1. INTERPRETATIONS

Occupational Health and Safety Act, Act 85 of 1993 shall apply to this Contract. The Construction Regulations promulgated on 07 February 2014 and incorporated into the said Act by Government Notice R. 84, published in Government Gazette 37305 apply to any person involved in construction work. These regulations are hereinafter referred to as “the Construction Regulations” and the said Act as “the Act”.

Construction work is defined as:

“Any work in connection with: -

- a) the erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure;
- b) the installation, erection, dismantling of or maintenance of a fixed plant where such work includes the risk of a person falling;
- c) the construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure; or
- d) the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work”.

As per the Construction Regulation 4 the employer is responsible to prepare this Health and Safety Specification for the required construction work.

Provision for the cost of Health and Safety on site is made in the Schedule of Quantities

2. GENERAL

The Contractor shall ensure that all employees and visitors are informed, instructed and trained regarding safety conditions on site.

2.1 Proof of induction training to all workers shall be filed in the Health and Safety file on site. All employees shall sign the relevant induction training forms. The contents of the Induction training shall be displayed in the file. Each worker shall write a Safety Induction test to proof their understanding of the induction training done.

The Contractor shall ensure that all professionals entering the site are informed, instructed and trained regarding safety conditions on site. Proof of Professional site safety induction shall be signed by professionals and filed in the Health and Safety file on site.

The Contractor shall ensure that all visitors are informed, instructed and trained regarding safety conditions on site. Visitors have to sign the visitors register before entering the site. Hardhats shall be issued to visitors. No visitor shall enter the site without the appropriate safety shoes.

2.2 Should the Contractor at any stage in execution of the Works -

- a) fail to implement or maintain his health and safety plan;

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- 2.3 The Contractor shall provide proof of this registration and good standing with the Compensation Fund or with a licensed compensation insurer when submitting a BID. BIDs without this will be regarded as non-responsive. (Construction Regulation 4)
- 2.4 The Contractor shall, in submitting his BID, demonstrate that he has made provision for the cost of compliance with the specified health and safety requirements, the Act and the Construction Regulations. The Schedule of quantities for Health and Safety requirements in the BID document shall be completed in full. Each and every item shall be priced. No summations or grouping of items are allowed
- 2.5 The Contractor shall consistently demonstrate his competence and adequacy of resources to perform the duties imposed on the Contractor in terms of this Specification, the Act and the Construction Regulations.

c) Any acceptance, approval, check, certificate, consent, examination, inspection, instruction, notice, observation, proposal, request, test or similar act by either the Employer, any of his agents or the Engineer (including absence of disapproval) shall not relieve the Principal Contractor from any responsibility he has under the Contract, the Act and the Construction Regulations, including responsibility for errors, omissions, discrepancies and non-compliances.

Information herein addressed might affect the Health and Safety of employee's or persons carrying out the construction work as per this Bid document.

Section C3.6

The Contractor shall ensure that it is fully conversant with the requirements of this Specification.

This Specification is not intended to supersede the Act nor the Construction Regulations. Those sections of the Act and the Construction Regulations, which apply to the scope of work to be performed by the Contractor in terms of this Contract, continue to be a legal requirement of the Contractor.

The Principal Contractor will be appointed in writing to be in overall control of the Construction site.

- 4.2 A Health and Safety Plan must be submitted by the Principal Contractor to the Employer or the Employer's Agent containing all the relevant documentation as required by this specification and terms of the provisions of this Specification, the Act and the Construction Regulations. (Construction Regulation 4)

Health and Safety Plans must also be submitted by Sub Contractors to the Principal Contractor containing all the relevant documentation as required by this specification and terms of the provisions of this Specification, the Act and the Construction Regulations. (Construction Regulation 5)

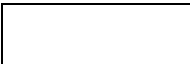
The H&S Plans shall be submitted before commencement of any work on site.

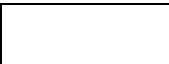
The H&S Plans must be approved by the Client and/or Employer's Agent. Any alterations required in the Plans shall be done before commencement of work.

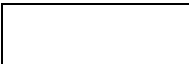
Should the scope of work changes during the construction period, alterations to the plans shall be done accordingly.

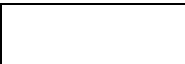
The H&S plan shall contain the following items where applicable:

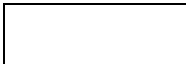
1. Description of contract
2. Construction site address / Building site address
3. Construction period
4. Name and details of employer –telephone, fax, address
5. Name and details of consultants –telephone, fax, address
6. Name and details of principal contractor–telephone, fax, address
7. Name and details of sub-contractors–telephone, fax, address
8. Company's policy towards health & safety
9. Company's policy towards drug and alcohol abuse
10. Company's policy towards disciplinary procedures
11. Company's policy towards environment.
12. Workmen compensation – number and expire date
13. Management and Supervision rules
14. Structure, Supervision of construction work and responsibilities
15. Health and Safety Officers/Representatives
16. Health and Safety Committees\
17. First Aid
18. Medical tests
19. Incident/ Accident reporting procedures

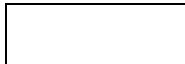

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

20. Emergency/evacuation procedures
21. Subcontractor agreements and requirements and super positioning
22. Material Safety Data Sheets
23. Transport of workers
24. Proposed PPE
25. Scope of works – describe type
26. Sequence and phases of the work to be performed describe stages involved in project
27. List of all equipment to be used on the specific site – tools, construction vehicles, mobile plant.
28. Company's approach toward hygienic facilities on the construction site (toilets, eating areas, drinking water, showers, refuge removal)
29. Company's approach towards other facilities as required by law (the transport act, the smoking act, PPE)
30. Local labour agreements, requirements, policies
31. Fire extinguishers and fire equipment
32. Oxygen, acetylene and LP gas cylinders
33. Welding, cutting, grinding and heating
34. Signs and symbols to be displayed on the specific site
35. Lock – out procedures
36. Public safety, hoarding and fencing
37. Risk assessment methods
38. Company's monitoring plan
39. Company's review plan.
40. Identification of risks and hazards
41. Appointments of personnel to be made (Safety reps, Supervisors, First Aiders, Fire equipment inspectors)
42. Registers to be completed by appointed employees (Checklists)
43. List of training material to be used for educational purposes of construction workers (Induction, Firefighting, First Aid, etc.)
44. List of safe work procedures to be explained to workers.
45. Company's Policy on

House Keeping
Stacking and storage on sites
Construction welfare facilities
Explosive power tools
Ladders
Welding flame cutting and soldering
Electrical installations and machinery
Boatswain chairs
Suspended platforms
Material hoists/ Builders hoist
Batch plants
Water Environments

46. List of Safe Work procedures, Method Statements and Safety plans to be used:

Contractor

Witness 1

Witness 2

Employer

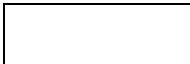
Witness 1

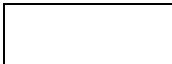
Witness 2

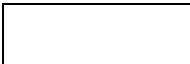
Fall protection plan
Tunnelling plan
Pile driving plan
Steel assembling and placing method statement
Emergency/evacuation plan
Demolition plan
Scaffold erection procedures
Erection of structural steel procedures
Electrical installations plan.
Excavation plan
Form work and support work plan
Material Hoist rules
Lifting machines and tackle rules
Rules on Construction vehicle and mobile plant procedures
Rules on mobile and tower cranes
Fire precautions on the construction site
Rules on Hazardous chemicals on the site, storage and use
Rules on storage and use of Flammable liquids and substances on site
Rules on compressed gas cylinders
Rules on hand tools
Rules on portable electrical equipment

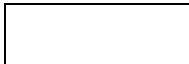
List of Risk Assessments

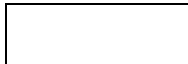
- ☐ Clearing and Grubbing of the area/site
- ☐ Site establishment including:
 - Office/s
 - Secure/safe storage for materials, plant and equipment
 - Ablutions
 - Sheltered eating area
 - Maintenance workshop
 - Vehicle access to the site
 - Dealing with existing structures
 - Location of existing services
 - Installation and maintenance of temporary construction electrical supply, lighting and equipment
 - Adjacent land uses/surrounding property exposures
 - Boundary and access control/public liability exposures (NB: the Employer is also responsible for the OH&S of non-employees affected by his work activities.)
 - Health risks arising from neighbouring as well as own activities and from the environment e.g. threats by dogs, bees, snakes, lightning etc.
 - Exposure to noise
 - Exposure to vibration
- ☐ Protection against dehydration and heat exhaustion

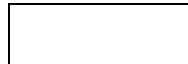

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

- ☐ Protection from wet and cold conditions
- ☐ Dealing with HIV/Aids and other diseases
- ☐ Use of portable electrical equipment including
 - Angle grinder
 - Electrical drilling machine
 - Skill saw
- ☐ Excavations including
 - Ground/soil conditions
 - Trenching
 - Shoring
 - Drainage of trench
- ☐ Welding including
 - Arc welding
 - Gas welding
 - Flame cutting
 - Use of LP gas torches and appliances
- ☐ Loading and offloading of trucks
- ☐ Aggregate/sand and other materials delivery
- ☐ Manual and mechanical handling
- ☐ Lifting and lowering operations
- ☐ Driving and operation of construction vehicles and mobile plant including
 - Trenching machine
 - TLB
 - Tippers
 - Grader
 - Water browser
 - Tractors
 - Excavator
 - Material handlers
 - Bobcat
 - Bomag roller
 - Plate compactor
 - Front end loader
 - Mobile cranes and the ancillary lifting tackle
 - Tower cranes
 - Parking of vehicles and mobile plant
 - Towing of vehicles and mobile plant
- ☐ Use and storage of flammable liquids and other hazardous substances
- ☐ Layering and bedding
- ☐ Installation of pipes in trenches
- ☐ Pressure testing of pipelines
- ☐ Backfilling of trenches

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- The contractor will only be allowed to start working once the submitted Health and Safety plan are approved by the Employer or the Employer's H&S Agent.

Witness 2

The Risk Assessment shall:

- Address tasks on site and hazards related to the type of work performed.
- Possible consequences of these hazards.
- Refer to legislative requirements concerning these hazards on the construction site
- Calculate the value of the risk associated with the hazard by an approved method taking into consideration the probability of occurrence, the degree of injury, lost time, production costs, and influence on the environment and frequency of occurrence.

- Method Statements, Safe Work Procedures, Training and Protective Equipment to be issued and implemented to reduce the Risk values.
- Type of training required,
- Type and number of Safe Work Procedures to be introduced to workers in the form of Toolbox Talks

No work shall commence on the construction site prior to induction training of all employees intended to work on site.

Training shall be done by a competent Health and Safety Induction Trainer. Proof of training in the form of a register signed by the trained employees shall be kept in the H&S file. The contents of the training as well as the induction tests results shall also be displayed in the H&S file.

Appointments of people/workers related to Health and Safety as required by law and the Risk Assessment shall be done prior to the commencement of any work. Letters of appointment shall be kept in the H&S file for inspection by the Employer, Agent or any Inspector. Competency certificates and/or CVs shall be attached to the Letters of Appointment.

The CEO of the Principal Contractor Company shall appoint a Project Manager (16(2)). The Project manager shall appoint a Construction Supervisor (6(1)) to be permanent on site. The Construction Supervisor 6(1) shall have a detailed CV attached to his/her appointment letter.

The Construction Supervisor shall perform all other H&S appointments. All appointed workers shall have a proof of competency attached to the letter of appointment. (e.g. TLB Operator shall have a valid TLB competency Certificate.)

Medical Fitness Certificates shall be obtained for the workers/operators at an Occupational Health and Safety Practitioner as determined by the Risk Assessment.

Witness 2

4.4.2 During the construction period the Contractor shall ensure that all employees and visitors are informed, instructed and trained regarding safety conditions on site. All employees shall have proof of this induction while employed on site in the form of signed induction training forms and induction tests. Proof of training shall be in the H&S file on site. Additional training required on this project will be describe elsewhere

Notification of Construction work shall be done to the Department of Labour within 7 days from commencement of the construction work.

A Safety Management Information (SMI) board shall be erected at the site office and maintained during the construction period. The board shall be weather proof

Items to be displayed on the board shall include:

Copy of the OHS Act

Organogram of Appointments

Safety Statics

Letter of Good Standing with Compensation Commissioner

Copy of signed and stamped Notification of Construction Work to the Department of Labour.

Evacuation plan

Name and telephone number of appointed First Aider on site

Information on the location of the nearest First Aid Station.

Follow-up Risk Assessments shall be done during the construction period as and when the scope of work changes indicating new introduced hazards.

Additional appointments shall follow as required by the Risk Assessment.

4.4.3 Should the Contractor at any stage in execution of the Works

- a) fail to implement or maintain his health and safety plan;
- b) execute construction work which is not in accordance with his health and safety plan;
- or
- c) act in any way which may pose a threat to the health and safety of persons, the Employer will stop the Contractor AT HIS/HER OWN COSTS from executing construction work.

4.5 The Employer will take reasonable steps to ensure that the Contractor's Health and Safety plan is implemented and maintained. The steps taken will include periodic audits at intervals of at least once a month.

4.6 Upon completion of the Works, the Contractor shall hand over a consolidated Health and Safety file to the Employer.

5. HEALTH AND SAFETY MAIN FILE

5.1 The following documentation shall be in the Health and Safety File of the Principal Contractor and Sub-Contractors:

A1 Copy of the Occupational Health and Safety Act No 85 of 1993 including the Construction Regulations – February 2014

A2 Proof of registration with Compensation Commissioner (Principal Contractor)

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- The following appointments are required for the project. Deviations will only be allowed with the approval of the Agent. Appointment of an employee for more than one responsibility will be allowed and shall be approved by the Agent.

- Appointment of Principal Contractor by Employer
- Appointment of Project Manager (Section 16(2) of The Act) by CEO of Company
- Appointment of Contractors (Sub Contractors) by Principal Contractor (where applicable) (16(2) to appoint Sub-Contractors)
- Appointment of Construction Work Supervisor (Construction Regulation 6(1)) (full time employee on site)
- Appointment of Assistant Construction Work Supervisor (Construction Regulation 6(2)) (full time employee on site if required)

- Appointment of a Safety Officer
- Appointment of Risk Assessment Officer
- Appointment of a SHE Coordinator
- Appointment of a Health and Safety Induction Trainer

- Appointment of a SHE Representative (Competent employee to control/monitor all H&S activities)
- Appointment of an Accident and Incident Investigator
- Appointment of the Safety Committee Members (Employees actively involved in H&S)
- Appointment of an Excavation Inspector.
- Appointment of Construction Vehicle and Mobile Plant Inspector
- Appointment of Construction Vehicle and Mobile Plant Operators

Section C3.6

- Appointment of Concrete Mixer Operator (If required)
- Appointment of Hand Tool Inspector
- Appointment of a Portable Electrical Equipment Inspector.
- Appointment of a Ladder Inspector (If ladders are used)
- Appointment of a Scaffold Inspector (Where Scaffolds are used)
- Appointment of a Hygiene and Facility Inspector (Ablutions and eating places)
- Appointment of Fire Equipment Inspector
- Appointment of Fire Team Members (employees trained in firefighting awareness)
- Appointment of First Aid Equipment Inspector
- Appointment of First Aid Team Members (employees trained in first aid awareness)

A11 List of Contractors (Sub-Contractors)

A12 Evacuation plan (To be also displayed on SMI board)

A13 Refer to H&S TRAINING FILE

A14 Risk Assessments - All Risk Assessments done before and during the Construction period

A15 Refer to H&S REGISTER FILE

A16 Safe Work Procedures and material safety data sheets

A17 Fall protection plan

A18 Incident recording forms

A19 Medical records of workers

A20 Minutes of safety meetings

Emergency telephone numbers to be displayed on the back of the file

5.2 HEALTH AND SAFETY REGISTER FILE

A15 Registers as required

5.3 HEALTH AND SAFETY TRAINING FILE

A13 The contents of all Training Material used on sited –

- e.g. Accredited and non-accredited training
- Toolbox talks; and
- All training records signed by workers

6. NOTIFICATION OF CONSTRUCTION WORK – REGULATION 4 OF THE CONSTRUCTION REGULATION – FEBRUARY 2014

The Employer will appoint the Contractor in writing for execution of the Works. The Contractor shall accept its appointment under the terms and Conditions of Contract. The Contractor shall sign and agree to those terms and conditions and shall, before commencing work, notify the Department of Labour of the intended construction work in terms of Regulation 4 of the Construction Regulations. The Contractor shall submit the notification in writing prior to commencement with work. The annexure to this Contract Document contains a “Mandatory notification of construction work in terms of regulation 4 of the construction regulations (2014) of the Occupational Health and Safety Act no 85 of 1993” which shall be filled in by the contractor and forwarded to the Department of Labour. A copy of this notification shall be included in the Contractors Health and Safety file.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

The Principal Contractor must notify the Provincial Director of:

- Construction work on a form similar to Annexure A in the Construction Regulation 2014 of the Occupational Health and Safety Act and Regulations.
- A copy of the notification form must be available on site for inspection by an Inspector.

No notification is required from the Sub Contractors.

7. **Contractor’s SHE REPRESENTATIVE**

Before commencing work, the Principal Contractor shall designate a competent Safety, Health and Environmental representative (SHE Rep) who shall be acceptable to the Agent, to represent and act for the Principal Contractor and Sub Contractors.

The Principal Contractor/Contractor shall ensure that the appointed H&S Representatives are on site at all times to oversee the Employee’s activities.

The Contractor shall inform the Agent in writing of the name and address of the Contractor’s SHE Rep and of any subsequent changes in the name and address of the SHE Rep, together with the scope and limitations of the SHE Rep’s authority to act for the Contractor. The Contractor’s SHE Rep shall make available to the Employer an all-hours telephone number at which the SHE Rep can be contacted at any time in the event of an emergency involving any of the Contractor’s employees, or other persons at the Works.

It should be noted that the Principal Contractor is held responsible for the activities of the Sub Contractors.

Failure of Health and Safety measures by the Sub Contractor will revert directly back to the Principal Contractor.

8. **SUPERVISION OF CONSTRUCTION WORK – REGULATION 6**

The appointed Project Manager (Section 16(2) of the Act) of the Principal Contractor shall appoint a full-time employee (Construction Regulation 6(1)) in writing as the Construction Supervisor. An assistant Construction Supervisor (Construction Regulation 6(2)) may also be appointed where required.

The appointed Project Manager (Section 16(2) of the Act) shall appoint all Sub – Contractors. All Sub- Contractors shall appoint a full-time employee (Construction Regulation 6(1)) in writing as the Construction Supervisor. An assistant Construction Supervisor (Construction Regulation 6(2)) may also be appointed where required.

9. **RISK ASSESSMENT – REGULATION 7**

The Principal Contractor as well as all other Contractors shall appoint a competent person in writing to carry out a risk assessment before any construction work is started. The Risk Assessment shall form part of the Health and Safety Plan.

The Risk Assessment shall include:

- Identification of all tasks to be performed
- Risks and hazards associated with each task.

- Rating of possible consequences
- A documented plan of safe procedures to mitigate, reduce or control the risks and hazards. (SAFE WORK PROCEDURES AND PROTECTIVE CLOTHING)
- A monitoring plan
- A review plan

Copies of the risk assessment shall be available on each site for inspection.

All employees shall be informed, instructed and trained by an appointed competent person regarding all hazards and work-related procedures.

A Risk Assessment communication register shall be displayed with each Risk Assessment done to prove communication of the Risk Assessment to the relevant workers.

The form shall be signed by all relevant workers.

Baseline Risk Assessments

The following risks are envisaged by the client to be a potential threat to the contractor.

No	Risk Identified	Action Required
1	Use of hand tools and Electrical Power tools	All portable electrical power tools will be clearly identified and registered on a checklist and inspected according to the prescribed intervals. All users of these tools must be made aware of their hazards and safe work procedure. New tools must be checked for any special new operational measures, which differ from the existing ones in use. Employees must be trained in the use of this type of new equipment to avoid incompetent usage. Defective tools must be repaired immediately or scrapped. Only a qualified electrician may work on or repair electrical equipment.
2	Falling from heights	Use correct Fall Protection Equipment Only certified employees to use FAS Fall protection plan to be in place and on site all times FAS to be part of ongoing risk assessment on site
3	Fire	All possible precautions must be taken to avoid a fire from starting at any place where employees work. All firefighting equipment must at all times be in a good serviceable condition. No firefighting equipment may be obstructed and demarcation rules must be adhered to. No person may tamper with firefighting equipment.
4	Injuries.	All injuries and incidents must be reported in the prescribed format and flow diagram immediately. All employees must report an injury to their supervisor on the same shift, or it will not be regarded as a work-related injury.
5	Health Risks	Dust has been identified
6	Vehicle accidents	All drivers to comply with Traffic Act and conduct Risk Assessment of the terrain they will driving in

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

7	School Children and Public	Working in a live area
8	Drilling activities (where applicable)	Drilling will be done in certain areas
9	Use of mobile plant	Children, operate certificates
10	Handling hazardous chemical substances	Exposure to be minimized
11	Lifting equipment and gear	Potential equipment failure
12	Pollution	Air pollution, provision of toilets

Baseline Risk Assessment Action List

ID #	Risk identified	Action required
1	Working at heights	Employees to be issued with safety harnesses, not belts. All persons issued harnesses will be trained in the correct use. Record of training attended to be filed.
2	Falling objects	Good housekeeping must be in place at all times at all workstations at heights. All tools used at heights must be fixed to the fixed structure by means of lanyards. Scaffold flooring boards must be without openings at all times. Where the possibility exists, that objects can injure people below or damage equipment, the area below the working area must be demarcated and barricaded. Tape is not a barricade.
3	Handling hazardous chemical substances	Before any employee uses an HCS, they must be warned of the possible hazards as per MSDS of the HCS. Correct and practical PPE will be issued and worn at all times and kept in a good condition. Proof of training must be filed.
4	Electrical Power tools	All portable electrical power tools will be clearly identified and registered on the prescribed checklist and inspected according to the prescribed intervals. All users of these tools must be made aware of their hazards and safe work procedure. New tools must be checked for any special new operational measures, which differ from the existing ones in use. Employees must be trained in the use of this type of new equipment to avoid incompetent usage. Defective tools must be repaired immediately or scrapped. Only a qualified electrician may work on or repair electrical equipment.
5	Use of hand tools	All Handtools, whether private or company tools, must be listed on the prescribed checklist and checked for integrity at prescribed intervals. No unsafe Handtools or purpose made tools may be used.
6	Lifting equipment and gear	All lifting equipment and gear must be identified and listed on the prescribed list as well as the checklist for specific equipment or gear. Prescribed checks will be done and equipment colour coded quarterly

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ID #	Risk identified	Action required
		as per standard. No equipment or gear may be used by a person not trained in the use thereof and the possible hazards.
7	Fire	All possible precautions must be taken to avoid a fire from starting at any place where employees work. All firefighting equipment must at all times be in a good serviceable condition. No firefighting equipment may be obstructed. No person may tamper with firefighting equipment.
8	Environmental pollution	All employees must at all times avoid pollution of the environment (ground, air and water) or any equipment, machine or workplace of our client or our area of responsibility. All pollution incidents must be reported in the prescribed manner.
9	Injuries	All injuries and incidents must be reported in the prescribed format and flow diagram immediately. All employees must report an injury to their supervisor on the same shift, or it will not be regarded as a work-related injury.
10	Vehicle accidents	All drivers to comply with Traffic Act and do Risk Assessment of the terrain they will driving in
11	Defective hardware failure	Site Supervisor and Project Manager to do Risk Assessment to determine the structures that are rusted and that may fail to carry the weight

10. LOCAL SERVICES

Contractor must establish all local services in area of excavations. Plan of local services shall be documented in the Health and Safety file (A6). Local services include:

Telkom, Gas, Water, Electricity Supplies and other similar services.

11. Safe Working Loads

The Contractor shall ensure that -

- the safe working loads of hoists, load-bearing beams and cranes are prominently displayed at all times.
- the safe working loads are not exceeded under any circumstances.
- all lifting gear is marked with a unique identity number and recorded in a register.

12. Machine Guarding

All power tools and machinery driven by belts, gears, ropes, chains, couplings and similar drives shall be adequately guarded. The Contractor shall prohibit the use of any equipment with a damaged, missing or inadequate guard.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

13. CONSTRUCTION VEHICLES AND MOBILE PLANT – REGULATION 21

The Contractor shall ensure that drivers of motor vehicles are in possession of a driver's licence, valid for the class of vehicle which they are required to drive, and shall produce the licence on request.

The Contractor shall not permit any driver to be in control of a vehicle at the Works while under the influence of alcohol, drugs or other substance.

All vehicles of the Contractor shall display a name board bearing the Contractor's name. Hired vehicles shall bear an identifying sticker.

A register shall be kept of workers operating construction vehicles and mobile plant.

The register shall contain proof of training of operators to operate construction vehicles and mobile plant, certification of competency and authorization of operators to operate machinery, vehicles or plant.

Names of operators and their relevant training with date and time stamps together with name of course instructor shall be kept in the Health and Safety File on site.

Physical and psychological fitness shall be proved by way of a medical certificate of fitness (issued by a registered Occupational Medical Practitioner) of the said operators before allowing operators to operate machinery, vehicles or plant.

The Health and Safety File shall include the written training material offered to operators for the different construction vehicles and mobile plant.

Each and every driver shall be trained on risks involved and safety procedures.

All Construction vehicles and mobile plant must be of acceptable design and construction and used according to their design.

All construction vehicles and mobile plant must be maintained in good working order.

Registers of all vehicles and plant shall be kept on site together with names of operators responsible for each.

The register shall report all maintenance activities performed on these vehicles and plant as well as signatures certifying the condition of the vehicles as in a good working order.

All requirements on the vehicles and mobile plant with regard to safety and health shall be inspected and certified.

These requirements include:

- a) Portable fire extinguishers mounted in specified positions on construction vehicles – 2kg dry powder Fire Extinguisher
- b) Safety belts and harnesses
- c) Inspection for leaking fuel or gasses which can cause a fire hazard
- d) Safe and suitable means of access
- e) Adequate signalling or other control arrangements to guard against the dangers relating to movement of vehicles and plant.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- i) Turn indicators
- ii) Stop lights x2 – where poor visibility conditions warrant
- iii) Reverse siren or acoustic device
- iv) Tail lights
- v) Head lights x2 - where poor visibility conditions warrant
- vi) Rotating amber flashing light with lens heights of at least 200mm and an output of at least 100Watt on roof or other visible position
- vii) Warning boards mounted at least 1.5m above ground level to be clearly visible
- viii) Inspections of appropriate structures fitted to protect the operator from falling material or from being crushed should the vehicle or mobile plant overturn.
- ix) Appropriate seats must be firmly secured and adequate in number on vehicles used to transport employees

1. Construction vehicles or mobile plant must be prevented from falling into excavations, water or any other area lower than the working surface. This protection must consist of adequate edge protection e.g. guard rails and/or crash barriers
2. No person shall be allowed to or require to ride on any Construction Vehicle or Mobile Plant in a position otherwise than a safe place provided for on the construction vehicle or mobile plant as designed for that purpose.
3. The construction site must be organized in such a way that as far as is reasonably practical, pedestrians and vehicles can move safely and without risks to health and safety.
4. Traffic routes shall be of sufficient size, sufficient in number and in suitable positions to be used safely by construction vehicles, mobile plant and pedestrians.
5. Each and every traffic route shall be indicated by suitable signs for reasons of safety and health.
6. No tools and/or material shall be transported in the same compartment as the operators/drivers/employees unless the said are secured against movement during transportation.
7. All Construction Vehicles and Mobile Plant left unattended at night adjacent to a freeway in normal use or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of vehicles or plant
8. Bulldozers, scrapers, loaders and other similar mobile plant are, when being repaired or when not in use, fully lowered or blocked with controls in a neutral position, motors stopped and brakes set.
9. Reflective indicators must be provided to workers in the form of reflective yellow jackets or vests as specified and worn by workers working on/or adjacent to public roads

14. SIGNS AND NOTICES

The use of colour codes, symbolic signs and notices are means of communication whereby information is visually conveyed to people and also provides early warning of dangers.

Safety signs provide for immediate recognition of danger, information, actions allowed or not allowed and procedures that have to be done.

There are 5 types of safety signs:

1. Black triangle on yellow background	=>	WARNING
2. Red (round) on white background	=>	PROHIBITORY
3. White on blue background	=>	MANDATORY
4. White on green background	=>	INFORMATION
5. Red (square) on white background	=>	FIRE

The following signs shall be provided for on the site:

Traffic control signs	-	ROAD CLOSE DETOUR DIRECTION ARROWS
Warning signs	-	DANGER - MEN AT WORK
Prohibitory signs	-	NO ENTRY
Fire	-	POSITION OF EQUIPMENT ARROWS
First Aid	-	INFORMATION SIGNS

All signs shall be new or in good condition and approved by the Engineer.

All temporary signs shall be mounted on portable supports to facilitate moving.

Defective or missing items shall be replaced immediately.

All signs shall be inspected at least twice a day.

Prohibited area – TR208

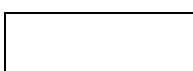
Men at work – TW 336

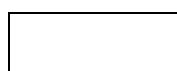
15. EXCAVATION WORK – REGULATION 11

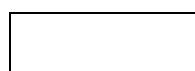
Excavation:

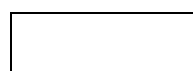
Definition: A space made by digging.

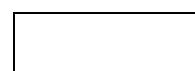
1. An excavation could be a hole or trench of any size and shape.
2. A Risk Assessment must be done prior to making an excavation.
3. The following must be taken in consideration when doing the Risk Assessment:
 - ⇒ Depth of the excavation
 - ⇒ Length of the excavation
 - ⇒ Type of soil
 - ⇒ Sloping of sides of excavation to maximum angle of repose
 - ⇒ Shoring and bracing required

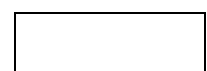

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

- ⇒ Existing services
- ⇒ Barricading and demarcation

Depth of the excavation

1. Should an excavation be more than chest deep (1.5m), it must be adequately shored or braced.
2. Slopes or trenches shall be as flat as possible, 1 x vertical to 2 x horizontal must be considered maximum for dry conditions. In wet conditions either a much lower slope shall be used, or if space is a constraint, shoring and de-watering shall be applied.

A competent person shall be appointed to supervise excavation work.

Stability evaluation of ground must be done and a certificate shall be issued.

A plan for prevention of persons being trap due to collapse shall be provided by Contractor

The design of shoring shall be documented by Contractor in the Health and Safety file as provided by the competent designer of shoring. To be filed at index A6

The maximum loading of sides of an excavation must be documented in a usable format

If adjacent structures and buildings are present and can be affected a design and construction of supporting details shall be represented.

Provision shall be made for access routes to the excavation. Routes must not be more than 6 meters away from worker.

Contractor must establish all local services in area of excavations. Plan of local services shall be documented in the Health and Safety file. To be filed at index A6

Local services include:

Telkom, Gas, Water, Electricity Supplies and other similar services.

Inspection shall be done on all bracing and shoring on a

- daily basis
- prior to each shift
- after every blasting operation
- after an unexpected fall of ground
- after substantial damage to supports
- after rain

An inspection register shall be completed by the Excavation Inspector during each and every inspection.

Barricading and Demarcation:

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Warning signs must be posted next to an excavation in which persons are working or carrying out inspection or tests.

It is advised to use 1.2m high Day-Glo Mesh (barrier netting) to prevent pedestrians on pavements to enter the construction area.

Ladders must not be used nearer than 3 metres to any exposed electrical power source and never in substations or on electrical installation work.

Wooden ladders must never be painted.

No person supervising or operating a concrete mixer shall authorize any other person to operate the plant, unless such a person is competent to operate such machinery.

Witness 2

19. SCAFFOLDING – REGULATION 14

All scaffolding must be in compliance to SABS 085.

A competent person shall be appointed in writing to supervise the erection of all scaffolding operations. The Scaffolding Erector shall have the required accredited qualifications for scaffold erecting.

A competent Scaffold Inspector shall be appointed in writing to inspect the erected scaffolds and shall not be the same person as the erector.

An Inspection Register on scaffolding shall be kept in the Health and Safety File.

A copy of SABS 085 as amended shall be available on site and kept in the Health and Safety File.

20. HOUSE KEEPING AND CONSTRUCTION SITES – REGULATION 25

The Contractor shall at all time carry out the Works in a manner to avoid the risk of bodily harm to persons or risk of damage to any property. The Contractor shall take all precautions, which are necessary and adequate to eliminate any conditions, which contribute to the risk of injury to persons or damage to property. The Contractor shall continuously inspect all work, materials and equipment to discover and determine any such conditions and shall be solely responsible for the discovery, determination and elimination of such conditions.

During the period of this Contract, the Contractor shall be responsible for the safe storage of all materials and equipment required for execution of the Contract, and for disposal of all non-usable waste material in an orderly manner.

All materials, whether stored on the construction site or within the Contractor’s designated area, shall be stored neatly and safely to prevent possible injury to any personnel. The material shall be stored to facilitate safe access to, and removal of the material from the storage area.

Any flammable material, such as paint, diesel fuel and oil, shall be stored in lockable non-combustible structures, which shall be clearly marked to indicate the hazardous nature of the materials stored within. The flammable materials stores shall be located in safe areas away from hazardous surroundings and adequate and suitable fire-fighting equipment shall be provided within easy reach of the materials stores.

All diesel tanks shall be erected on a suitable floor surrounded by a bund wall which will contain 110% of the maximum volume of diesel stored.

Loose material need for use shall not accumulate so as to obstruct means of access to and egress from the workplace. A demarcated area shall be identifying for waste disposal.

Scrap and waste shall not be allowed on site and must be removed daily.

The construction sites adjacent to build up area or public way shall be effectively fenced and controlled with access points.

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- Identify Risks:

Lanyards must be used to attach tools and equipment used in elevated positions.

Scaffolding where possible, must be provided.

On windy/rain days, special precautions are to be taken especially when working with loose roof sheets.

Walking on asbestos roofs is prohibited unless supporting ladders or crawl boards are placed thereupon.

Consult your supervisor in that area if in any doubt.

23. STRUCTURES – REGULATION 9

1. A contractor shall ensure that-
 - (i) all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work:

and
 - (ii) no structure or part of a structure is loaded in a manner which would render it unsafe.
2. The designer of a structure shall-
 - a) before the contractor is put out to Bid, make available to the employer all relevant information about the design of the relevant structure that may affect the pricing of the construction work;
 - (i) inform the contractor in writing of any known or anticipated dangers or hazards relating to the construction work, and make available all relevant information required for the safe execution of the work upon being designed or when the design is subsequently altered;
 - (ii) subject to the provisions of paragraph (a) and (b) ensure that the following information is included in a report and made available to the contractor-
 - (iii) a geo-science technical report where appropriate;
 - (iv) the loading of the structure is designed to withstand; and
 - (v) the methods and sequence of construction process;
 - b) not including anything in the design of the structure necessitating the use of dangerous procedures or materials hazardous to the health and safety of persons, which could be avoided by modifying the design or by substituting materials;
 - c) take into account the hazards relating to any subsequent maintenance of the relevant structure and should make provision in the design for that work to be performed to minimize the risk;

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- ## 24. FORMWORK & SUPPORT WORK – REGULATION 10

1. Before use
2. During placement of concrete or any other imposed load
3. After placement of concrete or any other imposed load
4. On a daily basis after placement of concrete until the structure is removed.
5. Ensure that concrete gains sufficient strength before the support work is removed.

Section C3.6

Foundations of formwork must be adequate to sustain the applied load.

A mandatory incident report form (Annexure 1), containing full details of the incident, shall be completed by the appointed Accident Investigator and submitted to the Site Agent and the Department of Labour within twenty-four (24) hours of the occurrence of the incident.

Witness 2

Within 7 days notice must be given in the form of WCL1 or WCL2 to the Provincial Director.

In case of

Major incident

Dangerous substance was spilled

Uncontrolled release of any substance under pressure

Machinery fractured resulting in flying, falling objects

Machinery out of control

A mandatory incident report form (Annexure 1), containing full details of the incident, shall be completed by the appointed Accident Investigator and submitted to the Site Agent and the Department of Labour within twenty-four (24) hours of the occurrence of the incident.

26. FIRE PRECAUTIONS ON CONSTRUCTION SITES – REGULATION 27

A register shall be kept on all Acetylene and Oxygen cylinders used on the site.

Condition of components, sub-components and safety components (e.g. Flame back arrestors) shall be listed in the register and signed by the construction supervisor at regular intervals as required with time and date stamp.

Acetylene, Oxygen and LP Gas cylinders shall be stored in suitable places to minimize the risk of fire.

Suitable storage is to be provided for flammable liquids, e.g. petrol, diesel, paint, thinners.

Smoking shall be prohibited in the workplace and notices posted accordingly.

Smoking areas with sand buckets / ashtrays will be demarcated when site is established.

Suitable and sufficient firefighting equipment shall be placed in strategic positions in the work place. (On vehicles and other positions as deemed necessary).

A register shall be kept on type and number of equipment for each site in the Health and Safety File.

A competent person shall inspect all firefighting equipment.

A sufficient number of employees shall be trained in the use of firefighting equipment.

A register shall be kept in the Health and Safety File on site with names of employees and type of firefighting training completed with date.

Suitable signs shall be erected in work places indicating escape routes.

Escape routes shall be kept clear. Evacuation plans shall be in Health and Safety File as part of Induction Training.

Combustible materials shall not accumulate on site.

A siren is installed and sounded in the event of fire

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Before construction commences or any other related works and during the progress thereof adequate steps must be taken to establish the presence of and guard against any danger to the workers in respect to electrical cables or apparatus.

Any temporary electrical installation set up by the principal contractor or contractor must be inspected at least once a week by a competent person. The inspections shall be recorded in a register and kept in the Health and Safety File.

When Distribution Boards are removed the incoming power supplies shall be cut by the employer's authorized Electrician. The incomer electricity supply feeder shall be earthed by a suitable earth wire or spike to prevent cable of becoming live during the installation of new Distribution Boards.

No person shall continue with wiring of premises unless the supply to the premises has been rendered dead and the above effective measures has been taken to ensure that such cables remain dead. When rewiring of premises is done the feeder breakers at the other end of the supply cables shall be locked out and the cable earthed to prevent any injury to workers by Electrical Shock.

A register shall be kept on site in the Health and Safety File indicating all signatures of competent persons switching electricity supply on or off with time and date stamps.

No person shall use or permit to use a portable electric load operating at a voltage exceeding 50V to earth unless it is connected to a source of electrical energy incorporating an earth leakage protection device.

A register shall be kept on site in which all daily checks of portable electric tools are performed and signed by the responsible person. Checks shall include condition of plug top, power cord, on-off switch and insulation condition of electric tool. All tools shall be numbered and entered accordingly into the register. Condition of tools as listed in the register shall be inspected and signed by the construction supervisor at regular intervals as required by the nature of the equipment.

The following list of Registers is merely an indication of what could be required by law on site.

- Personal Protective Clothing and Equipment issued

Section C3.6

MACHINERY

- Daily Checklist - Compaction Machinery – Bomag
- Daily Checklist - Compaction Machinery – Plate Compactor
- Daily Construction Vehicle Pre-ignition Checklist – Tractors
- Daily Checklist - Compaction Machinery – Tipper
- Daily Checklist - Compaction Machinery – Excavator
- Daily Construction Vehicle Pre-ignition Checklist – TLB
- Daily Checklist - Compaction Machinery – Material Handler
- Daily Checklist - Compaction Machinery – Water Lorry
- Daily Checklist - Compaction Machinery – Bomag
- Daily Checklist - Compaction Machinery – Mini Excavator
- Daily Checklist - Compaction Machinery – Bobcat
- Daily Checklist - Compaction Machinery – Concrete Mixer
- Daily Checklist - Compaction Machinery – Crane

EQUIPMENT

- Ladder Inspection Register
- Scaffold Inspection Register
- Safety Harness Inspection Register
- Gas Cutting and Welding Inspection Register

TOOLS

- Monthly Checklist on Hand Tools
- Monthly Checklist on Portable Electrical Equipment

HOUSE KEEPING

- Stacking Inspection Register
- Excavations Inspection Register
- Monthly Environmental Checklist and Deviation
- Monthly Hygiene Facility Inspection Register – Mobile Ablutions and Eating areas

INCIDENTS

- Minor Incident Recording form
- Near misses Recording form
- Major Incident Recording forms (Wcl1 and WCL2)
(Injury/ occupational disease record book
Recording and investigation of incidents)
- Annexure 1 – report to Department of Labour
- Motor Vehicle Accident Report
- Safety Statics form

FIRE

- Fire Extinguishing Equipment Register

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- Register of Trained Employees in Fire Fighting
- Fire Awareness Attendance Training Register

FIRST AID

- First Aid Box and Equipment Checklist
- Register of Trained Employees in Basic First Aid
- First Aid Awareness Attendance Training Register

TRAINING

- Induction Training Attendance Registers
- Risk Assessment Communication Registers
- Safe Work procedures Communication Registers

PERMITS

- Lock-out Request Forms (Water and Electricity)
- Lock-out Permits (Water and Electricity)

INSPECTIONS

- SHE Coordinator Inspection Register – Monthly checklist and deviations
- Minutes of Safety Committee Monthly meetings

33. SAFE WORK PROCEDURES REQUIRED IN HEALTH AND SAFETY FILE

The following list of SWP's is merely an indication of what could be required by law on site.

- Stacking of material
- Working with angle grinders
- Working with drills
- Working with glass panes
- Excavating of trenches
- Loading and transport of material
- Working with cement and concrete mixers
- Driving company vehicles
- Approaching Construction Vehicles
- Maintaining Scaffolding
- Form work repair guide
- Roof work
- Correct use of Fire Extinguishers
- Engaging and working with Contractors
- Dealing with Heat Stress
- Electrical Safety precautions
- Maintenance of Ladders
- Dealing with Silica and dust
- Trenches and open excavations

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

- Any other as required by activities on site

34. WRITTEN TRAINING COURSE MATERIAL TO BE FILED IN HEALTH AND SAFETY FILE

The following Training is merely an indication of what could be required by law on site.

- Induction Training (Workplace awareness – Site specific)
- Training of operators on Construction Vehicles and Mobile Plant (Certificates)
- First Aid Awareness
- Fire Fighting Awareness
- Toolbox talks on Hand Tools
- Toolbox talks on Machine Guarding
- Toolbox talks on Hand Tool Accidents
- Toolbox talks on Ten Commandments of Safety
- Toolbox talks on Fire prevention
- Toolbox talks on lifting materials by hand
- Toolbox talks on safe loading
- HIV Training Unit 1 - The Nature of HIV/Aids
- HIV Training Unit 2 - Transmission of the HI virus
- HIV Training Unit 3 - HIV/AIDS preventative measures
- HIV Training Unit 4 – Voluntary HIV/AIDS counselling and testing
- HIV Training Unit 5 – Living with HIV/AIDS
- HIV Training Unit 6 – Treatment options for people with HIV/AIDS
- HIV Training Unit 7 – The rights and responsibilities for workers in the workplace with regard to HIV/AIDS
- Toolbox talks on Environmental influences

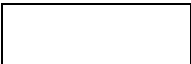
35. TRAINING COURSES TO BE PRESENTED

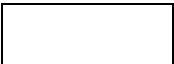
PHASE 1

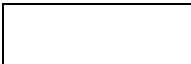
- Toolbox talks on the functions of the SHE Representative
- Induction Training (Workplace awareness) - Ten Commandments of Safety
- Training of the Community on Construction Workplace Hazards
- HIV Training Unit 1 - The Nature of HIV/Aids
- Toolbox talks on Environmental Awareness

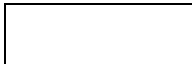
PHASE 2

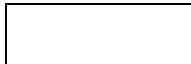
- Training of Operators on Construction Vehicles and Mobile Plant
- First Aid Awareness
- Fire Fighting Awareness
- Toolbox talks on Hand Tools and Hand Tool Accidents
- Toolbox talks on Machine Guarding
- Toolbox talks on lifting materials by hand
- Toolbox talks on Safe Loading
- Toolbox talks on Safety Signs

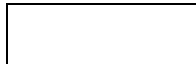

Contractor


Witness 1


Witness 2


Employer


Witness 1


Witness 2

- HIV Training Unit 2 - Transmission of the HI virus
- HIV Training Unit 3 - HIV/AIDS preventative measures
- HIV Training Unit 4 – Voluntary HIV/AIDS counselling and testing
- HIV Training Unit 5 – Living with HIV/AIDS
- HIV Training Unit 6 – Treatment options for people with HIV/AIDS
- HIV Training Unit 7 – The rights and responsibilities for workers in the workplace with regard to HIV/AIDS
- Toolbox talks on Environmental Awareness

36. **EQUIPMENT ON SITE**

First Aid Kit (basic)

Stretcher

Fire Extinguishers – 9kg

37. **Personal Protective Clothing**

The Contractor shall provide the necessary personal protective clothing for its employees in hazardous areas, appropriate to the nature of the hazard.

37.1 Hard Hats

All employees of the Contractor shall wear hard hats in areas where appropriate hazard notices are displayed. The Engineer shall have the right to ban certain colours if they are similar to the Employer's identifying colours. Hard hats shall not be painted or otherwise defaced.

Colours

Red – Fire Fighter

Green _First Aider

White – Professional Team

Yellow –Supervisor

Blue – Workers

Pink – SHE Representatives

37.2 Eye Protection

Suitable eye protection shall be worn in areas where appropriate hazard notices are displayed, or when grinding, chipping, breaking, drilling, arc-welding, cutting with oxy-acetylene equipment or similar activities are taking place.

37.3 Hearing Protection

Suitable hearing protection shall be worn in areas where appropriate hazard notices are displayed.

37.4 Foot Wear

All employees of the Contractor shall wear undamaged, laced-up safety boots or safety shoes, suitable for the intended purpose, in prescribed areas where appropriate hazard notices are displayed.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

37.5 Gloves

All employees of the Contractor shall wear suitable protective gloves in areas where appropriate hazard notices are displayed, or when handling hot or hazardous materials or chemicals.

Mixing cement and steelwork shall be attended to

37.6 Clothing

All employees of the Contractor shall wear suitable protective clothing when working in proximity of machinery, power tools, hazardous materials or chemicals.

Proposed Personal Protective Equipment required on this project:

NO.	TYPE	WHEN TO WEAR
1.	Hard Hats	Always
2.	400mm Shoulder Length PVC Gloves	Working with cement
3.	Leather chrome Gloves	Working with steel
4.	Plastic Trousers	Working with cement
5.	Safety Goggles	Grinding, Cutting Cement
6.	Gumboots	Working in water
7.	Welding helmet	Welding
8.	Gas welding safety goggles	Gas Welding
9.	Safety shoes	Always except in water
10.	Dust Masks	Grinding and dusty conditions
11.	Ear Muff	Grinding
12.	Leather apron	Welding/ gas welding
13.	Reflective vests	Operators and workers on/near public road
14.	Protective Overalls	Depends on nature of work

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

The Employer and the Contractor hereby agree, in terms of the Provisions of Sections 37(2), 9 and 8(2) of the Occupational Health and Safety, Act No. 85 of 1993, hereinafter referred to as 'the Act', that the Contractor as an employer in its own right and in its capacity as Contractor for the execution of the works, shall have certain obligations and that the following arrangements shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely: -

- SIGNED at..... on this..... day of 20.....

Print Name: _____

Section C3.6

AS WITNESSES:

1. _____

2. _____

Print Name: _____

Print Name: _____

For and on behalf of the **Employer**:

Print Name: _____

AS WITNESSES:

1. _____

2. _____

Print Name: _____

Print Name: _____

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

[illegible]

.....

.....

.....

Longitude (E)

.....

.....

.....

H. Expected completion date:

I. Estimated maximum number of persons on the construction site:

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

.....

.....

.....

.....

.....

.....

Signed at on this day of 20.....

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

INFORMATION TO BE SUPPLIED BY THE BIDDER

The following form shall be completed by the Bidder.

- A. Particulars of WCF / FEMA
- Compensation Fund Registration No.:
- Expiring Date:
-
- B. Particulars of designated Construction Health and Safety Manager (CHSM) appointed in terms of Regulation 8(1) as the Construction Supervisor, with the duty of supervising health and safety at the Works:
- Name:
- ID No.:
- Postal Address:
- Tel No.: Cell phone No.:
-
- C. Particulars of Contractor's Health and Safety Officers/ Representatives (CHSO):
- Name: Qualifications:
- Name: Qualifications:
- Name: Qualifications:.....
-
- D. Particulars of First Aider (Level 1)
- Name:
- ID No.
- Valid First Aid Certificate: Yes
- No
-
- E. Particulars of Fire Fighter (Level 1)
- Name:
- ID No.
- Valid Fire Training Cert.: Yes
- No

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

F Training Records of Construction Vehicle Operators

Name:.....
Qualifications.....
PDP/License (Yes / No) & No:

Name:.....
Qualifications.....
PDP/License (Yes / No) & No:

Name:.....
Qualifications.....
PDP/License (Yes / No) & No:

Name:.....
Qualifications.....
PDP/License (Yes / No) & No:

G. Incident Statistics: (Can be added as Addendum)

Incidents during last 12 months	Date	Degree of Injury	Production days lost	Costs involved
1				
2				
3				
4				
5				
6				
7				

PHOKWANE LOCAL MUNICIPALITY
UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS

CONTRACT : PLM/TREF/1409 - 2025

PART C4
Site Information

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

**UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS**

CONTRACT : PLM/TREF/1409 - 2025

INDEX

Section	Description	Page
C4.1	Annexure	298
C4.1.1	Location Map	299
C4.1.2	Surveys / Beacons	300
C4.1.3	Geotechnical information	300
C4.1.4	Hydrological information	300
C4.1.5	Warning on acquiring of material	300
C4.1.6	Borrow pit information	300
C4.1.7	Access to site	300
C4.1.8	Accommodation, Water and Electricity	300

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

**UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP
WASTE WATER TREATMENT WORKS**

CONTRACT : PLM/TREF/1409 - 2025

Section C4.1
Annexure : Site Information

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

C4.1.2 Surveys/Beacons

No claims will be entertained in connection with missing pegs or benchmarks. The Contractor shall be solely responsible for the protection of survey pegs after Site Handover.

C4.1.3 Geotechnical Information

General

No detailed site investigation was done to determine the sub soil (geotechnical) conditions.

C4.1.4 Hydrological Information

No detailed hydrological investigation was done.

C4.1.5 Warning on Acquiring of Material

The Contractor is reminded that aggregates for concrete obtained from mining activities will not be allowed. Only material from commercial sources complying with the relevant specifications will be allowed.

C4.1.6 Borrow pit Information

The Contractor will not be allowed to open up borrow pits.

C4.1.7 Access to Site

Access to the construction site will be obtained via gravel roads.

C4.1.8 Accommodation, Water and Electricity

C4.1.8.1 Power Supply and other Services

The Contractor shall make his own arrangements concerning the supply of electrical power and all other services. No direct payment will be made for the provision of electrical and other services. The cost thereof shall be deemed to be included in the rates and amounts offered for the various items of work for which these services are required.

C4.1.8.2 Contractor's Camp Site

The Contractor shall make his own arrangements for a suitable site for his camp and provide suitable facilities in his own offices for site meetings.

C4.1.8.3 Housing for Contractor's Employees

No housing is available for the Contractor's employees, and the Contractor shall make his own arrangements for housing his employees or transporting them to and from the site. The Contractor is in all respects responsible for the housing and transporting of his employees and for the arrangement thereof, and no extension of time due to any delays resulting from this, will be granted.

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

PHOKWANE LOCAL MUNICIPALITY

UPGRADING AND REFURBISHMENT OF THE JAN KEMPDORP WASTE WATER TREATMENT WORKS

CONTRACT: PLM/TREF/1409 - 2025

INDEX

The following drawings are attached in Bid Document:

Drawing No.	Description
4048 / C / 1	General Layout
4048 / C / 2	Inlet Channel
4048 / C / 3	Primary Settling Ponds No. 1-3
4048 / C / 4	Emergency Pond
4048 / C / 5	BNR Reactor
4048 / C / 6	MCC Building At BNR
4048 / C / 7	Clarifier
4048 / C / 8	RAS/WAS Pumping Station
4048 / C / 9	Recycling Pumping Station
4048 / C / 10	Chlorine Dosing Facility and Contact Channels
4048 / C / 11	Biological Filter
4048 / C / 12	Biological Filter Pumping Station
4048 / C / 13	Humus Tank
4048 / C / 14	Sludge Drying Beds
4048 / C / 15	Admin Building
4048 / C / 16	Recycle Pump Station - Ø200mm Pump Main Layout
4048 / C / 17	Oxidation Pond Recycle Pump Station Layout & Sections
4048 / C / 18	Recycle Pump Station Ø200mm Pump Main Connection Details
4048 / C / 19	Concrete Palisade Fence: Layout
4048 / C / 20	Security Fence: Concrete Palisade Fence with steel gate plan, Sections & Details
4048 / C / 21	Boundary Walls Locality
4048 / C / 22	Recycle Pump Station Boundary Wall Layout
4048 / C / 23	Biofilter / Activated Sludge Plant Boundary Wall Layout
4048 / C / 24	Boundary Walls Elevation & Details
4048 / CNB	Contract Board Plan & Elevations

Electrical Drawings

2024 / 06 / DRW - 110	Front Page
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2024 / 06 / DRW – 131	Description of Works
2024 / 06 / DRW – 132	Extent of Works
2024 / 06 / DRW – 133	Design Brief

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

2024 / 06 / DRW – 140	Construction Works Specification
2024 / 06 / DRW – 150	Electrical Works Specification
2024 / 06 / DRW – 211	Complete Plant Overview Electrical Distribution
2024 / 06 / DRW – 221	Plant Main Overview Electrical Distribution
2024 / 06 / DRW – 231	Plant Outlet Overview Electrical Distribution
2024 / 06 / DRW – 241	Complete Plant Overview Area Lighting
2024 / 06 / DRW – 311	Existing Electrical Distribution Reduced Network Diagram (RND)
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2024 / 06 / DRW – 411	Electrical Network Analysis Operational Load
2024 / 06 / DRW – 511	Equipment Schedule
2024 / 06 / DRW – 521	Distribution Schedule (1 of 2)
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2024 / 06 / DRW – 531	Control Schedule
2024 / 06 / DRW – 541	Instrumentation Schedule (1 of 3)
2024 / 06 / DRW – 542	Instrumentation Schedule (2 of 3)
2024 / 06 / DRW – 543	Instrumentation Schedule (3 of 3)
2024 / 06 / DRW – 621	Main Distribution & Reactor (MCC – Main) Single Line Diagram (SLD)
2024 / 06 / DRW – 622	Main Pumping Station (MCC – Main PS) Single Line Diagram (SLD)
2024 / 06 / DRW – 623	Main Pumping Station (MCC – Main PS) Single Line Diagram (SLD)
2024 / 06 / DRW – 631	Main Pumping Station (MCC – Main PS) Single Line Diagram (SLD)
2024 / 06 / DRW – 632	Main Pumping Station (MCC – Main PS) Single Line Diagram (SLD)
2024 / 06 / DRW – 641	Biofilter Pump Station (MCC – Main PS) Single Line Diagram (SLD)
2024 / 06 / DRW – 671	Recycle Pump Station (MCC – Main PS) Single Line Diagram (SLD)
2024 / 06 / DRW – 931	Main Distributor & Reactor General Arrangement (GA) – Electrical
2024 / 06 / DRW – 941	Main Pump Station General Arrangement (GA) – Electrical
2024 / 06 / DRW – 951	Biofilter Pump Station General Arrangement (GA) – Electrical
2024 / 06 / DRW – 961	Recycle Pump Station General Arrangement (GA) – Electrical

END OF SECTION

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

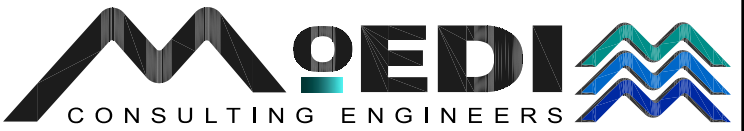


JAN KEMPDORP WWTW LAYOUT

NOTES

REVISIONS

No.	DATE	BY	DESCRIPTION



Klerksdorp
2 Van Ryneveld Street
Wilkopple, Klerksdorp 2571
Tel: 018 462-9603 / 5 / 8
e-mail: consult@moedi.co.za

Pretoria
The Village Office Park, Block D
Cnr Glenwood Rd & Oberon Ave
Tel: 083 388-5117
e-mail: ilana@moedi.co.za

	SIGNATURE
	DATE

ARCHITECT

PROJECT

UPGRADING & REFURBISHMENT OF JAN KEMPDORP WASTE WATER TREATMENT WORKS

DRAWING TITLE

JAN KEMPDORP WWTW LAYOUT

RESPONSIBLE PERSON	DATE	PROFFESIONAL ENGINEER
DESIGNED	FH DE BEER 08/16	JWB HATTINGH
DRAWN	Q DE BRUYN 08/16	PR No: 20170282
SURVEY	---	---
CHECKED	JWB HATTINGH 08/16	---
CONTACT	LENNERT VAN ROOYEN	SIGNATURE

DRAWING PURPOSE

PRELIMINARY	FOR TENDER
FOR APPROVAL	FOR CONSTRUCTION
REPORT	RECORD DRAWING

PRINT ISSUED ON 16/9/2025

DRAWING No.	REVISION	SCALE
4048 / C / 1	00	N.T.S