

	REQUEST FOR BID PROFESSIONAL SERVICES	Form No: RW SCM 00049 F Revision No: 09 Effective Date: 04 Nov 2024
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BID NUMBER: RW10412286/24

**APPOINTMENT OF ENGINEERING FIRM/CONSULTANT FOR CONDUCTING A
FEASIBILITY STUDY AND THE DETAILED ENGINEERING DESIGN OF THE
MIDVAAL REGIONAL WASTEWATER TREATMENT WORKS AT RAND WATER
FOR A PERIOD OF 5 YEARS.**

ISSUE DATE:	MONDAY, 09 DECEMBER 2024	
NON-COMPULSORY BRIEFING SESSION DATE:	N/A	
BRIEFING SESSION VENUE:	A PRESENTATION WILL BE UPLOADED ON THE NATIONAL TREASURY WEBSITE UNDER E-PORTAL	
CLOSING DATE:	MONDAY, 17 FEBRUARY 2025	AT 12H00PM
SITE VIEWING DATE/S	N/A	

BIDDER INFORMATION				
BIDDER NAME				
POSTAL ADDRESS				
STREET ADDRESS				
TELEPHONE NUMBER	CODE		NUMBER	
CELLPHONE NUMBER				
E-MAIL ADDRESS 1				
E-MAIL ADDRESS 2				
VAT REGISTRATION NUMBER				
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		CENTRAL SUPPLIER DATABASE No:	MAAA.....
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	[TICK APPLICABLE BOX] <input type="checkbox"/> Yes <input type="checkbox"/> No		B-BBEE STATUS SWORN AFFIDAVIT (EMEs and QSEs)	[TICK APPLICABLE BOX] <input type="checkbox"/> Yes <input type="checkbox"/> No

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:			
BUYER		SOURCING MANAGER	
CONTACT PERSON	VONGANI MAGEZA	CONTACT PERSON	BONGANI NDWANDWE
TELEPHONE NUMBER	011 682 0675	TELEPHONE NUMBER	011 682 0724
E-MAIL ADDRESS (Submissions must be made to this address)	vmageza@randwater.co.za	E-MAIL ADDRESS	bndwandw@randwater.co.za

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SECTION A: BID

PART T1: BIDDING PROCEDURES

T1.1. BID NOTICE AND INVITATION TO BID

Rand Water invites bids for the appointment of engineering firm/consultant for the design engineering of water reclamation plant in the barrage at Rand Water for a period of 5 years.	
Procurement Procedure	Rand Water uses a single volume approach.
Awarding Strategy	The number of suppliers to be awarded this bid is One (1) .
Access to the Bid Documents	<p>The bid documents are downloadable on the National Treasury e-Tender Publication portal which can be accessed through the following link: http://www.etenders.treasury.gov.za.</p> <p>No bid documents will be issued to Contractors at site meetings. Please ensure that bid documents have been downloaded from the National Treasury e-Tender Publication portal prior to the site meeting date.</p> <p>Bids shall only be submitted on the bid documentation that is issued by the Employer. This bid document (as issued through the National Treasury e-Tender Publication portal) must be submitted in full together with the returnable documents.</p>
Bid Clarifications	<p>Bidders can seek clarification by no later than fifteen (15) calendar days before the bid closing date.</p> <p>Rand Water will provide a final response on clarifications by no later than ten (10) calendar days before the closing date.</p>
Bid Addenda	Rand Water shall issue addenda, where applicable, by no later than ten (10) calendar days before the closing date. Bid addenda will be published on the eTender Publication Portal.
Bid Submission Location	<p>Bids must be submitted before or on closing date and time at the following address:</p> <p><i>Rand Water Head Office 522 Impala Road Glenvista 2058 (in the Bid Submissions Box at the Main Gate)</i></p>
Bid Validity	<p>To be valid for 180 days after closing date</p> <p>Rand Water reserves the right to extend the validity period for a period reasonable for business requirements.</p>

T1.2. BID DATA

The Standard Conditions for Bidding are outlined below and must be read in conjunction with the applicable procurement legislative prescripts:

CLAUSE NUMBER	BID DATA
T1.2.1	The Employer is Rand Water.
T1.2.2	The bid documents issued by the Employer are detailed on the contents page of this bid document.
T1.2.3	The Employer's Representative/s is stated on the cover page of this bid document.
T1.2.4	The Employer shall evaluate this bid in accordance with the evaluation criteria stated in this bid.
T1.2.5	The arrangement for a non-compulsory site meeting (where applicable) is as stated in the Notice and Invitation to Bid.
T1.2.6	The due date for seeking clarification is as stated in the Bid Notice and Invitation to Bid.
T1.2.7	<p>Bidders may propose alternative bid offer only if the main tender offer, strictly in accordance with all the requirements of this bid document, is also submitted as well as a schedule that compares the requirements of this bid document with the alternative requirements that are proposed.</p> <p>An alternative bid offer will only be considered if the main bid offer is the winning bid. Additionally, the following statements shall apply:</p> <ul style="list-style-type: none"> • Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative bid offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer's standards and requirements and to evaluate the acceptability of the pricing proposals. • Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. • Pricing Data must reflect all assumptions in the development of the pricing proposal. • <i>The pricing of the alternative bid offer may not exceed the pricing of the main bid offer.</i> <p>Acceptance of an alternative bid offer will mean acceptance in principle of the offer. In the event that the alternative bid offer is accepted, it will be a contractual obligation for the Contractor to accept full responsibility and liability that the alternative bid offer complies in all respects with the Employer's standards and requirements.</p>
T1.2.8	<p>Bidders must submit one (1) original bid document and returnables.</p> <p>USB flash drive with pdf format of the bid document and returnables may be provided in addition of the required document.</p>

	<p>The Employer's address for delivery of the bid offers is stated in the Bid Notice and Invitation to Bid.</p> <p>The bid submission must be sealed and endorsed with both the bid number and the description of the bid, as it appears on the front cover of this bid.</p>
T1.2.9	Telephonic, telegraphic, telex, facsimile or e-mailed bid offers will not be accepted.
T1.2.10	The closing time for submission of bid offers is as stated in the Bid Notice and Invitation to Bid.
T1.2.11	<p>The bid offer validity period is as stated in the Bid Notice and Invitation to Bid.</p> <p><i>No bid substitutions will be allowed after the closing date and time.</i></p>
T1.2.12	See 2.1 List of Returnable Documents for a comprehensive list of certificates and additional documents required for submission with this bid.
T1.2.13	<p><i>Rand Water's evaluation process comprises of the following steps. Specific criteria to be utilised for this bid are contained in <u>T1.3 Evaluation Criteria</u></i></p> <p>a) Test for responsiveness/Pre - qualification <i>Refer to the criteria as stated in T1.3 of this bid document. All test for responsiveness must be met in order for the bid submission to be considered further.</i></p> <p>b) Functionality evaluation <i>Refer to the criteria as stated in T1.3 of this bid document. A minimum score of 70 points must be obtained for the bid submission to be considered further.</i></p> <p>c) Preference Point System <i>The (80/20 or 90/10) Preferential Point System will be used to evaluate price and specific goal on received written price quotations. Where 80/ 90 will be allocated for Price and 20 / 10 for the Specific goals.</i></p> <p>i. Price Analysis</p> <p>ii. Specific Goal</p> <p>Rand Water specific goal is to empower previously disadvantaged designated groups. This specific goal will be evaluated and measured by using the SANAS accredited B-BBEE certificate or sworn affidavit for QSE or EME or the dtic B-BBEE certificate.</p> <p>Points will be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:</p> <p>WHERE PROCUREMENT VALUE IS R0 < R50 000 000 (INCL. VAT):</p> $P_s = 80 * \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$ <p>WHERE PROCUREMENT RAND VALUE IS >= R50 000 000 (INCL. VAT):</p> $P_s = 90 * \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$

Where:

Ps = Points scored for comparative price of bid or offer under consideration
 Pt = Comparative price of bid or offer under consideration
 Pmin = Comparative price of lowest acceptable bid or offer.

Rand Water does not bind itself to accept the bid with the lowest price

BBBEE STATUS (P_P = 10/20 maximum)

Quantification of procurement contribution to B-BBEE

Points will be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of point (90/10 system)	Number of point (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

Bidders will not be disqualified from the bidding process for not submitting a certificate substantiating the B-BBEE status level of contribution or is a non-compliant contributor. ***Such a bidder will score zero (0) out of maximum of 10/20 for B-BBEE***

d) Objective Criteria

Refer to the criteria as stated in [T1.3 Evaluation Criteria](#) of this bid document.

A bid must be awarded to the bidder who scored the highest total number of points in terms of the preference point systems (price and B-BBEE points), unless objective criteria in terms of section 2(1)(f) of the Act justify the award of the bid to another bidder.

SUMMARY

The total number of functionality/ quality (P_F) shall be the sum total of the product of quality criteria by weight allocated.

The total number of adjudication points (P_T) shall equal the sum of the bid price points (P_S) and the BBBEE status points (P_P) i.e.

$$P_T = P_S + P_P$$

Rand Water does not bind itself to accept the bid with the highest number of adjudication points.

T1.2.14

Rand Water shall provide to the successful bidder the signed copy of the contract after completion and signing of the form of offer and acceptance.

T1.3. EVALUATION CRITERIA

T1.3.1. TEST FOR RESPONSIVENESS

1. Fully Completed and signed Form of Offer.

T1.3.2. FUNCTIONALITY EVALUATION

Bid submissions will be evaluated on the criteria outlined in items (A-H) below. Each Item (A-H) has an assigned "Weight" and "Rating" scale. During the evaluation process, Bidders shall be assigned a "Rating" for each item in A to H

The maximum "Score" that a Bidder can achieve will be equal to the "Weight" for a particular item. The Total Scores of each functionality criterion will be multiplied by its weight and then the total score summed up to a total score out of 100.

Responses are required to meet a minimum of 70 percent to be further evaluated.

A detailed description of the “Rating” scales and associated adjudication documentation are as follow

CRITERION	RETURNABLE SCHEDULE REFERENCE	WEIGHT	RATING SCALE			
			GOOD (100%)	MODERATE (66.7%)	WEAK (33.33%)	NONE (0%)
A. RECORD OF PREVIOUS EXPERIENCE: (20)	Relevant to the current scope/ work (with contactable client ref.) This is based on consultant history and managing projects of a similar nature and size to this bid. The reference must be written confirmation from clients and may include a completion certificate. If works that was costed was multi-disciplinary, the disciplines that were covered on the scope can be considered under one completion certificate or reference letter, however, it will have to be clear on the completion certificate or reference letter what disciplines were covered by the scope.					
A 1. Provision of feasibility studies and detailed Engineering designs services, including commissioning of the full plant	T2.2.10	10	Minimum of five (5) projects (provision of service) completion certificate/reference letter on provision of feasibility studies and detailed engineering designs of Water treatment/purification Plants, Wastewater treatment Plants and various other designs of process plants.	Between 3 and 4 projects (provision of service) completion certificate/reference letter on provision of feasibility studies and detailed engineering designs of Water treatment/purification Plants, Wastewater treatment Plants and various other designs of process plants	Between 1 and 2 projects (provision of service) completion certificate/reference letter on provision of feasibility studies and detailed engineering designs of Water treatment/purification Plants, Wastewater treatment Plants and various other designs of process plants	No submission or submission that does not at least meet weak requirements.
A.2. Application of water use licences (WUL), conducting environmental impact assessments (EIA), Geohydrological or Hydrological studies	T2.2.10	5	Minimum of five (5) projects (provision of service) completion certificate/reference letter where successful application of WUL was achieved, successfully conducting an EIA, geohydrological and/or hydrological studies.	Between 3 and 4 projects (provision of service) completion certificate/reference letter where successful application of WUL was achieved, successfully conducting an EIA, geohydrological and/or hydrological studies.	Between 1 and 2 projects (provision of service) completion certificate/reference letter where successful application of WUL was achieved, successfully conducting an EIA, geohydrological and/or hydrological studies.	No submission or submission that does not at least meet weak requirements.

CRITERION	RETURNABLE SCHEDULE REFERENCE	WEIGHT	RATING SCALE			
			GOOD (100%)	MODERATE (66.7%)	WEAK (33.33%)	NONE (0%)
A. 3. Provision of Land management services which include but not limited to, land acquisitions, service detections, etc	T2.2.10	5	Minimum of five (5) projects (provision of service) completion certificate/reference letter on acquisition of land for business use or industrial use through successful negotiations, conducted service detections etc.	Between 3 and 5 projects (provision of service) completion certificate/reference letter on acquisition of land for business use or industrial use through successful negotiations, conducted service detections etc	Between 1 and 2 projects (provision of service) completion certificate/reference letter acquisition of land for business use or industrial use through successful negotiations, conducted service detections etc	No submission or submission that does not at least meet weak requirements.
B. PERFORMANCE ON PREVIOUS RELATED WORK DONE (5)	Overall performance score for similar work previously done. The bidder must submit a record of performance on previous work (in A1 above) which must have a percentage rating by the client.					
B.1 Performance Score	T2.2.10	5	Three or more (3) References/completion certificates with a <u>performance score</u> of 70% or above. Performance Scores of feasibility study and design projects completed of similar nature (Wastewater treatment plants, water treatment plants). Designs of multidisciplinary projects	Two (2) References with a <u>performance score</u> of 70% or above. Performance scores of feasibility study and design projects completed of similar nature (Wastewater treatment plants, water treatment plants). Designs of multidisciplinary projects	One (1) Reference with a <u>performance score</u> of 70% or above. References of feasibility study design projects completed of similar nature (Wastewater treatment plants, water treatment plants). Designs of multidisciplinary projects	No submission or submission that does not at least meet weak requirements.
C. HUMAN RESOURCE CAPACITY (25)	Adjudicated based on Human Resource Capacity Schedule (including company's Project Team vs. Company Organogram; Project Team Member List including CVs with qualifications, resource allocation). The purpose is to establish an overall picture of the company's human resource capacity and ability to undertake the work. Proof of current employment such as valid three months bank statement and Payslips and signed contract for every key resource/personnel must be submitted over and above the requirements below (C.1. and C6). The three months base date is the Bid closing date, which means the resource must have been employed by the company/JV/Consortium for a minimum of three months at Bid submission date. The resources provided must be South African, otherwise an equivalent SAQA					

CRITERION	RETURNABLE SCHEDULE REFERENCE	WEIGHT	RATING SCALE			
			GOOD (100%)	MODERATE (66.7%)	WEAK (33.33%)	NONE (0%)
	accredited qualification with proof from SAQA is required and the foreign resource must have a valid working permit, failing which resources will not be considered for evaluation.					
C.1. Engineering designs services and conducting geotechnical services etc	T2.2.11	10	Minimum of 6 Professionally registered (ECSA) personnel with Degree (BSc, B.Eng.; B.Tech) in Civil, Mechanical; Structural; Electrical; Automation (C&I); Process/Chemical Engineering, with minimum of ten (10) years of relevant and related experience in engineering designs of Water & Wastewater treatment Plants and various other designs of process plants.	Between 4 and 5 Professionally registered (ECSA) personnel with Degree (BSc, B.Eng.; B. Tech) in Civil; Mechanical; Structural; Electrical; Automation(C&I); Process/Chemical Engineering, with minimum of five (5) to seven (7) years of relevant and related experience in engineering designs of Water & Wastewater treatment Plants and various other designs of process plants.	Between 1 and 3 Professionally registered (ECSA) personnel with Degree (BSc, B.Eng.; B. Tech) in Civil; Mechanical; Structural; Electrical; Automation(C&I); Process/Chemical Engineering, with minimum of two (2) to four (4) years of relevant and related experience in engineering designs of Water & Wastewater treatment Plants and various other designs of process plants.	No submission or submission that does not at least meet weak requirements.
C.2. Environmental management	T2.2.11	5	Minimum of three personnel with Degree (BSc or B.Tech.) in Environmental Science/Management plus a Professional registration with related Professional Registration body (EAPASA or SACNASP) and more than 8 years' experience as environmental assessor professional/specialist;	Minimum of two personnel with Degree (BSc or B.Tech.) in Environmental Science/ Management plus a Professional registration with related Professional Registration body (EAPASA or SACNASP) and 5 to 6 years' experience as environmental assessor professional/specialist.	Minimum of one personnel with Degree (BSc or B.Tech.) in Environmental Science/ Management plus a Professional registration with related Professional Registration body (EAPASA or SACNASP) and 2 to 4 years' experience as environmental assessor professional/specialist.	No submission or submission that does not at least meet weak requirements.

CRITERION	RETURNABLE SCHEDULE REFERENCE	WEIGHT	RATING SCALE			
			GOOD (100%)	MODERATE (66.7%)	WEAK (33.33%)	NONE (0%)
C.3 Geohydrology and/or Hydrology	T2.2.11	5	Minimum of three personnel with applicable B Eng /B Tech degree and with a minimum of ten (10) experience in geohydrology or hydrology design and professionally registered	Minimum of two personnel with applicable B Eng/B Tech degree and five (5) to seven (7) years' experience in geohydrology or hydrology design and professionally registered	Minimum of one personnel with applicable B Eng/B Tech degree and two (2) to four (4) years' experience in geohydrology or hydrology design and professionally registered	
C.4. Land management services	T2.2.11	5	Minimum of three personnel with Survey/Geomatics Degree (BSc, BEng, or B.Tech.) plus, Professional Registration with related professional body (SAGC) and with a minimum of ten (10) years related experience	Minimum of two personnel with Survey/Geomatics Degree (BSc, BEng, or B.Tech.) plus, Professional Registration with related professional body (SAGC) and with a minimum of five (5) to seven (7) years related experience	Minimum of one personnel with Survey/Geomatics Degree (BSc, BEng, or B.Tech.) plus, Professional Registration with related professional body (SAGC) and with a minimum of two (2) to four (4) years related experience	No submission or submission that does not at least meet weak requirements.
D. PLANT AND EQUIPMENT RESOURCE CAPACITY (15)	Adjudicated based on Equipment Resource Capacity (i.e., office space, required design software e.g., AutoCAD, AutoCAD Plant 3D, AutoCAD MEP, Sofistik, Surge Analysis, Civil 3D, Navisworks 3D, CAESAR II Modelling software, Prokon etc and requisite tools, vehicles and working tools). In addition, the consultant shall have the adequate Design Codes e.g., BS13445, BS8007, EN BS 1295 The purpose is to establish an overall picture of the company's equipment resource capacity and ability to undertake the work. Rand Water will confirm the information submitted when conducting due diligence.					
D.1 Design Phase	T2.2.12	15	Proof of ownership for: Design office space Proof of ownership of relevant licensed design software's e.g. AutoCAD, AutoCAD Plant 3D, AutoCAD MEP, Sofistik, Surge Analysis, Civil 3D, Navisworks 3D, CAESAR II Modelling, Prokon etc.	Proof of lease agreement for: Design office space Proof of lease agreement for relevant licensed design software's e.g. AutoCAD, AutoCAD Plant 3D, AutoCAD MEP, Sofistik, Surge Analysis,	A letter of intent to lease Design office space and relevant licensed design software's e.g. AutoCAD, AutoCAD Plant 3D, AutoCAD MEP, Sofistik, Surge Analysis, Civil 3D, Navisworks 3D, CAESAR II Modelling, Prokon etc	No submission or submission that does not at least meet weak requirements.

CRITERION	RETURNABLE SCHEDULE REFERENCE	WEIGHT	RATING SCALE			
			GOOD (100%)	MODERATE (66.7%)	WEAK (33.33%)	NONE (0%)
				Civil 3D, Navisworks 3D, CAESAR II Modelling, Prokon etc.		
E. PROJECT RISK MANAGEMENT (7.5)	As per risk register provided. Provide a full report on the risk's response plan					
E.1. Response to tender document risks register	T2.2.16	7.5	Effectively address 100% of risks on the risks register including filling of all the response actions and response strategies for every risk. Identification of additional appropriate risks including response actions and strategies	Effectively address 100% of risks on the risks register including filling of all the response actions and response strategies for every risk	Effectively address less than 100% of risks on the risks register including filling of all the response actions and response strategies for every risk.	No submission or submission that does not at least meet weak requirements.
F. FINANCIAL MANAGEMENT PLAN (7.5)	This is going to be evaluated on the how the Bidder has articulated the financial management such as initial investment and cashflow throughout the project					
F1. Financial Management Plan (5)	T2.2.5	7.5	Comprehensive Financial Management Plan, including cash flows incorporating all the activities of the contract for its duration.	Basic Financial Management Plan, including cash flows incorporating all the activities of the contract for its duration.	Basic Financial Management Plan, including cash flows not incorporating activities of the contract for its duration.	No submission or submission that does not at least meet weak requirements.

CRITERION	RETURNABLE SCHEDULE REFERENCE	WEIGHT	RATING SCALE			
			GOOD (100%)	MODERATE (66.7%)	WEAK (33.33%)	NONE (0%)
G. METHOD STATEMENT (7.5)	Specific method statement in accordance with the scope of work, Aligned with Contractual requirements, logical and aligned to the scope of work.					
G.1. Method Statement	R1.17	7.5	Comprehensive Design and Engineering Plan (including feasibility phase) - logical sequencing of appropriate designs activities across 90% - 100% of applicable engineering disciplines.	Details of Design and Engineering Plan (including feasibility) - logical sequencing of appropriate designs activities across 70% - 89% of applicable engineering disciplines.	Details of Design and Engineering Plan (including feasibility phase) - logical sequencing of appropriate designs activities across less than 70% of applicable engineering disciplines.	No submission or submission that does not at least meet weak requirements.
H. SHERQ (5)	Adjudicated based on Consultants Health, Environment, Risks, Safety and Quality Policy, Plan and documentation submitted					
H.1. SHEQ Management Systems (5)	R1.11	5	ISO 9001, ISO 45001 and ISO 14001 certificates	Less than three ISO certificates but have internal management system for health and safety, quality and environmental. This must be coupled with signed SHEQ Plan, signed SHE Policy and signed Quality Policy	Less than three ISO certificates but have internal management system for health and safety, quality and environmental. This must be coupled without signed SHEQ Plan, signed SHE Policy and signed Quality Policy	No submission or submission that does not at least meet weak requirements.

T1.3.4. PREFERENCE POINT SYSTEM

The **80/20** or **90/10** will be applied in this bid.

T1.3.5. OBJECTIVE CRITERIA

Rand Water shall apply objective criteria in accordance with the PPPFA.

Rotation of suppliers for bids will be done on the following conditions:

- a) *Aggregate value of R250 million (inclusive of all taxes) awarded.*
- b) *Where an award to be made to the supplier results in the cumulative value exceeding the rotation threshold for bids, that award can be made which will constitute the last award to the supplier in the financial year.*
- c) *As its objective criteria, Rand Water shall therefore not award to a Bidder that scores the highest points, if such Bidder has already exceeded the rotation threshold for bids.*

In making the determination on the aggregate value of work awarded to a supplier, Rand Water shall consider the supplier's relations and as such, where Rand Water had awarded work to entities and/or persons that are related and/or inter-related to the supplier, the value of such awards shall be used as a measure of assessing the aggregate value of the work awarded to the supplier.

PART T2: RETURNABLE DOCUMENTS

T2.1. LIST OF RETURNABLE DOCUMENTS

T2.1.1 ALL RETURNABLES ARE REQUIRED FOR PURPOSES OF EVALUATION IRRESPECTIVE OF WHETHER THEY ARE DESIGNATED DISQUALIFIABLE OR NON-DISQUALIFIABLE.

T2.1.2 Returnable required at Tender closing (disqualifiable):

These returnables are required to be fully completed, signed (if required on the returnable) and submitted with the bid at Bid closing date and time. If not fully completed, signed (if required on the returnable) and/or submitted by Bid closing, the bidder will be disqualified.

No.	Description	Action Required
1.	Form of Offer	Submit fully completed and signed copy
2.	Pricing Schedule / Bill of Quantities (BoQ)	Attach copy
3.	SBD 4 Bidder's Disclosure	Complete 6.4 and sign
4.	SBD 6.1 Preference Points	Complete 6.1 and sign
5.	Compulsory Enterprise Questionnaire	Complete T.2.2.1 and sign
6.	Resolution Letter for the Main Contractor (a letter authorising the person completing the bid to sign on behalf of the company)	Attach copy

T2.1.2 Returnable required at Tender Closing date and time for evaluation

These returnables are required to be submitted at bid closing date and time. A bidder that does not submit the required returnable at stipulated deadline or submits an incomplete returnable; will not be disqualified but will be scored accordingly.

No.	Description	Action Required
1.	B-BBEE certificate	Attach copy
2.	Proof of tax compliance status and a valid SARS Tax PIN	Attach copy
3.	Alternative Bid	Complete T2.2.2 and sign
4.	Qualifications to Bid	Complete T2.2.3 and sign
5.	Requirements with regard to fluctuations in the cost of labour and materials	Complete T2.2.4 and sign
6.	Record of Previous Experience, Quality of	Complete T2.2.6 and sign
7.	Human Resource Capacity Schedule,	Complete T2.2.7 and sign
8.	Equipment Resource Capacity (Plant and Equipment),	Complete T2.2.8 and sign
9.	SHERQ (Safety, Health, and Environment)	Complete T2.2.9 and sign
10.	Project Risk Management	Complete T2.2.10 and sign
11.	Financial Management Plan	Attach copy
12.	Method Statement	Attach copy

T2.1.3 Returnable required at Tender closing (non-disqualifiable)

These returnables are required to be fully completed, signed (if required on the returnable) and submitted with bid at Bid closing date and time; however, if not submitted by Bidder or submitted with incomplete information or without a required signature, the Senior Buyer / Sourcing Manager will, in writing, request the bidder to submit the returnable within 5 working days. If the returnable is not fully completed, signed if required and/or received by the Senior Buyer / Sourcing Manager within 5 working days of the request, the bidder will be disqualified.

No.	Description	Action Required
1.	Declaration of Insurance (Including Professional Indemnity)	Complete T2.2.5 and sign
2.	<ul style="list-style-type: none"> 3-year financial statements (audited in accordance with the organisation's relevant PI score, however limited to a minimum assurance level of an Independent Review). In addition, the current year's management report 	Attach copy and sign

T2.2. RETURNABLE SCHEDULES

T2.2.1. COMPULSORY ENTERPRISE QUESTIONNAIRE

The following particulars must be furnished. In the case of a joint venture, separate enterprise questionnaires in respect of each partner must be completed and submitted.

Section 1: Name of enterprise:

Section 2: VAT registration number, if any:

Section 3: CSD Number:

Section 4: Particulars of sole proprietors and partners in partnerships:

Name *	Identity Number *	Personal income tax number *

* Complete only if sole proprietor or partnership and attach separate page if more than 3 partners

Section 5: Particulars of companies and close corporations

Company registration Number:	
Close Corporation number:	
Tax reference number:	

Section 6: SBD 4 issued by National Treasury must be completed for this bid.

Section 7: SBD 6.1 issued by National Treasury must be completed for this bid.

I the undersigned, who warrants that he/she is duly authorized to do so on behalf of the enterprise:

- i) authorizes the employer to verify the Bidders tax clearance status from the South African Revenue Services that it is in order;
- ii) confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;
- iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;
- iv) confirms that I / we are not associated, linked or involved with any other bidding entities submitting bid offers and have no other relationship with any of the Bidders or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and
- v) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Name of Bidder:

Signed by or on
behalf of Bidder:

Official
Capacity:

Date:

SBD 4

BIDDER'S DISCLOSURE

1. PURPOSE OF THE FORM

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

2. Bidder's declaration

- 2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest¹ in the enterprise, employed by the state? **YES/NO**

- 2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

- 2.2 Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution? **YES/NO**

- 2.2.1 If so, furnish particulars:

.....

¹ the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

- 2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract?

YES/NO

- 2.3.1 If so, furnish particulars:

.....
.....

3 DECLARATION

I, the undersigned, (name)..... in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

- 3.1 I have read and I understand the contents of this disclosure;
- 3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
- 3.3 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 consortium² will not be construed as collusive bidding.
- 3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.4 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.
- 3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
- 3.6 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.

² 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.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE
IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF
PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND
COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS
DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name

SBD 6.1

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, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

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
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

(delete whichever is not applicable for this tender).

- a) The applicable preference point system for this tender is the **90/10** preference point system.
- b) The applicable preference point system for this tender is the **80/20** preference point system.
- c) Either the **90/10 or 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	80/90
SPECIFIC GOALS	20/10
Total points for Price and SPECIFIC GOALS	100

- 1.5 Failure on the part of a tenderer 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 tenderer, 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.

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 OR 90/10 PREFERENCE POINT SYSTEMS

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

$$Ps = 80 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right) \text{ or } Ps = 90 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$$

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 or 90 points is allocated for price on the following basis:

$$\begin{array}{ccc}
 \text{80/20} & \text{or} & \text{90/10} \\
 P_s = 80 \left(1 + \frac{P_t - P_{max}}{P_{max}} \right) & \text{or} & P_s = 90 \left(1 + \frac{P_t - P_{max}}{P_{max}} \right)
 \end{array}$$

Where

P_s = Points scored for price of tender under consideration
 P_t = Price of tender under consideration
 P_{max} = 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 tenderer 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 whether the 80/20 or 90/10 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 either the 80/20 or 90/10 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 either the 80/20 or 90/10 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 both the 90/10 and 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 tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm.....

4.4. Company registration number:
.....

4.5. 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
- [TICK APPLICABLE BOX]

- 4.6. 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:
- i) The information furnished is true and correct;
 - ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
 - iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
 - iv) 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 organ of state 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 a 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 tenderer 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 organ of state 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 TENDERER(S)
SURNAME AND NAME:
DATE:
ADDRESS:

T2.2.2. ALTERNATIVE BID

- T2.2.4.1. Alternative bids will be accepted on the conditions described in [T1.2 Bid Data](#) (CIDB Clause C2.12)
- T2.2.4.2. Should the Bidder wish to submit an alternative bid 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.
- T2.2.4.3. If no departures or modifications are described, the schedule shall be marked NIL and signed by the Bidder.

Page	Item	Proposed alternative	Price saving (if any) to the Employer if proposal is accepted

Name of Bidder: _____

Signed by or on behalf of Bidder: _____ Official Capacity: _____

Date: _____



Should the Bidder wish to qualify any aspect of the bid (e.g. limitations, assumptions, limited liability, etc.), he shall set out his terms 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.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Official Capacity:

T2.2.4. REQUIREMENTS WITH REGARD TO FLUCTUATIONS IN THE COST OF LABOUR AND MATERIALS

T2.2.6.1. The Bidder shall delete whichever of the following statements are not applicable to the bid. *Where the Bidder has not indicated the applicability of fluctuations, Rand Water shall regard the fluctuations as not applicable.*

FLUCTUATIONS IN - Wages and allowances: *TO APPLY/NOT TO APPLY
Price of materials: *TO APPLY/NOT TO APPLY

* Delete whichever is not applicable.

FORMULAE OR BASIS FOR THE ADJUSTMENT OF THE BID PRICE

If firm prices are not quoted the Bidder shall supply the following information:

T2.2.6.2. Formula by which the bid price is to be multiplied in order to arrive at the adjusted price:

.....
.....

T2.2.6.3. Definition of all symbols used in the above formula:

.....
.....
.....
.....

T2.2.6.4. Any special materials or equipment to be excluded from the application of the formula stating the method and basis of price variation to be applied to such materials or equipment:

.....
.....
.....

Name of Bidder:

Signed by or on
behalf of Bidder:

Official
Capacity:

Date:

T2.2.5. DECLARATION OF INSURANCES

I/We hereby declare that the insurance policies enumerated below have been effected by me/us in accordance with the Contract Data.

Cover effected	Insurer	Policy	Expiry date
COID			
Unemployment Insurance			
Employer's Liability			
Motor Vehicle Liability			
Contractor's Equipment			
Manufacturing/Fabrication Premises			
Professional Indemnity			

Table T2.2.5: Declaration of Insurance

Copies of the abovementioned policies are attached.

In respect of COID, a copy of the current receipt and letter of good standing is attached.

Name of Contractor: _____

Signed by or on behalf of Contractor: _____ Official Capacity: _____

Date: _____

NOTE: This schedule shall be completed and submitted to Rand Water within 14 days from the commencement date of the contract and will serve as a condition precedent. The Contractor shall ensure that all policies are in place for the full period under the contract, and where policies need to be renewed and/or any changes effected, Rand Water is to be provided with the renewal confirmation and/or details of changes within 14 days of such renewal or changes.

T2.2.6. RECORD OF PREVIOUS EXPERIENCE, QUALITY OF WORKMANSHIP AND SAFETY

The Bidder shall provide details of **completed** works (similar to the work set out in this bid). Individuals listed as references must be contactable and willing to provide information relating to the performance of the Bidder (in terms of safety and health, workmanship, documentation, timeous completion, etc.). In order to verify the quality of workmanship, an inspection of the works may also be undertaken should Rand Water deem it necessary.

The Bidder must take into cognisance the functionality criteria in providing the record of previous experience. Information must be provided in the following format:

Description of Works	
Project Title :	
High level project description:	
Client :	
Contract No. :	
Contract Value (excl. VAT) :	
Role ^(Note 1) :	
Award Date :	
Completion Date :	
Location of Works :	
Project Manager :	
Construction Manager :	
Contact Details of Reference at Client Company	
Name :	
Position Held :	
Tel :	Cell :
Fax :	email :
<small>Note 1 – Role refers to the Contractor's responsibility w.r.t. the claimed experience. For example Single Contractor, Main Contractor but with electrical sub – contractor, Sub – contractor for civil construction etc.</small>	

Name of Bidder: _____

Signed by or on
behalf of Bidder: _____

Official
Capacity: _____

Date: _____

T2.2.6. RECORD OF PREVIOUS EXPERIENCE, QUALITY OF WORKMANSHIP AND SAFETY

The Bidder shall provide details of **completed** works (similar to the work set out in this bid). Individuals listed as references must be contactable and willing to provide information relating to the performance of the Bidder (in terms of safety and health, workmanship, documentation, timeous completion, etc.). In order to verify the quality of workmanship, an inspection of the works may also be undertaken should Rand Water deem it necessary.

The Bidder must take into cognisance the functionality criteria in providing the record of previous experience. Information must be provided in the following format:

Description of Works	
Project Title :	
High level project description:	
Client :	
Contract No. :	
Contract Value (excl. VAT) :	
Role ^(Note 1) :	
Award Date :	
Completion Date :	
Location of Works :	
Project Manager :	
Construction Manager :	
Contact Details of Reference at Client Company	
Name :	
Position Held :	
Tel :	Cell :
Fax :	email :
<small>Note 1 – Role refers to the Contractor's responsibility w.r.t. the claimed experience. For example Single Contractor, Main Contractor but with electrical sub – contractor, Sub – contractor for civil construction etc.</small>	

Name of Bidder: _____

Signed by or on
behalf of Bidder: _____

Official

Capacity: _____

Date: _____

T2.2.6. RECORD OF PREVIOUS EXPERIENCE, QUALITY OF WORKMANSHIP AND SAFETY

The Bidder shall provide details of **completed** works (similar to the work set out in this bid). Individuals listed as references must be contactable and willing to provide information relating to the performance of the Bidder (in terms of safety and health, workmanship, documentation, timeous completion, etc.). In order to verify the quality of workmanship, an inspection of the works may also be undertaken should Rand Water deem it necessary.

The Bidder must take into cognisance the functionality criteria in providing the record of previous experience. Information must be provided in the following format:

Description of Works	
Project Title :	
High level project description:	
Client :	
Contract No. :	
Contract Value (excl. VAT) :	
Role ^(Note 1) :	
Award Date :	
Completion Date :	
Location of Works :	
Project Manager :	
Construction Manager :	
Contact Details of Reference at Client Company	
Name :	
Position Held :	
Tel :	Cell :
Fax :	email :
<small>Note 1 – Role refers to the Contractor's responsibility w.r.t. the claimed experience. For example Single Contractor, Main Contractor but with electrical sub – contractor, Sub – contractor for civil construction etc.</small>	

Name of Bidder: _____

Signed by or on
behalf of Bidder: _____

Official

Capacity: _____

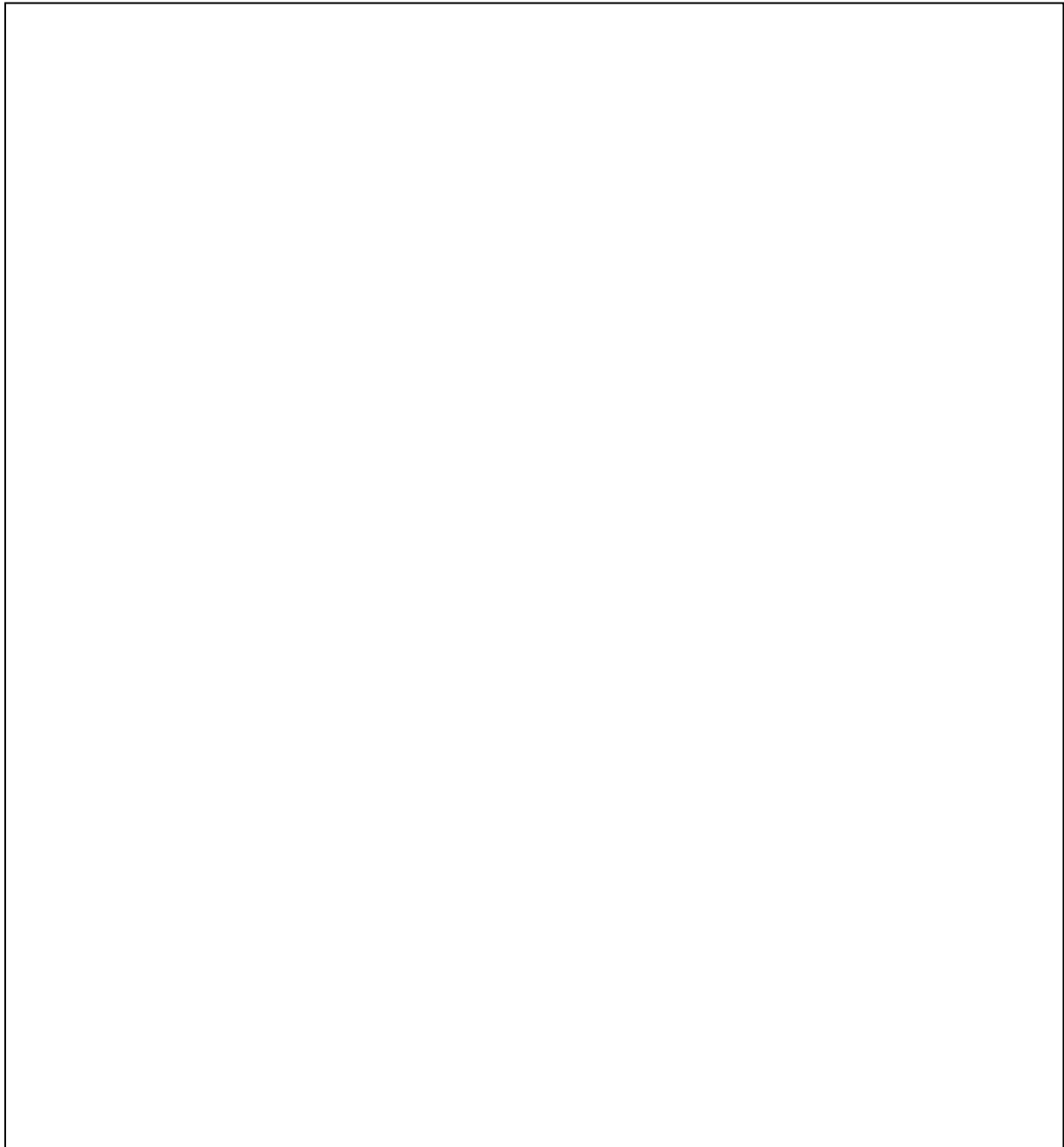
Date: _____

T2.2.7. HUMAN RESOURCE CAPACITY SCHEDULE

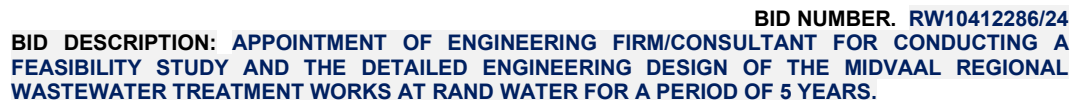
The aspects covered by T2.2.7.1, T2.2.7.2 and T2.2.7.3 will be viewed in conjunction with each other to establish an overall picture of the Bidder's capacity and ability to undertake the work specified in this document.

T2.2.7.1. Project Team Organogram vs. Company Organogram

The Bidder shall detail in the block below their company organogram and the Resources dedicated to this contract must be clearly indicated. In addition, sub-contractor and Joint-Venture arrangements must be clearly indicated:



cont.

[illegible]

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T2.2.7.3. List of Current Contracts (Work Load)

Contract or Work Title	Client	Contract Value (excl. VAT)	Role ^{NOTE 1}	Progress
				Award Date: Completion Date: % Complete: Stage ^{NOTE2} :
				Award Date: Completion Date: % Complete: Stage ^{NOTE2} :
				Award Date: Completion Date: % Complete: Stage ^{NOTE2} :
				Award Date: Completion Date: % Complete: Stage ^{NOTE2} :
				Award Date: Completion Date: % Complete: Stage ^{NOTE2} :

NOTES

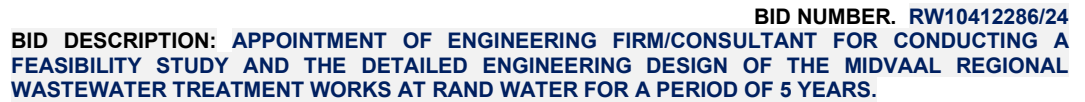
1. Role refers to the Contractor's responsibility w.r.t. the claimed experience for example Single Contractor, Main Contractor but with Electrical subcontractor, Sub-contractor for civil construction etc.
2. Stage refers to the current stage of the work (example design, procurement, construction, installation, commissioning, handed over, in Defects Liability Period etc.)
3. Attach additional signed copies of this schedule if insufficient space is available.

Name of Bidder: _____

Signed by or on
behalf of Bidder: _____

Official
Capacity: _____

Date: _____



The following are lists of major items of relevant equipment that are presently owned / leased / hired or planned to be purchased / leased / hired and will be available for this contract if the bid is accepted:

[illegible]

Name of Bidder:

Official Capacity:

Date:

T2.2.9. SAFETY, HEALTH, AND ENVIRONMENT

1. Safety and Health Policy

Bidders shall submit a copy of their company's internal Safety and Health Policy.

2. Safety, Health and Environment (SHE) Plan

Bidders shall submit the project specific SHE plan as per the project specific SHE Specification

3. Safety, Health and Environment (SHE) Risk assessment

Bidders shall submit the project specific SHE risk assessment.

4. DIFR Status

Bidders shall furnish their DIFR Status for 2 years in the table below, based on the following formula.

$$DIFR \text{ (annual)} = \frac{(\text{Number of Disabling Injuries})(200000)}{(\text{Number of Hours Worked})}$$

Number of Hours Worked (annual) = Total Number of Employees x Average Hours Worked per Employee per Year

	Current Year	Last Year
Number of Disabling Injuries		
Total Number of Employees		
Average Hours Worked per Employee per Year		
Number of Hours Worked per Year		
Calculated DIFR		

Table T2.2.17: Safety, Health, and Environment

Name of Bidder:

Signed by or on
behalf of Bidder:

Official
Capacity:

Date:

T2.2.10. PROJECT RISK MANAGEMENT

PROJECT RISK MANAGEMENT REGISTER FOR CONTRACT									
Please fill in the blank columns labelled Response Strategy and Response Action for each Risk Event listed in the table below:									
RISK IDENTIFICATION						QUALITATIVE RISK ASSESSMENT		RISK RESPONSE PLAN	
#	RISK CATEGORY	RISK EVENT	CAUSE	EFFECT	THREAT OR OPPORTUNITY	PROBABILITY	IMPACT	RESPONSE STRATEGY	RESPONSE ACTIONS
1	Feasibility stage	Delays in obtaining relevant information	Limited information	Infrastructure to be constructed not known	Delays in commencement. Or increase in project costs	Medium	High		
2	Feasibility Stage	Interested and Affected parties	Stiff Opposition from I and A parties to project implementation	Regulatory Compliance required for the project to commence may not be acquired in time	Delays in commencement. Or increase in project costs	Medium	High		

PROJECT RISK MANAGEMENT REGISTER FOR CONTRACT									
Please fill in the blank columns labelled Response Strategy and Response Action for each Risk Event listed in the table below:									
RISK IDENTIFICATION						QUALITATIVE RISK ASSESSMENT		RISK RESPONSE PLAN	
#	RISK CATEGORY	RISK EVENT	CAUSE	EFFECT	THREAT OR OPPORTUNITY	PROBABILITY	IMPACT	RESPONSE STRATEGY	RESPONSE ACTIONS
3	Design Phase	Poor Quality Design of designs submitted for review (incl. drawings)	Lack of Design Experience for the Design Team	Incomplete Designs	Threat	Medium	Medium		
4	Design Phase	Extended Design Review Period	Submission of poor design reports and packages by the Consultant	Extension of time to complete the project (cost overrun)	Threat	Low	Medium		

PROJECT RISK MANAGEMENT REGISTER FOR CONTRACT									
Please fill in the blank columns labelled Response Strategy and Response Action for each Risk Event listed in the table below:									
RISK IDENTIFICATION						QUALITATIVE RISK ASSESSMENT		RISK RESPONSE PLAN	
#	RISK CATEGORY	RISK EVENT	CAUSE	EFFECT	THREAT OR OPPORTUNITY	PROBABILITY	IMPACT	RESPONSE STRATEGY	RESPONSE ACTIONS
5	Design Phase	Lack of integration across disciplines and across other linked projects	Submission of incoherent design reports and packages by the Consultant	Re-work of the design to accommodate impact of design changes in one discipline.	Threat	Low	Medium		
6	Human Resources	Key staff resign	Working conditions, work pressure, remuneration	Negative time impact	Threat	Low	Medium		
RISKS IDENTIFIED BY THE BIDDER									

PROJECT RISK MANAGEMENT REGISTER FOR CONTRACT									
Please fill in the blank columns labelled Response Strategy and Response Action for each Risk Event listed in the table below:									
RISK IDENTIFICATION						QUALITATIVE RISK ASSESSMENT		RISK RESPONSE PLAN	
#	RISK CATEGORY	RISK EVENT	CAUSE	EFFECT	THREAT OR OPPORTUNITY	PROBABILITY	IMPACT	RESPONSE STRATEGY	RESPONSE ACTIONS
7									
8									

Name of Bidder: _____

Signed by or on
behalf of Bidder: _____

Official
Capacity: _____

Date: _____

T2.2.11. PENALTY TABLE

The Bidder is required to acknowledge the penalty table by signing this schedule.

PENALTY TABLES					
DELAYS ON ITEMS ATTRACTING PENALTIES	Value of Contract (Excl VAT.) in millions R				
	<1	≥1<5	≥5<20	≥20<50	≥50
PROGRAMME AND PRELIMINARY DOCUMENTS (Rand's per day delay)	2 000	10 000	20 000	20 000	20 000
DRAWINGS AND DESIGN PACK (Rand's per day delay)	5 000	20 000	30 000	40 000	50 000
SECTIONAL COMPLETION	2% of the value of the outstanding work/ week				
OVERALL COMPLETION	2% of the value of the outstanding work/ week				
COMMISSIONING (Rand's per day delay)	10 000	20 000	30 000	40 000	50 000
REMEDYING OF DEFECTS					
a) Critical to asset functioning/ running (Rand's per day delay)	10 000	50 000	100 000	100 000	100 000
b) Not critical to asset functioning/ running (Rand's per day delay)	1 000	5 000	10 000	10 000	10 000
SHERQ					
a)SHERQ non conformances, corrective and preventative actions not resolved within the agreed target dates	1 000	5 000	10 000	10 000	10 000
Agreed target dates exceeding 5 working days					
b)Non-reporting of SHERQ incidents and statistics within the required timeframe	1 000	5 000	10 000	10 000	10 000
Within a shift / Within 24 hrs					
c) Repeat SHERQ non conformances	2 000	10 000	20 000	20 000	20 000
During Construction phase	2 000	10 000	20 000	20 000	20 000

Name of Bidder:

Signed by or on
behalf of Bidder:

Official
Capacity:

Date:

SECTION B: CONTRACT

PART C1: AGREEMENT AND CONTRACT DATA

C1.1. FORM OF OFFER AND ACCEPTANCE

LETTER OF TENDER

DESCRIPTION: APPOINTMENT OF ENGINEERING FIRM/CONSULTANT FOR CONDUCTING A FEASIBILITY STUDY AND THE DETAILED ENGINEERING DESIGN OF THE MIDVAAL REGIONAL WASTEWATER TREATMENT WORKS AT RAND WATER FOR A PERIOD OF 5 YEARS.

TENDER NO: RW10412286/24

TO: The Tender Box
Rand Water Head Office
522 Impala Road
Glenvista
Johannesburg
Attention: Mr Bongani Ndwandwe

We have examined the Conditions of Contract, Specifications, Drawings, Schedules, the attached Appendix and Addenda No.'s for the execution of the above named Works. We offer to execute and complete the Works and remedy any defects therein in conformity with this Tender which includes all said documents, for the total sum of in **South African Rand (ZAR _____)**
(_____ **Amount in Words inclusive of all taxes**) or such other sum as may be determined in accordance with the Conditions of Contract.

The total ZAR value quoted above, to include the sum of imported equipment/material sourced directly from outside South Africa. The applicable currency of origin/s must be converted to South African Rand (ZAR) using the closing rate of exchange as published by SARB on the date, one week (7 day calendar days) prior to the closing date for the Tender.

The Tenderer shall further complete the offer/letter and stipulate the sum in the currency of origin (i.e. Euro, USD, GBP or any other currency) as noted below.

for the sum of in **Euro** (€ _____)
(_____ Amount in Words inclusive of all taxes*)
or such other sum as may be determined in accordance with the Conditions of Contract.

for the sum of in **USD** (\$ _____)
(_____ Amount in Words inclusive of all taxes *)
or such other sum as may be determined in accordance with the Conditions of Contract.

for the sum of in **GBP** (£ _____)
(_____ Amount in Words inclusive of all taxes *)
or such other sum as may be determined in accordance with the Conditions of Contract.

for the sum of in **any other currency** _____
(_____ Amount in Words inclusive of all taxes *)
or such other sum as may be determined in accordance with the Conditions of Contract.

***Applies to international suppliers that are registered for all taxes in South Africa**

We accept your suggestions for the appointment of the DAB, as set out in the Appendix to Tender.

We agree to abide by this Tender for a period of 180 days from the Submission Date and Time for Tenders and it shall remain binding upon us and may be accepted at any time before that date. We acknowledge that the Appendix forms part of this Letter of Tender.

If this offer is accepted, we will provide the specified Performance Security, commence the Works as soon as is reasonably practicable after the Commencement Date, and complete the Works in accordance with the above-named documents within the Time for Completion.

Unless and until a formal Agreement is prepared and executed this Letter of Tender, together with your written acceptance thereof, shall constitute a binding contract between us.

We understand that you are not bound to accept the lowest or any tender you may receive.

Signature..... in the capacity of.....

duly authorized to sign tenders for and on behalf of.....

Address:

Date:.....

Signature of Witness: _____

Signature of Witness: _____

Name of Witness:_____

Name of Witness: _____

Date : _____

Date : _____

C1.1.2. CONTRACT AGREEMENT

This Agreement made on the _____ day of (month) _____ (year) _____
between

RAND WATER

(hereinafter called "the Employer")

And

(hereinafter called "the Contractor").

Whereas the Employer desires that the Works known as **APPOINTMENT OF ENGINEERING FIRM/CONSULTANT FOR CONDUCTING A FEASIBILITY STUDY AND THE DETAILED ENGINEERING DESIGN OF THE MIDVAAL REGIONAL WASTEWATER TREATMENT WORKS AT RAND WATER FOR A PERIOD OF 5 YEARS** should be executed by the Contractor, and has accepted a bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement:
 - a. The Letter of Award
 - b. The Letter of Bid (incorporating the Appendix to Tender)
 - c. The Conditions of Contract
 - d. The Employer's Requirements
 - e. The Returnable Schedules
 - f. The Contractor's Proposal
 - g. The Bid Addenda (where applicable)
 - h. Additional Information Provided by Contractor (where applicable)
3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein, in conformity with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price at the times and in the manner prescribed by the Contract.

Authorised signature of Employer

Authorised signature of Contractor

for and on behalf of the Employer

for and on behalf of the Contractor

Name:

Designation: **GROUP CHIEF EXECUTIVE**

Date:

Name:

Designation:

Date:

In the presence of the undersigned witnesses:

Name:

Signature:

Date:

Name:

Signature:

Date:

C1.2. CONTRACT DATA

C1.2.1. GENERAL CONDITIONS

The General Conditions of Contract are based on the “Client/Consultant Model Services Agreement” as published by the Federation Internationale des Ingenieurs-Conseils (FIDIC).

Fourth Edition 2006

As published by the Federation Internationale des Ingenieurs-Conseils (FIDIC)

C1.2.2. PARTICULAR CONDITIONS OF CONTRACT

The General Conditions shall be amended by the Particular Conditions of Contract as detailed herein.

The following clauses – of the “Client/Consultant Model Services Agreement”, Fourth Edition 2006, as published by the Federation Internationale des Ingenieurs-Conseils (FIDIC) shall be amended as stated below:

1 GENERAL PROVISIONS

1.1 Definitions

The following words and expressions shall have the meanings assigned to them except where the context otherwise requires:

1.1.1 “**Accepted Contract Amount**” means the amount recorded in the Letter of Acceptance unless otherwise defined in the Contract Agreement; which amount may be adjusted under the terms of the Agreement.

1.1.2 “**Agreed Compensation**” means additional sums as defined in Annexure1 [*Remuneration and Payment Schedule*] which are payable under the Agreement.

1.1.3 “**Agreement**” means the terms and conditions comprising the documents listed in the Letter of Acceptance, unless otherwise defined in the Contract Agreement.

1.1.4 “**Client**” means Rand Water which is a body corporate established in terms of Section 83 of the Water Services Act 107 of 1997, who employs the Consultant, and legal successors to the Client and permitted assignees, to perform the Services.

1.1.5 “**Commencement Date**” means the date recorded in the Letter of Acceptance, unless otherwise defined in the Contract Agreement.

1.1.6 “**Consultant**” means the professional firm or individual named in the Agreement, who is employed by the Client to perform the Services.

1.1.7 “**Contract Documents**” means the Contract Agreement as well as all the documents listed therein, or the documents listed in the Letter of Acceptance if there is no Contract Agreement.

1.1.8 “**Country**” means the Republic of South Africa.

1.1.9 “**day**” means a calendar day and a “**year**” means 365 days.

1.1.10 “**Letter of Acceptance**” means the letter of formal acceptance, signed by the Client, of the Consultant’s tender.

1.1.11 “**Party**” means the Client or the Consultant and “**Parties**” means the Client and Consultant collectively while “**third party**” means any other person or entity as the context requires.

1.1.12 “**Project**” means the project named in the Particular Conditions for which the Services are to be required.

1.1.13 “**Services**” means the services defined in Appendix 1 [*Scope of Services*] to be performed by the Consultant in accordance with the Agreement and comprise Normal Services, Additional Services and Exceptional Services.

1.1.14 “**Time for Completion**” means the time period stated for this purpose in the Particular Conditions.

1.1.15 “**Works**” means the permanent works (if any) to be executed (including the goods and equipment to be supplied to the Client) for the achievement of the Project.

1.1.16 “**written**” or “**in-writing**” mean hand-written, type-written, printed or electronically made, and resulting in a permanent un-editable record.

1.2 Interpretation

1.2.1 The headings herein shall not be taken into consideration in the interpretation of these Conditions.

1.2.2 The singular includes the plural and vice-versa where the context requires.

1.2.3 The documents forming this Agreement are to be taken as being mutually explanatory of one another, if there is a conflict between any of the provisions contained in the contract documentation the precedence of such documents shall be in the order prescribed in the Contract Agreement.

1.2.4 Words indicating one gender include all genders.

1.2.5 Provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing, and signed by both Parties.

1.3 Communications

Whenever provision is made for the giving or issue of any notice, instruction or other communication by any person, such communication shall be in writing in the language of the Agreement, which notice, instruction or other communication shall not be unreasonably withheld or delayed.

1.4 Governing Language and Law

1.4.1 The language of the Agreement is English.

1.4.2 The Agreement shall be governed, construed and interpreted in accordance with the law of the Republic of South Africa.

1.5 Changes in Legislation

If after the date of the Agreement the cost or duration of the Services is altered as a result of changes in or additions to the laws or regulations in any country in which the Services are required by the Client to be performed the agreed remuneration and time for completion shall be adjusted accordingly.

1.6 Whole Agreement

The Contract Documents constitute the whole agreement between the Parties and no prior representation, and/or previous agreement, and/or representation, and/or previous agreement, and/or negotiations whether oral or written, which is not incorporated in the Agreement shall be of any force or effect. In addition no representation or agreement or addendum varying, adding to, deleting or cancelling this Agreement shall be of any force or effect unless reduced to writing and signed non-electronically by both Parties.

1.7 Waiver

No grant by either Party to the other of any indulgences, condonation, waiver or allowance shall, in respect of any specific event or circumstance other than in respect of which the grant was made, constitute a waiver of the rights of the grantor in terms of the Agreement or an estoppel of the grantor's right to enforce the provisions of the Agreement.

1.8 Assignment

Neither the Client nor the Consultant shall, without the written consent of the other, assign the Contract or any part thereof or any obligation under the Contract.

1.9 Subcontracting

The Consultant shall not without the written consent of the Client initiate or terminate any sub-contract for performance of all or part of the Services.

1.10 Intellectual Property Rights

For the purposes of this Sub-Clause, Intellectual Property means statutory and common law proprietary rights in respect of patents, designs, copyright, know how, confidential information, domain names, drawings, data and all other rights in respect of Intellectual Property

compiled, created or prepared in execution of the Services to be performed in terms of the Agreement.

As between the Parties, all rights, title and interest and copyright in and to any Intellectual Property, and other intellectual property rights in the Consultant's documents and other design documents made by (or on behalf of) the Consultant and in and to any and all documents prepared in connection with the Agreement shall vest in the Client.

1.11 Notices

Notices to be served under the Agreement shall be in writing and will take effect from receipt at the addresses stated in the Particular Conditions. Delivery can be by email and/or registered post.

1.12 Publications

The Consultant, either alone or jointly with others, shall not publish any material relating to the Services or the Project without the prior written approval of the Client.

1.13 Conflict of Interest Corruption and Fraud

Notwithstanding any penalties that may be enforced against the Consultant under the Law, the Client will be entitled to terminate the Agreement in accordance Sub-Clause 4.6.2 and the Consultant shall be deemed to have breached Sub-Clause 3.3.1 if it is shown that the Consultant is guilty of:

- a) offering, giving, receiving or soliciting anything of value with a view to influencing the behaviour or action of anyone, whether a public official or otherwise, directly or indirectly in the selection process or in the conduct of the Agreement; or
- b) misrepresentation of facts in order to influence a selection process or the execution of a contract to the detriment of the Client, including the use of collusive practices intended to stifle or reduce the benefits of free and open competition.

1.14 Confidentiality

Unless otherwise provided for in the Agreement, and with the exception of those matters set out hereinbelow, the Parties warrant that each shall keep confidential all matters relating to the Project, and that the Parties, their employees, agents and servants shall not divulge or disclose to any organisation or any person any information, data, documents, secrets, dealings, transactions or affairs relating to or incidental to the Works and/or the Project.

The obligation of confidentiality shall not apply to the following:-

- (a) any matter generally available in the public domain otherwise than as a result of a breach of this Sub-Clause;
- (b) any disclosure which may reasonably be required for the performance of that Party's obligations under the Agreement;
- (c) disclosure of information which is required by statute, regulation or any other law;
- (d) the provision of information to contractors, consultants, sub-contractors or suppliers for purposes of executing the Works and/or the Project, provided that the obligations of confidentiality herein shall be imposed mutatis mutandis upon such contractors, consultants, sub-contractors or suppliers in their respective contracts; or
- (e) the provision of information to any third person with the express written permission of the other Party.

2. THE CLIENT

2.1 Information

The Client shall timeously provide to the Consultant, free of cost, all information that may be reasonably required for the provision of the Services. The Consultant shall be entitled to rely on the accuracy and

completeness of such information furnished by or on behalf of the Client.

2.2 Decisions

The Client shall give his decision on all matters properly referred to him in writing by the Consultant within a reasonable time so as not to delay the Services to be provided.

2.3 Equipment and Facilities

The Client shall make available, free of cost, to the Consultant for the purpose of the Services the equipment and facilities described in Annexure 2 [*Schedule of Personnel, Equipment, Facilities and Services of Others to be Provided by the Client*].

2.4 Client's Personnel

2.4.1 In consultation with the Consultant, the Client shall at his own cost arrange for the selection and provision of personnel in his employment to the Consultant in accordance with Annexure 2 [*Schedule of Personnel, Equipment, Facilities and Services of Others to be Provided by the Client*]. In connection with the provision of the Services such personnel shall take instructions only from the Consultant.

2.4.2 If the Client cannot supply Client's personnel for which he is responsible and it is agreed to be necessary for the satisfactory performance of the Services, the Consultant shall arrange for such supply as an Additional Service.

2.5 Client's Representative

2.5.1 The Client shall appoint a Client's Representative to carry out those duties delegated to him in terms of the Agreement and in addition shall monitor and report to the Client on conformance by the Consultant with the provisions of the Agreement. In addition the Client's Representative shall be authorised to receive, on behalf of the Client, all notices, correspondence and other communications issued pursuant to the Agreement.

2.5.2 The Client's Representative shall have no authority to relieve the Consultant of any of its duties, obligation or responsibilities under the Agreement or to amend any of the terms thereof.

2.5.3 All services to be provided by the Consultant shall be to the reasonable satisfaction of the Client's Representative. In addition the Client's Representative may instruct the Consultant to:-

- (a) appoint additional personnel at no cost to the Client where the Client's Representative considers that the Consultant is not complying with the provisions of the Contract and/or to
- (b) terminate the involvement of any person on the Contract where the Client's Representative considers the presence of such person to be contrary to the interests of the Agreement and/or the Project.

2.5.4 No approval given by the Client's Representative shall relieve the Consultant of its obligations under the Contract.

2.5.5 Where the Client's Representative is required to determine value, quantities, cost or extensions of time he shall consult and endeavour to reach agreement with the Consultant and in all cases shall determine such matters fairly, reasonably and in accordance with the Agreement.

2.5.6 The Client's Representative may from time to time delegate any of his duties to an assistant, and may at any time revoke any such

delegation. Such delegation or revocation shall be in writing and shall not take effect until a copy of same has been delivered to both Parties.

2.5.7 Any determination, instruction, inspection, examination, test, consent, approval or other similar act by an assistant delegated in terms of Sub-Clause 2.5.6 shall have the same effect as if it had been given by the Client's Representative itself. However, in the event of the Consultant questioning or disputing any determination or instruction, given by the said assistant, the Consultant may refer such matter to the Client's Representative, who shall confirm, reverse or vary such determination or instruction.

2.6 Services of Others

The Client shall at its cost arrange for the provision of services from others as described in Annexure 2 [*Schedule of Personnel, Equipment, Facilities and Services of Others to be Provided by the Client*] and the Consultant shall co-operate with the suppliers of such services but shall not be responsible for them or their performance.

2.7 Payment of Services

The Client shall pay the Consultant for the Services in accordance with Clause 5 [*PAYMENT*] hereof.

3. THE CONSULTANT

3.1 Scope of Services

The Consultant shall perform Services relating to the Project. The Scope of Services to be provided are as stated in Appendix 1 [*Scope of Services*].

3.2 Normal, Additional and Exceptional Services

3.2.1 Normal Services are those described as such in Appendix 1 [*Scope of Services*].

3.2.2 Additional Services are those described as such in Appendix 1 [*Scope of Services*] or which by written agreement of the Parties are otherwise additional to Normal Services.

3.2.3 Exceptional Services are those which are not Normal or Additional Services but which are necessarily performed by the Consultant in accordance with Sub-Clause 4.7 [*Exceptional Services*].

3.3 Duty of Care and Exercise of Authority

3.3.1 The Consultant shall exercise reasonable skill, care and diligence in the performance of its obligations under the Agreement.

3.3.2 Where the Services include the exercise of powers to certify or exercise discretion in terms of a contract between the Client and any third party the Consultant shall act in accordance with that contract, but as an independent professional acting with reasonable skill, care and diligence.

3.4 Client's Property

Anything supplied by or paid for by the Client for the use of the Consultant shall be the property of the Client and where practical shall be so marked.

3.5 Supply of Personnel

3.5.1 The personnel who are proposed by the Consultant to work in the Country shall be subject to acceptance by the Client with regard to their qualifications and experience; such acceptance shall not be unreasonably withheld.

3.5.2 Where the Client requires the Consultant to nominate key Personnel in Annexure 6[*Schedule of Consultant's Key Personnel*] hereto, such Personnel shall not be removed from the Project without the Client's express permission. Substituted Personnel shall have equivalent qualifications and experience.

3.5.3 The Consultant shall furnish the Client and the Client's Representative with a list of addresses and telephone numbers of personnel in the Consultant's organisation who may be contacted in any emergency both during and outside normal working hours.

3.6 Consultant's Representative

3.6.1 The Consultant shall appoint a Consultant's Representative who shall give of his whole time to directing the execution of the Services to be provided by the Consultant in terms of the Agreement. In addition the Consultant's Representative shall be authorised to receive, on behalf of the Consultant, all notices, instructions, consents, approvals, certificates, determinations, correspondence and other communications issued pursuant to the Agreement.

3.6.2 The Consultant shall not revoke the appointment of the Consultant's Representative without the prior consent of the Client's Representative.

3.6.3 The Consultant's Representative may from time to time delegate any of his duties to any competent person, and may at any time revoke any such delegation. Such delegation or revocation shall be in writing and shall not take effect until the Client's Representative has received prior notice signed by the Consultant's Representative, specifying the powers, functions and authority being delegated or revoked.

3.7 Changes in Personnel

3.7.1 If it is necessary to replace any of the personnel provided by the Consultant, the Consultant shall arrange for replacement by a person of comparable competence as soon as reasonably possible.

3.7.2 The cost of such replacement shall be borne by the Consultant except where the replacement is requested by the Client, and in such case:

- (a) the request shall be in writing stating the reasons for it; and
- (b) the Client shall bear the cost of replacement unless it is agreed that misconduct or inability to perform satisfactorily is accepted as the reason for the replacement by the Consultant.

3.8 Co-operation with Others

The Consultant may be required to perform the Services in conjunction with other consultants or specialists who are providing services to the Project and he may make recommendations to the Client in respect of such appointments for certain parts of the Project. In such case the Consultant shall only be responsible for his own performance and the performance of his sub-consultants or specialists who have specifically been appointed by the Consultant to assist him with the Services to be provided under this Agreement.

3.9 Statutory Obligations, Notices Fees and Charges

3.9.1 The Consultant shall at all times conform in all respects with the provisions of any Act of Parliament, Regulations, Bye-law of any Local or any other Statutory Authority or other Enactment having the force of law which may be applicable to the performance of its obligations under the Agreement and shall indemnify, and keep indemnified the Client, against damages that it may suffer as a result of any breach by the Consultant, its agents or employees, including any hired labour, of any

such Act, Regulation, Bye-law or other Enactment and including all legal costs on the attorney and client scale which may be payable as a result of any claims or proceedings in respect of the Agreement.

3.9.2 The Consultant shall be responsible for payment of all costs, taxes, duties, levies and charges arising out of compliance with such laws and regulations.

3.9.3 The Consultant shall be liable for, and shall indemnify the Client against any claim arising out of the Consultant's non-compliance with any laws and regulations applicable to the execution of this Agreement.

3.10 Progress Meetings

3.10.1 The Consultant shall arrange and attend meetings with the Client and/or its representatives at the request of the Client, but not less frequently than once every month during the currency of the Agreement, in order to monitor the progress of the Services to be provided.

3.10.2 The purpose of the meetings is also to raise and address matters of concern to the Client, and/or the Consultant. The Consultant shall be responsible for chairing the meetings, taking minutes and distributing minutes within one week of the date of each meeting.

3.11 Safety Procedures

At all times the Consultant shall:-

- (a) comply strictly with the Client's site SHE Specifications/Rules, applicable legislation, other requirements and regulations from time to time in force, a copy of which is deemed to be incorporated into and shall be read as part of the Agreement;
- (b) be responsible for the safety and welfare of all its employees and shall comply to all relevant SHE requirements;
- (c) familiarize himself with all the Client's internal SHEQ systems, regulations, policies and procedures and all legislative or statutory requirements with regard to the health and safety of the Consultant's employees;
- (d) ensure that all his personnel are fully briefed with regards to all relevant policies and safety procedures and that all personnel have attended any required inductions;
- (e) ensure that all personnel sign their acceptance of these procedures and regulations – which signed documents are to be kept in a register which is to be made available at all times for inspection;
- (f) at its own cost provide all of its employees with all necessary safety equipment, namely, safety boots, hard hats, overalls etc. and will at all times adhere to the Client's standards as well as the site rules and regulations, including his sub-consultants and their employees, the South African safety regulations in particular, the Occupational Health and Safety Act (No. 85 of 1993) and relevant regulations and their latest revisions;
- (g) be responsible for the discipline of its employees and shall, at the Client's request, remove from the site any incompetent or undesirable employees.

3.12 Security

The Consultant shall at all times remain responsible for the security of his own equipment. In addition the Consultant shall fully acquaint

himself and strictly comply with all the Client's security regulations particularly with regard to personnel, plant, material and equipment entering or leaving the Client's property.

3.13 Health and Safety

3.13.1 The Consultant is responsible for the safety and welfare of its employees and Sub-consultants employed on the Project and shall provide medical facilities as such facilities shall only be provided for by the Client under special circumstances.

3.13.2 The Consultant's attention is directed to the requirements of the Occupational Health and Safety Act No. 85 of 1993 as amended, its Regulations and the site rules and regulations of the Client shall at all

times be adhered to by the Consultant, his employees and his Sub-consultants.

3.16 Protection of the Environment

The Consultant's attention is directed to Client's SHEQ Policy a copy of which is appended to the Agreement as Appendix 2 (Technical Part).

The Consultant shall comply with all requirements, stipulations and the like of any Environmental Impact Assessment undertaken and/or issued in respect of the Project and/or the Works.

4.COMMENCEMENT, COMPLETION, VARIATION AND TERMINATION

4.1 Effective Date

5. The Agreement is effective from the date of the Letter of Acceptance or on the effective date of the Contract Agreement whichever is the latter.

6.

7. 4.2 Commencement and Completion

The Services shall be commenced on the Commencement Date, shall proceed in accordance with the Time Schedule in Annexure 3 [*Time Schedule for Services*], and shall be completed within the Time for Completion, subject to extensions in accordance with the Agreement.

4.3 Variations

4.3.1 The Client may order variations to the Services in writing or may request the Consultant to submit proposals, including the time and cost implications, for variations to the Services.

4.3.2 The incorporation into the Agreement of any variations to the Services ordered by the Client, including any increase in the Consultant's fees and reimbursable costs, shall be agreed between the Consultant and the Client.

4.4 Delays

If the Services are impeded or delayed by the Client or his contractors so as to increase the scope, cost or duration of the Services:

- (a) the Consultant shall inform the Client of the circumstances and probable effects;
- (b) the increase in scope and/or costs shall be regarded as an Additional Service; and
- (c) the time for completion of the Services shall be increased accordingly.

4.5 Changed Circumstances

If circumstances arise for which neither the Client nor Consultant is responsible and which make it irresponsible or impossible for the

Consultant to perform in whole or in part the Services in accordance with the Agreement he shall promptly dispatch a notice to the Client.

In these circumstances:

- (a) if certain Services have to be suspended, the time for their completion shall be extended until the circumstances no longer apply plus a reasonable period not exceeding 42 days for resumption of them; and
- (b) if the speed of performing certain Services has to be reduced, the time for their completion shall be extended as may be made necessary by the circumstances.

4.6 Abandonment, Suspension or Termination

4.6.1 The Client may suspend all or part of the Services or terminate the Agreement by notice of at least 30 days to the Consultant who shall immediately make arrangements to stop the Services and minimise further expenditure.

4.6.2 If the Client considers that the Consultant is without good reason not discharging his obligations he can inform the Consultant by notice stating the grounds for the notice. If a satisfactory reply is not received within 14 days the Client may by a further notice terminate the Agreement provided that such further notice is given within 35 days of the Client's former notice.

4.6.3 After giving at least 14 days notice to the Client, the Consultant may by a further notice of at least 42 days terminate the Agreement, or at his discretion without prejudice to the right to terminate, may suspend or continue suspension of performance of the whole or part of the Services:-

- (a) when 28 days after the due date for payment of an invoice he has not received payment of that part of it which has not by that time been contested in writing, or
- (b) when Services have been suspended under either Sub-Clause 4.5 [*Changed Circumstances*] or Sub-Clause 4.6.1 and the period of suspension has exceeded 182 days.

4.7 Exceptional Services

4.7.1 Upon the occurrence of circumstances described in Sub-Clause 4.5 [*Changed Circumstances*] or abandonment or suspension or resumption of Services or upon termination of the Agreement otherwise than under the provisions of Sub-Clause 4.6.2 any necessary work or expense by the Consultant extra to the Normal and Additional Services shall be regarded as Exceptional Services.

4.7.2 The performance of Exceptional Services shall entitle the Consultant to extra time necessary for their performance and to payment for performing them.

4.8 Rights and Liabilities of Parties

4.8.1 Termination of the Agreement shall not prejudice or affect the accrued rights or claims and liabilities of the Parties.

4.8.2 After termination of the Agreement the provisions of Sub-Clause 6.4 [*Limit of Compensation*] shall remain in force.

5. PAYMENT

5.1 Payment to the Consultant

5.1.1 The Client shall pay the Consultant for Normal Services in accordance with the Conditions and with the details stated in Annexure 1 [*Remuneration and Payment*], and shall pay for any Additional

Services at rates and prices which are given in or based on those in Annexure 1 [*Remuneration and Payment*] so far as they are applicable but otherwise as are agreed in accordance with Sub-Clause 4.3 [*Variations*].

5.1.2 Unless otherwise agreed in writing the Client shall pay the Consultant in respect of Exceptional Services:

- (a) as for Additional Services for extra time spent by the Consultant's personnel in the performance of the Services, and
- (b) the net cost of all other extra expense incurred by the Consultant.

5.1.3 Where the Client has required the Consultant to appoint selected consultants as the Consultant's sub-consultants, fees owed to those sub-consultants shall be due to the Consultant in addition to the Consultant's own fees.

5.2 Time for Payment

5.2.1 The Consultant shall submit monthly statements/invoices complete with all supporting documentation thereto to the Client by the 25th day of the month following the month in which the Services were rendered.

In the event that the Consultant fails to submit a statement by the 25th day of the month any late submission will only be evaluated in the next month.

Payment will be effected 30 days from date of statement.

5.2.2 If the Consultant does not receive payment by the due date in terms of Sub-Clause 5.2.1 he shall be paid Agreed Compensation at the rate defined in the Particular Conditions on the sum overdue reckoned from the due date for payment of the invoice until the actual date on which payment is received. Such Agreed Compensation shall not affect the rights of the Consultant stated in Sub-Clause 4.6.3.

5.3 Currencies of Payment

The currencies applicable to the Agreement are those stated in Annexure 1 [*Remuneration and Payment Schedule*]

5.4 Disputed Invoices

If any item or part of an item in an invoice submitted by the Consultant is contested by the Client, the Client shall give notice with reasons of his intention to withhold payment and shall not delay payment on the remainder of the invoice. Sub-Clause 5.2.2 shall apply to all contested amounts which are finally determined to have been payable to the Consultant.

5.5 Independent Audit

5.5.1 The Consultant shall maintain up-to-date records which clearly identify relevant time and expense and shall make these available to the Client on reasonable request.

5.5.2 Except where the Agreement provides for lump sum payments, not later than twelve months after the completion or termination of the Services, the Client can at notice of not less than 7 days require that a reputable firm of accountants nominated by him audit any amount claimed by the Consultant by attending during normal working hours at the office where the records are maintained.

6. LIABILITIES

6.1 Liability of the Parties

6.1.1 Neither Party shall be liable to the other for loss of profit or other special damages unless such loss of profit or other special damages was expressly contemplated at the time of entering into the Agreement.

6.1.2 In the event of the Client having a claim against the Consultant, the Client shall be entitled to set off such claim against any amounts due to the Consultant, or to deduct same from any security held by the Client, notwithstanding that such claim may be unliquidated.

6.2 Compensation

If it is considered that either party is liable to the other, compensation shall be payable only on the following terms:

- (a) Such compensation shall be limited to the amount of reasonably foreseeable loss and damage suffered as a result of such breach, but not otherwise;

In any event, the amount of such compensation will be limited to the amount specified in Sub-Clause 6.4 [*Limit of Compensation*].

6.3 Duration of Liability

Neither the Client nor the Consultant shall be considered liable for any loss or damage resulting from any occurrence unless a claim is formally made on him before the expiry of the relevant period stated in the Particular Conditions, or such earlier date as may be prescribed by law.

6.4 Limit of Compensation

6.4.1 The maximum amount of compensation payable by either party to the other in respect of liability under this Agreement is limited to the amount stated in the Particular Conditions. This limit is without prejudice to any Agreed Compensation specified under Sub-Clause 5.2.2 or otherwise imposed by the Agreement.

6.4.2 Each Party agrees to waive all claims against the other in so far as the aggregate of compensation which might otherwise be payable exceeds the maximum amount payable.

6.4.3 If either Party makes a claim for compensation against the other Party and this is not established the claimant shall entirely reimburse the other for his costs incurred as a result of the claim.

6.5 Indemnity

So far as the law governing this Agreement permits, the Client shall indemnify the Consultant against the adverse effects of all claims including such claims by third parties which arise out of or in connection with the Agreement including any made after the expiry of the period of liability referred to in Sub-Clause 6.3 [*Duration of Liability*], except insofar as they are covered by the insurances arranged under the terms of Clause 7 [*INSURANCE*].

6.6 Exceptions

Sub-Clauses 6.4 [*Limit of Compensation*] and 6.5 [*Indemnity*] do not apply to claims arising:

- (a) from deliberate default or reckless misconduct, or
- (b) otherwise than in connection with the performance of obligations under the Agreement.

7. INSURANCE

7.1 Professional Indemnity

The Consultant agrees to arrange and keep in force professional indemnity insurance cover in respect of the Services provided under this Agreement to the extent of the liability under Sub-Clause 6.4 [*Limit of Compensation*] until the time at which that liability shall cease in terms of Sub-Clause 6.3 [*Duration of Liability*]. The insurance cover may alternatively be provided by means of an equivalent performance bond.

7.2 Additional Insurances

The Consultant agrees to arrange and maintain at its own cost until the time at which liability shall cease in terms of Sub-Clause 6.3 [*Duration of Liability*], the following additional insurances:-

- (a) Third Party Liability Insurance;
- (b) Comprehensive Motor Vehicle Insurance;
- (c) Fidelity Guarantee;
- (d) Workers Compensation;
- (e) Group Personal Accident;
- (f) Group Life Assurance;

8. SETTLEMENT OF DISPUTES

8.1 Amicable Dispute Resolution

The Parties shall seek to resolve in good faith any dispute or difference arising between them in respect of any matter connected with this Agreement, including the validity of the Agreement, and may not initiate any further proceedings until either Party has, by written notice to the other, declared that such negotiations have failed.

8.2 Mediation

Any such dispute or claim, which cannot be settled between the Parties, may be referred by the Parties, without legal representation, to

mediation by a single mediator. The mediator shall be selected by agreement between the Parties and, failing such agreement, shall be nominated by the Chairman of the Association of Arbitrators of Southern Africa. The cost of the mediation shall be born equally between the Parties.

8.3 Arbitration

8.3.1 If either Party were unwilling to agree to mediation or be dissatisfied with the opinion expressed by the mediator or should the mediation fail then such Party may refer the dispute to arbitration by a single arbitrator to be mutually agreed upon or, failing agreement, to be nominated by the Chairman of the Association of Arbitrators (Southern Africa). The Arbitration shall be in terms of the Rules for the Conduct of Arbitrations as published by the said Association of Arbitrators. Referral to arbitration under this Sub-Clause shall take place within three months of the date of notice from either party declaring that the settlement negotiations under Sub-Clause 8.1 [*Amicable Dispute Resolution*] have failed, or, if mediation is agreed on, within three months of the date of the mediator's opinion or the date upon which the mediator declares that the mediation has failed, Claims not bought within the time periods set out herein will be deemed to be waived.

8.3.2 The said Rules shall be those Rules current at the date of declaration of the dispute.

8.3.3 The Arbitration shall be held in Johannesburg in the language of the Agreement.

CLAUSE	CLAUSE HEADING	CONDITION
5	PAYMENT 5.2 Time for Payment	Agreed compensation for overdue payment % per annum
6	LIABILITIES 6.3 Duration of Liability	Duration of liability is 5 years calculated from the commencement date.
	6.4 Limit of Compensation	Insert Rand Value

PART C2: PRICING DATA

C2.1. PRICING ASSUMPTIONS

1. These Bills of Quantities (C2.2) shall be used to assist both parties in administering and agreeing any changes/variations, which may arise during the course of the Contract.
2. These Bills of Quantities shall be used to calculate the value of work completed in the evaluation of interim/final payments.
3. The Contractor is deemed to have allowed opposite each item contained in these Bills of Quantities whatever costs and charges it may consider necessary for the carrying out, complying with and due observance of the provisions, conditions and requirements set out in the Contract.
4. No claim whatsoever will be entertained in respect of errors or omissions in pricing due to the brevity of a description of any item contained in these Bills of Quantities which items are fully described or can reasonably be inferred when read in conjunction with the relevant clauses provided for in the Conditions of Contract, Specifications, Drawings or other relevant documentation.
5. Any item left un-priced will be deemed to be provided for elsewhere and no claim for any extras arising out of the Contractor's omission to price any item will be entertained.

C2.2. PRICING SCHEDULES / BILLS OF QUANTITIES (BoQ)

The Bidder must refer to **Annexure C2.2: Pricing Schedule / Bill of Quantities (BoQ)** provided with this bid document.

The Bidder is required to submit the following:

- **Excel® format of the completed pricing schedule or BoQ in a compact disc (CD) or USB flash drive.**
- **Printed format and signed version of the completed pricing schedule or BoQ.**

PART C3: SCOPE OF WORK

C3.1. DATES FOR DELIVERY AND COMPLETION

1. It is estimated that the Contract will be placed on or before 01 May 2025 access to undertake work will only become available after the issue of the Site Access Certificate.
2. All equipment, plant, design documentation shall be handed over by 31 May 2030 and the Bidder's programme shall comply with this requirement by the Employer.
3. The contract shall end upon the exhaustion of funds on the purchase order or after 5 years whichever occurs earlier **(Unless an Extension of Time is granted by Delegated Authority)**.

C3.2. SCOPE OF WORK

Rand Water with its strategic customer (Midvaal Local Municipality), seek to exploit ways to address the bulk wastewater bottlenecks within the jurisdiction of the municipality to enable developments, protect the environment as well as improve the quality of life through the implementation of long-term sanitation infrastructure.

The scope of works includes the following:

1. Planning, assessment, investigation and studies (Feasibility study)
2. Inception and viability
3. Design development
4. Documentation and procurement
5. Contract administration and inspection
6. Close-out
7. Project Monitoring
8. Environmental Authorisation and Water Use Licence

The bidder should also make provision for a process of comparing and evaluating the technology performance, practices and strategies of wastewater treatment installations to identify best practices, areas of improvement and opportunities for growth (i.e. benchmarking). This, among others, shall include arrangements to physically visit similar installations and/or OEM facilities to gain insight on selected technologies.

As a minimum, the following performance indicators shall be considered for benchmarking:

- Contaminant removal efficiencies
- Water quality standards compliance
- Energy consumption
- Maintenance requirements
- Flexibility

This list is not exhaustive.

The bidder is therefore expected to provide a detail on the following.

1. Conduct a feasibility study for the wastewater treatment plant. The Consultant shall refer to Section C7 in this document for the guideline on requirement(s) for feasibility study of an industrial effluent water treatment plant to potable water standards
It is expected of the Consultant to do all the groundwork pertaining to pre-investigation studies and provide a detailed report for perusal and acceptance.
2. Investigate and acquire the land where the plant will be constructed. Subsequently, conduct Geotech and geohydrological studies.
3. Fully costed detail designs of the Midvaal Regional Wastewater Treatment Works, which will include
 - a) a detail design and the costs of Wastewater Treatment Works and associated infrastructure.
 - b) the designs must also include the bulk outfall sewers, rising mains and transfer sewer pump stations.

Name of the Wastewater Treatment Works	Expected Design capacity (Ml/day)
Midvaal Regional Wastewater Treatment Works	To be determined upon completion of the feasibility study

All work must be done in accordance with relevant legislation at a minimum, the latest revision of the act shall apply.

- Engineering Professions Act of 2000 (Act 46 of 2000)
 - Occupational Health and Safety Act (Act 85 of 1993) and its regulations, such as Pressure Equipment Regulations, Major Hazard Installation Regulations, Hazardous Chemical Substances Regulations and any other relevant regulations
 - National Water Act (Act 36 of 1998) Inclusive of the Dam Safety Regulation
 - National Environmental Management Act (107 of 1998)
 - National Environmental Waste Management Act (59 of 2008)
 - Critical Infrastructure Protection Act (8 of 2019)
- a) The consultant shall proceed to the next stage of the works once the previous stage has been completed and accepted by Rand Water.

C3.2.1. 2. BASIS OF PROFESSIONAL FEES CALCULATION

C3.2.1.2.1. Basis of calculation of professional fees

(a) The basis of calculation for professional fees shall be time based due to the nature project. Time based fees shall be all-inclusive fees, including allowances for overhead charges incurred by the consultant as part of normal business operations, including the cost of management, as well as payments to administrative, clerical and secretarial staff used to support professional and technical staff in general and not on a specific project only.

b) Time based fees are calculated by multiplying the hourly rate contemplated which is applicable to the consultant or any other technical staff employed by the consultant, with the actual time spent by such technical staff in rendering the services required by the client. Technical staff include all staff performing work directly related to the execution of the services the consultant is engaged for by the client and excludes all administrative, clerical and secretarial staff used to support professional and technical staff in general and not on a specific project only, but includes the typing of letters, minutes, reports and documents for projects.

c) The consultant hourly rates shall be deemed to include provision for the following expenses in his professional fee calculations to cater for all or any of the following items; no claims shall be entertained.

- i. All expenses actually incurred by the consultant and members of the consultant's staff in rendering their services.
- ii. Travelling expenses for the conveyance of the consultant or a member of the consultant's staff by means of private motor transport, including any parking charges, toll fees and related expenses; a scheduled airline or a train, bus, taxi or hired car; or non-scheduled or privately owned air transport.
- iii. Travelling time for all time spent in travelling by the consultant or members of his staff.
- iv. Costs of typing, production, copying and binding of contract documents, pre-qualification documents, feasibility reports, preliminary design reports, final reports and manuals, excluding general correspondence, minor reports, contractual reports, progress reports, etc.
- v. Expenses on special reproductions, copying, printing, artwork, binding and photography, etc. requested by the client.
- vi. In conducting all the specialist / investigation studies, the rate must be all inclusive of all costs required to produce the specialist study reports deliverables as per tender specification).

C3.2.1.2.2. Categories of personnel

To determine the time-based fee rates the persons concerned are divided into four categories: -

(a) **Category A**, in respect of a private consulting practice in engineering, shall mean a top practitioner whose expertise and relevant experience is nationally or internationally recognized and who provides advice at a level of specialization where such advice is recognized as that of an expert.

(b) **Category B**, in respect of a private consulting practice in engineering, shall mean a partner, a sole proprietor, a director, or a member who, jointly or severally with other partners, co-directors or co-members, bears the risks of the business, takes full responsibility for the liabilities of such practice, where level of expertise and relevant experience is commensurate with the position performs work of a conceptual nature in engineering design and development, provides strategic guidance in planning and executing a project and/or carries responsibility for quality management pertaining to a project.

(c) **Category C**, in respect of a private consulting practice in engineering, shall mean all salaried professional staff with adequate expertise and relevant experience performing work of an engineering nature and who carry the direct technical responsibility for one or more specific activities related to a project. A person referred to in Category B may also fall in this category if such person performs work of an engineering nature at this level.

(d) **Category D**, in respect of a private consulting practice in engineering, shall mean all other salaried technical staff with adequate expertise and relevant experience performing work of an engineering nature with direction and control provided by any person contemplated in categories A, B or C. The maximum time base fee rates shall be based on clause 4.5 Indicative Time-Based Fee rates as periodically published by and updated by Engineering Council of South Africa.

C3.2.2.1. FEE PAYMENT SCHEDULE

The following table indicates how the fee shall be apportioned over the various stages of the project. The fee shall become due upon presentation of the deliverables per stage as indicated in Appendix 1 Section 1 Scope of Works in the Technical Document. These deliverables shall be approved by the project manager, design engineer or the Design Review Committee whichever is applicable for the project.

1a) All Engineering Projects:

Stage of Services	Percentage payable points for each stage
1. Inception-	5%
2. Concept and Viability	25%
3. Design Development	25%
4. Documentation and Procurement	15%
5. Contract Administration and Inspection	25%

6. Close-Out	5%
7. Feasibility study	Time based

C. GENERAL CIVIL, ELECTRICAL, AUTOMATION, PROCESS, MECHANICAL, ARCHITECTURAL, GEOTECHNICAL ENGINEERING SERVICES

1 STRUCTURAL DRAUGHTSPERSON

1.1 REQUIREMENTS FOR CIVIL AND/OR STRUCTURAL DRAUGHTSPERSON

1.1.1 REQUIREMENTS

- i. Technical knowledge and experience in detailing of reinforced concrete, structural steel, earthworks, roads, drains and pipelines.
- ii. Extensive AutoCAD skills.
- iii. Minimum 5 years relevant draughting experience
- iv. Additional knowledge of Revit Structures and/or Civil 3D and/or the Techno CAD suite of programs, Structural steel detailing, civil detailing (roads, pipe specials, storm water drainage and sewers) will be advantageous.

1.2 DUTIES

- I. AutoCAD 2014 or later
- II. Able to produce advanced concrete reinforcement detail drawings and bending schedules given design (area of steel) – All detailing to be done in accordance with SANS 10144 or able to produce structural steel detail drawings.
- III. Able to use either Autopadds or Rebarmate.
- IV. Must be able to produce working drawings with minimal supervision.

2 CIVIL PIPELINE DESIGN ENGINEERS

1. REQUIREMENTS FOR CIVIL PIPELINE DESIGN ENGINEERS

1.1. REQUIREMENTS

- i. Formal Civil Engineering B Eng. Degree or Equivalent,
- ii. Professional Registration with the Engineering Council of South Africa
- iii. 6-10 years applicable post graduate experience with a minimum of four experience

in the design of large diameter steel bulk water pipelines and related structures, three years construction experience

- iv. Liaison and effective communication with other departments and stakeholders in the industry

1.2. DUTIES

- i. Develop planning briefs or pre-project investigation reports into project scope of work.
- ii. In conjunction with the survey, GIS section assist in the route section of the pipelines
- iii. Undertake hydraulic design for pumping and gravity pipelines including suction and delivery headers.
- iv. Detailed longitudinal section drawings
- v. Perform the pipeline selection of materials for the steel grade, lining and coating system, the cathodic protection system and the backfilling material.
- vi. Structural pipeline design: - analyse the pipe to soil system: design loads, deflections, pipe buckling.
- vii. Design of all pipe specials (bends, mitres, t pieces, wrapper plates)
- viii. Design of pipeline structures: valve chambers (air, isolating, reflux, scour),
- ix. Compilation of contract document made up design criteria, design reports, specifications,
- x. bills of quantities, drawings, and relevant standards
- xi. Direct, manage and develop junior engineers within the Pipeline Engineering Design Team in the Design Office, including the reviewing of team outputs for technical accuracy, adequacy, and compliance with set pipeline or civil design standards and organizational procedures.
- xii. Manage the interface with other engineering design disciplines (mechanical, civil, electrical, process, architectural and automation), consultants, asset engineers/managers, project teams, and contractors to accomplish completely integrated pipeline designs.
- xiii. Conduct/participate in scoping meetings, detailed design reviews, hazard and operability studies and present scopes / designs to the Design Review Committee / site personnel.
- xiv. Review and improve pipeline design standards and procedures conjunction with the Pipeline Asset Management Section
- xv. Pipeline engineering
- xvi. Knowledge of the applicable design standards e.g., BS 1295, EN13445, PD 5000
- xvii. Ability to interpret geotechnical recommendations into designs.
- xviii. Design of pipeline structures such as air valve chambers, etc

3. ELECTRICAL DESIGN ENGINEERS

3.1. REQUIREMENTS FOR ELECTRICAL DESIGN ENGINEERS

3.1.1. REQUIREMENTS

- i. B Sc (Eng) or B Eng degree or BTech in Electrical Engineering.
- ii. Already registered as a Professional Engineer with ECSA. Pr Tech Eng registration is not acceptable. Two years post ECSA Pr Eng registration experience required.
- iii. Ten years' relevant post qualification experience in industrial electrical plant comprising MV and LV switchgear, LV and MV motor drives, transformers, cable installations, MV and LV reticulation systems and control systems interfacing to PLC/SCADA systems. Experience in MV and LV reticulation alone is not acceptable. Experience in the design of appropriate electrical control, interlocking and protection systems, including feeder, motor and cable differential protection. Experience in the integration of components into a functional electrical and instrumentation system. Exposure to a c variable speed drives and small scale generation plant will be an advantage.
- iv. A minimum of two years' relevant experience in the installation and site commissioning of industrial electrical plant including MV and LV switchgear, LV and MV motor drives and MV and LV cabling and instrumentation.
- v. Three years relevant design experience comprising sizing of electrical equipment, drawings including single line diagrams, general arrangements and schematic diagrams, specifications of equipment and Bills of Quantities. The ability to generate solutions to complex problems with lateral thinking.
- vi. Experience in engineering contract management and administration, including schedule, quality and financial management of contracts and the application of international conditions of contract such as FIDIC or NEC.
- vii. Knowledge of the OHS Act, the Electrical Installation Regulations and the Construction Regulations and contractual safety requirements.
- viii. Exposure to production and maintenance management and management of shutdowns and outages of production plant for brownfields projects within operational plants.
- ix. Exposure to negotiations with Eskom and municipalities for MV supplies for new or upgraded pumping installations.
- x. Experience in the execution of projects and project management.
- xi. Experience in complex multi-disciplinary industrial projects involving rotating plant, and understanding of the mechanical, process, architectural, structural and automation interfaces to the electrical infrastructure.
- xii. Good working knowledge of national and international electrical engineering standards for e g LV and MV switchgear, miniature substations, LV and MV motors, variable speed drives and cables.
- xiii. The ability to work within the confines of sound engineering practice and Rand Water standards.

3.1.2. DUTIES

- i. Perform a full range of varied and responsible Electrical Engineering design work in LV and MV switchgear and reticulation, large MV motor drives, variable speed drives, transformers, cable installations, control systems, protection systems and interface to PLC/SCADA systems independently requiring a high level of judgment and independent evaluation, selection, and adaptation of standard techniques, and where required, devising new improved approaches to meet unique situations.
- ii. Involvement in work where no clear precedents exist, and which requires going beyond existing parameters and adaptation of plans to fit the situation, always bearing in mind the initial specifications, and the underlying reason for them.
- iii. Give input into pre-project recommendations prepared by the Assets section into project scopes of work.
- iv. Functional and detailed designs (including calculations, drawings, technical specifications, and tender document input).
- v. Integration of a proposed engineering solution into an operating plant with minimal effect to such plant.
- vi. Assist with the direction of the Electrical Engineering Design Team, including the assignment and co-ordination of work and reviewing of team outputs for technical accuracy, adequacy, and compliance with national and international electrical engineering standards and organizational procedures.
- vii. Assist in the development of staff within the Design Office.
- viii. Manage the interface with other engineering design disciplines (mechanical, civil, pipelines, process, architectural and automation), consultants, asset engineers/managers, project teams, and contractor's designers to accomplish completely integrated electrical designs.
- ix. Build and manage the working relationship with project managers, site operations and the Assets Sections.
- x. Participate and give input in scoping meetings, functional and detailed design reviews, hazard and operability studies and present scopes / designs to Asset Managers/site personnel.
- xi. Assist with the review and improvement to electrical design standards and procedures in conjunction with the Electrical Asset Management Section.
- xii. Give input into increased electrical supply capacity requirements from Eskom and municipalities at operational sites.
- xiii. May be required to provide technical advice/reports to management as well as operating, scientific and asset management areas of the business, on which Rand Water may base significant decisions.

- xiv. Liaises with other specialists such as quality assurance specialists and financial specialists.

4. AUTOMATION (CONTROL & INSTRUMENTATION) DESIGN ENGINEERS

4.1. REQUIREMENTS FOR AUTOMATION (C&I) DESIGN ENGINEERS

4.1.1. REQUIREMENTS

- i. Formal Electrical (Light Current) Engineering qualification (BSc Eng / B Eng degree/ B. Tech / BEng Tech or Equivalent)
- ii. Professional Registration with the Engineering Council of South Africa
- iii. 6-10 years applicable post graduate experience in Industrial automation (measurement, control and instrumentation) engineering

4.1.2 DUTIES

- iv. Designing and developing new automation systems
- v. Design and development Profibus, Modbus, Ethernet and Hardwired network design (PLC Architecture (Profibus and Ethernet)
- vi. Development Profibus, Modbus equipment general arrangement drawing
- vii. Design and development I/O listing and tagname database
- viii. Design and development Loop diagrams
- ix. Design and development Ethernet Network Architecture for SCADA
- x. Development HMI Layout
- xi. Development of SCADA mimics
- xii. Development of Instruments List
- xiii. Development of Instruments power load list
- xiv. Development of Instrument Datasheets
- xv. Design and development of Overall Control System Architecture Drawing

5. PROCESS DESIGN ENGINEERS

5.1. REQUIREMENTS FOR PROCESS DESIGN ENGINEERS

5.1.1. REQUIREMENTS

- xvi. Formal Chemical/Process Engineering qualification (BSc Eng / B Eng degree/ B. Tech / BEng Tech or Equivalent)
- xvii. Professional Registration with the Engineering Council of South Africa

- xviii. 6-10 years applicable post graduate experience in process design
- xix. Water industry experience

5.1.2 DUTIES

- xx. Development of design basis, process flow diagrams, mass & energy balances, utility balances
- xxi. Development of piping and instrument diagrams, mechanical flow diagrams, and utility flow diagrams
- xxii. Development of process equipment / instrument data sheets, process philosophies, equipment/ line/ tie-in/ fluid/ utility consumption/ waste & emission lists.
- xxiii. Development process philosophies, operating, safety and commissioning manuals
- xxiv. Relief valve calculations and relief load summary and other safety related calculations
- xxv. Provide process inputs to material selection table and hazardous area classification.
- xxvi. Perform unit operation sizing
- xxvii. Perform simple and complex calculations
- xxviii. Computer process simulations
- xxix. Hydraulic sizing of piping, pumps and control valves
- xxx. Plant layout studies
- xxxi. Provide inter-discipline support.
- xxxii. Display knowledge of the appropriate design codes with respect to process applications

6. MECHANICAL DESIGN ENGINEERS

6.1. REQUIREMENTS FOR MECHANICAL DESIGN ENGINEERS

6.1.1. REQUIREMENTS

- i. Formal Mechanical Engineering qualification (BSc Eng / B Eng degree/ B. Tech / BEng Tech or Equivalent)
- ii. Professional Registration with the Engineering Council of South Africa
- iii. 6-10 years applicable post graduate experience in mechanical design

6.1.2. DUTIES

- iv. Developing and implementing mechanical engineering plans
- v. Development of mechanical detailed design
- vi. Design, development and specifications of pumps, cranes, valves etc.
- vii. Surge analysis
- viii. Review and approve the quality control plan (QCP's) and/ Inspection and test plans (ITP's)

- ix. Interpret or evaluate test results in accordance with applicable codes, standards, specifications, or procedures. Interpret the results of all methods of non-destructive testing (NDT), such as acoustic emission, electromagnetic, leak, liquid penetrant, magnetic particle, neutron radiographic, radiographic, thermal or infrared, ultrasonic, vibration analysis, and visual testing
- x. Display knowledge of the appropriate design codes with respect to mechanical engineering applications

7. PROFESSIONAL GEOTECHNICAL ENGINEER

7.1. REQUIREMENTS FOR PROFESSIONAL GEOTECHNICAL DESIGN ENGINEERS

7.1.1. REQUIREMENTS

- i. Minimum qualification of internationally recognized Bachelor of Science in Engineering or Bachelor of Engineering degree in Civil Engineering.
- ii. Registration with ECSA as a Professional Engineer.
- iii. At least 20 years specialist experience in geotechnical investigations and foundation design of water retaining structures; in a position of direct responsibility and decision making. Knowledge of local soil and geological conditions as well construction practices of water retaining structures.
- iv. CESA Membership as a Firm and/or Registered Principal.

7.1.2 DUTIES

Conduct geotechnical evaluation and recommendations for existing assets and construction of new assets in the water treatment industry, these include but are not limited to process plants, reservoirs, sedimentation tanks, pipelines, valve chambers etc.,

- Determine design criteria and site conditions (in-situ soil classification, hydraulic conductivity, potential expansiveness, groundwater, active and passive soil pressure, total and differential settlement, design bearing capacity. A technical specification will be provided to the consultants.
- Compile a geotechnical data report (to summarise geotechnical information accumulated in the field reconnaissance, data review, field explorations, field resistivity, and laboratory testing).
- Compile a geotechnical recommendations report (to include recommendations for the Design Engineer for foundation types and materials, shoring methods for the safety of the workers, with a cost and feasibility analysis of each proposed foundation type)
 - i. Conduct geotechnical evaluation and design the foundation requirements for the construction of all structures including pipelines. In conducting the geotechnical

evaluation, the consultant must cater for all equipment, and lab test required to produce the geotechnical deliverables.

- ii. Determine design criteria and site conditions (in-situ soil classification, hydraulic conductivity, potential expansiveness, groundwater, active and passive soil pressure, total and differential settlement, design bearing capacity etc.)
- iii. Compile a geotechnical data report (to summarise geotechnical information accumulated in the field reconnaissance, data review, field explorations, field resistivity, and laboratory testing)
- iv. Compile a geotechnical recommendations report (to include the Design Engineer for foundation types and materials, with a cost and feasibility analysis of each proposed foundation type)

8. ARCHITECT

8.1. REQUIREMENTS FOR ARCHITECTURAL DESIGN ENGINEERS

8.1.1. REQUIREMENTS

- i. Formal Bachelor of Architectural Studies qualification (BAS, BAS Hons, BArch, Bsc Arch, MArch or Equivalent)
- ii. Pr. Arch. registration with SACAP
- iii. 6-10 years applicable post graduate experience in architectural design

DUTIES

- iv. Combining architectural design principles with engineering technology to develop building plans and systems
- v. Preparing detailed architectural drawings, plans, and specifications
- vi. Using Computer-Aided Design (CAD) software to create 3D models and simulations
- vii. Applying engineering principles to design safe and functional building structures
- viii. deep understanding of building codes and regulations. They ensure that their designs and construction processes adhere to the applicable codes and standards, ensuring the safety and well-being of occupants.
- ix. integrating various building systems such as mechanical, electrical, plumbing, and HVAC (heating, ventilation, and air conditioning).
- x. select appropriate materials for construction, considering factors like durability, cost-effectiveness, environmental impact, and aesthetic appeal
- xi. Display knowledge of the appropriate design codes with respect to mechanical engineering applications

Resource Title	CATEGORY A			CATEGORY B			CATEGORY C			CATEGORY D		
	Qualifications	Years of Experience (Post PR)	Hourly Rate per person	Qualifications	Years of Experience	Hourly Rate per person	Qualifications	Years of Experience (Post PR)	Hourly Rate per person	Qualifications	Years of Experience (Post PR)	Hourly Rate per person
Engineers Design and Asset Management (All Disciplines)	Deg. + Prof Registration	>12		Deg. + Prof Registration	8 to 12		Deg. + Prof Registration	5 to 8		Deg. + Prof Registration	2 to 4	
Geotechnical Engineer	Deg. + Prof Registration	>12		Deg. + Prof Registration	8 to 12		Deg. + Prof Registration	5 to 8		Deg. + Prof Registration	3 to 4	
Geohydrologist / Hydrologist Scientists	Deg. + Prof Registration	>12		Deg. + Prof Registration	8 to 12		Deg. + Prof Registration	5 to 8		Deg. + Prof Registration	3 to 4	
Design- Draughts person	Draughting Diploma	>12		Draughting Diploma	8 to 12		Draughting Diploma	5 to 8		Draughting Diploma	3 to 4	
Corrosion Engineer/D design- Cathodic Protection systems	Deg. +NACE Prof Registration	>12		Deg. + NACE Prof Registration	8 to 12		Deg. + NACE Prof Registration	5 to 8		Deg.	3 to 4	

NB* In conducting the all specialist / investigation studies, the rate must be all inclusive of all costs required to produce all relevant deliverables as per tender requirements)

C5. LIST OF APPLICABLE DESIGN STANDARDS

C5.1 RAND WATER STANDARD (ELECTRICAL)

No	RW No	Description
1.	RW-EES-002-REV-1B	Electrical Engineering Standard for Electrical Drawings
2.	RW-00320-AS-001-Rev D	General Electrical Specification for the Design & Selection of Electrical Equipment
3.	RW-00320-AS-116 Rev C	Standard for Earthing and Suppression
4.	RW-00320-AS-488 Rev B	Engineering Standard for the Control of Plant and Equipment
5.	SAM EAM 00001 Spec Rev 1	Specification for Control Panels and Factory Build Assemblies of Low Voltage switchgear and Control Gear
6.	RW-00320-AS-492	Standard Electrical Specification for LV Squirrel Cage Induction Motors
7.	RW-00320-AS-494 Rev B	General Electrical Standard for Uninterruptible Power Supplies
8.	RW-00320-AS-495	General Electrical Specification for Automatic Mains Failure Diesel Generators
9.	RW-00320-AS-496	General Electrical Specification for the Installation of Plant and Equipment
10.	RC-01422 Rev B	Area lighting installation
11.	RW-01200-S-022 Rev 2	Specification for Plant Codification Labels–WKS Codes
12.	RW-00320-AS-909	Instrument Transformers for Protection and Metering in Medium Voltage Systems
13.	RC-01475	Standard for 110VDC Auxiliary and Battery Charging Systems
14.	RW-00320-AS-978	Medium Voltage Switchgear and Ancillary Equipment
15.	RW-00320-S REV C	Standard Electrical Specification for Low Voltage Variable Frequency Converters
16.	RW-00320-AS-XXX Rev 0	Specification for Dry Type Distribution and Power Transformers
17.	RC-01462	Standard for Medium Voltage Asynchronous Motors
18.	SAM EAM 00002 Spec Rev 1	Standard Specification for The Refurbishment and Repair of Medium Voltage Electric Motors
19.	RC-01519	Standard for Mimic Control Panels
20.	SAM EAM 00003 Spec Rev 1	Specification for Building Lighting and Small Power Installations

C5.1.1 NATIONAL AND INTERNATIONAL STANDARDS (ELECTRICAL)

GENERAL

No	Standard No	Description
1	SANS 1019	Standard voltages, currents and insulation levels for electricity supply
2	SANS IEC 60529	Degrees of protection provided by enclosures (IP code)
3	SANS 60050	International Electro technical vocabulary. Chapter 441: Switchgear, control gear and fuses
4	SABS ISO 9001, Parts I, II and III.	Quality systems
5	SANS 1091	National colour standard for paint
6	BS 4190	Specification for ISO metric black hexagon bolts, screws and nuts
7	OHS Act	Occupational Health and Safety Act (Act 85 Of 1993)
8	SANS 60909-1	Short-Circuit Currents In Three-Phase A.C. Systems Part 1: Factors For The Calculation Of Short-Circuit Currents According To IEC 60909-0 Use With: SANS 60909-0
9	SANS 60909-3	Short-Circuit Currents In Three-Phase A.C. Systems Part 3: Currents During Two Separate Simultaneous Line-To-Earth Short Circuits And Partial Short-Circuit Currents Flowing Through Earth Use With: SANS 60909-0
10	SANS 60909-2	Short-Circuit Currents In Three-Phase A.C. Systems Part 2: Data Of Electrical Equipment For Short- Circuit Current Calculations Use With: SANS 60909-0
11	SANS 10142-1	The wiring of premises Part 1: Low-voltage installations
12	SANS 10142-2	The wiring of premises Part 2: Medium-voltage installations above 1 kV a.c. not exceeding 22 kV a.c. and up to and including 3 000 kW installed capacity
13	SANS 10139	Fire installation

MEDIUM VOLTAGE SWITCHGEAR

No	Standard No	Description
1	SANS 62271-100/IEC 62271-100	High-voltage switchgear and controlgear Part 100: Alternating-current circuit-breakers
2	SANS 62271-102/IEC 62271-102	High-voltage switchgear and control gear Part 102: Alternating current disconnectors and earthing switches
3	SANS 62271-103:2012/IEC 62271-103	High-voltage switchgear and control gear Part 103: Switches for rated voltages above 1 kV up to and including 52 kV
4	SANS 62271-105/IEC 62271-105	High-voltage switchgear and control gear Part 105: Alternating current switch-fuse combinations

5	SANS 62271-200/IEC 62271-200	High-voltage switchgear and control gear Part 200: AC metal-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV
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INSTRUMENT TRANSFORMERS

No	Standard No	Description
1	SANS 60044-1	Instrument Transformers: Part 1: Current Transformers
2	SANS 60044-2/IEC 60044-2	Instrument transformers Part 2: Inductive voltage transformers
3	SANS 60186	Voltage transformers
4	NRS 029	Current transformers for rated a c voltage from 3,6kV up to and including 420kV
5	NRS 030	Electromagnetic voltage transformers- For rated a c voltage from 3,6kV up to and including 145kV – Preferred requirements for applications in the electricity supply industry
6	BS 3938	Specification for current transformers
7	BS 3941	Specification for voltage transformers

METERING

No	Standard No	Description
1	SANS 62051	Electricity metering - Glossary of terms
2	SANS 62052-11	Electricity metering equipment (a.c) – General requirements, tests and test conditions. Part 11: Metering Equipment
3	SANS 62053-11	Electricity metering equipment (a.c) – Particular requirements. Part 11: Electro mechanical meters for active energy (classes 0.5, 1 & 2)
4	SANS 62053-21	Electricity metering equipment (a.c) – Particular requirements. Part 21: Static meters for active energy (classes 1 & 2)
5	SANS 62053-22	Electricity metering equipment (a.c) – Particular requirements. Part 22: Static meters for active energy (classes 0.2S, & 0.5S)
6	SANS 62053-52	Electricity metering equipment (a.c) – Particular requirements. Part 52: Symbols
7	SANS 1799	Watt-hour meters - AC electronic meters for active energy
8	NRS 057-4	Electricity Metering. Part 4: Code of Practice

HV FUSES

No	Standard No	Description
1	SANS 60282-1	High Voltage Fuses. Part 1: Current Limiting
2	SANS 60282-1	High Voltage Fuses. Part 2: Expulsion Fuses

HV CIRCUIT BREAKERS, SWITCHES & CONTACTORS

No	Standard No	Description
1	NRS 006	Switchgear - Metal-enclosed ring main units - For rated a.c. voltages above 1 kV and up to and including 36 kV - Preferred requirements for applications in the electricity supply industry
2	NRS 031	Alternating current disconnectors and earthing switches (up to 145kV)
3	SANS 60056-1	High-voltage alternating-current circuit-breakers
4	SANS 1874	Metal-enclosed ring main units - For rated a.c. voltages above 1 kV and up to and including 36 kV
5	SANS 60265-1	High-voltage switches - Part 1: Switches for rated voltages above 1 kV and less than 52 kV
6	SANS 60219	Alternating current disconnectors and earthing switches
7	SANS 60420	High-voltage alternating current switch-fuse combinations
8	SANS 60470	High-voltage alternating current contactors and contactor-based motor-starters

1.1.1. PROTECTION RELAYS

No	Standard No	Description
1	IEC 60255	Parts 1 to 25 – Electrical Relays

CABLES AND CABLE INSTALLATION (LV, MV & EARTHING)

No	Standard No	Description
1	SANS 97	Electric cables - Impregnated paper-insulated metal-sheathed cables for rated voltages 3,3/3,3 kV to 19/33 kV (excluding pressure assisted cables)
2	SANS 1339	Electric cables - Cross-linked polyethylene (XLPE) insulated cables for rated voltages 3,8/6,6 kV to 19/33 kV
3	SANS 1507	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300 V)
4	SANS 1507-1	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300 V) Part 1: General
5	SABS 1507-2	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300 V) Part 2: Wiring cables
6	SANS 1507-3	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300 V) Part 3: PVC distribution cables
7	SANS 1507-4	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300 V) Part 4: XLPE cables
8	SANS 1507-5	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300 V) Part 5: Halogen free distribution cables

9	SANS 1507-6	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300 V) Part 6: Service cables
10	SANS 10198-1	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 1: Definitions and statutory requirements
11	SANS 10198-2	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 2: Selection of cable type and methods of installation
12	SANS 10198-3	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 3: Earthing systems - general provisions
13	SANS 10198-4	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 4: Current ratings
13	SANS 10198-5	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 5: Determination of thermal and electrical resistivity of soil
14	SANS 10198-6	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 6: Transportation and storage
15	SANS 10198-7	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 7: Safety precautions
16	SANS 10198-8	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 8: Cable laying and installation
17	SANS 10198-9	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 9: Jointing and termination of extruded solid dielectric-insulated cables up to 3,3 kV
18	SANS 0198-10	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 10: Jointing and termination of paper-insulated cables
19	SANS 0198-11	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 10: Jointing and termination of screened polymeric-insulated cables
20	SANS 10198-12	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 12: Installation of earthing system
21	SANS 10198-13:1995	The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 13: Testing, commissioning and fault location
22	NRS 012	Enclosures for cable terminations in air - For rated voltages of 7,2 kV and up to and including 36 kV - Preferred requirements for applications in the electricity supply industry
23	NRS 011	Pilot cables - Preferred requirements for applications in the electrical supply industry
24	NRS 013	Medium-voltage cables - Preferred requirements for applications in the Electricity Supply Industry

25	NRS 028	Cable lugs and ferrules for copper and aluminium conductors - Preferred requirements for applications in the electricity supply industry
26	NRS 053	Accessories for medium-voltage power cables (3,8/6,6 kV to 19/33 kV)
27	VC 8075	Safety of electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1 900/3 300 V)
28	SANS 10142-2	The wiring of premises Part 2: Installations above 1 kV not exceeding 33 kV
29	SANS 1574	Electric cables- Flexible cords and flexible cables

LOW VOLTAGE SWITCHGEAR

No	Standard No	Description
1	SANS IEC 60439- 1	Low voltage switchgear and controlgear assemblies Part 1: Type-tested and partially type-tested assemblies
2	SANS IEC 60439- 2	Low voltage switchgear and controlgear assemblies Part 2: Particular requirements for busbar trunking systems (busways)
3	SANS IEC 60439- 3	Low voltage switchgear and controlgear assemblies Part 3: Particular requirements for low voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access to their use- Distribution boards
4	SANS IEC 60439- 4	Low voltage switchgear and control gear assemblies Part 4: Particular requirements for assemblies for construction sites (ACS)
5	SANS IEC 60439- 5	Low voltage switchgear and control gear assemblies Part 5: Particular requirements for assemblies intended to be installed outdoors in public places- Cable distribution cabinets (CDC's) for power distribution in networks
6	BS 5486-12	Low-voltage switchgear and control gear assemblies. Specification for particular requirements of type tested miniature circuit- breaker boards
7	SANS IEC 60947-1	Low Voltage Switchgear and Control Gear Part 1: General Rules
8	SANS IEC 60947-2	Low Voltage Switchgear and Control Gear Part 2: Circuit Breakers
9	SANS IEC 60947-3	Low Voltage Switchgear and Control Gear Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units
10	SANS IEC 60947-4-1	Low Voltage Switchgear and Control Gear Part 4: Contactors and motor-starters Section 1: Electromechanical contactors and motor-starters
11	SANS IEC 60947-4-2	Low Voltage Switchgear and Control Gear Part 4: Contactors and motor-starters Section 2: A C semiconductor motor controllers and starters
12	SANS IEC 60947-4-3	Low Voltage Switchgear and Control Gear Part 4: Contactors and motor-starters Section 3: A C semiconductor controllers and contactors for non-motor starters
13	SANS IEC 60947-5-1	Low Voltage Switchgear and Control Gear Part 5: Control Circuit devices and switching elements- Electromechanical control circuit devices

14	SABS 763	Hot dip (galvanized) zinc coating
15	SABS 1473-1	Low-voltage switchgear and control gear assemblies Part 1: Type-tested and partially type-tested assemblies
16	SABS 1473-2	Low-voltage switchgear and control gear assemblies Part 2: Busbar trunking systems
17	SABS 1973-3	Safety of assemblies with a rated prospective short-circuit current of up to and including 10 kA
18	SANS 1973-1	Low-Voltage Switchgear and Control Gear ASSEMBLIES Part 1: Type-Tested ASSEMBLIES With Stated Deviations and A Rated Short-Circuit Withstand Strength Above 10 kA Use with: SANS 60439-1
19	SANS 1973-3	Low-Voltage Switchgear and Control Gear ASSEMBLIES Part 3: Safety Of ASSEMBLIES With A Rated Prospective Short-Circuit Current Of Up To And Including 10 kA
20	SANS 1973-7	Low-Voltage Switchgear and Control Gear ASSEMBLIES Part 7: Requirements For Testing Under Conditions Of Arcing Due To Internal Fault Use with: SANS 60439-1

BUSBARS

No	Standard No	Description
1	SANS 1195	Busbars and Busbar Connections

CIRCUIT BREAKERS & EARTH LEAKAGE PROTECTION

No	Standard No	Description
1	VC 8035	Compulsory Specification for Earth Leakage Units
2	VC 8036	Compulsory Specification for Circuit Breakers
3	SANS 156	Moulded-case Circuit-Breakers
4	SANS 767-1	Earth leakage protection units Part 1: Fixed earth leakage protection circuit-breakers
5	SANS 767-2	Earth leakage protection units Part 1: Single phase, portable units

SURGE ARRESTORS AND PROTECTION

No	Standard No	Description
1	SANS 60099-4	Surge Arresters Part 4: Metal-Oxide Surge Arresters Without Gaps for A.C. Systems
2	SANS 61643-1	Low-voltage surge protective devices Part 1: Surge protective devices connected to low-voltage power distribution systems - Requirements and tests

3	SANS 61643-11	Low-voltage surge protective devices Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
4	SANS 61643-12	Low-voltage surge protective devices Part 12: Surge protective devices connected to low-voltage power distribution systems - Selection and application principles
5	SANS 61643-21	Low voltage surge protective devices Part 21: Surge protective devices connected to telecommunications and signaling networks - Performance requirements and testing methods
6	SANS 61643-22	Low-voltage surge protective devices Part 22: Surge protective devices connected to telecommunications and signaling networks - Selection and application principles
7	SANS 61643-321	Components for low-voltage surge protective devices Part 321: Specification for avalanche breakdown diode (ABD)
8	SANS 61643-341	Components for low-voltage surge protective devices Part 341: Specification for thyristor surge suppressors (TSS)
9	SANS 60099-1	Surge Arresters Part 1: Non-Linear Resistor Type Gapped Surge Arresters For A.C Systems
	SANS 60099-5	Surge arresters Part 5: Selection and application recommendations

TRANSFORMERS

No	Standard No	Description
1	SANS 780	Distribution transformers
2	SANS 60076-1	Power transformers Part 1
3	SANS 60076-2	Power transformers Part 2: Temperature rise
4	SANS 60076-3	Power transformers Part 3: Insulation levels, dielectric tests and external clearances in air
5	SANS 60076-4	Lightning impulse and switching impulse
6	SANS 60076-5	Power transformers Part 5: Ability to withstand short circuits
	SANS 60076-6	Power transformers Part 6: Reactors
7	SANS 60076-8	Power Transformers Part 8: Application Guide
8	SANS 60076-10	Power transformers Part 10: Determination of sound levels
9	SANS 60076-12	Power transformers Part 12: Loading guide for dry type power transformers
10	SANS 60146-3	Semiconductor convertors Part 1-3: General requirements and line commutated convertors - Transformers and reactors
11	SANS 61378-1	Convertor transformers Part 1: Transformers for industrial applications
12	SANS 61378-3	Converter transformers Part 3: Application guide
13	SANS 1037	Standard transformer bushings
14	SANS 61558-1	Safety of Power Transformers Part 1

15	SANS 61558-2-2	Safety of Power Transformers Part 2
16	SANS 61558-2-4	Safety of Power Transformers Part 2-4
17	SANS 61558-2-6	Safety of Power Transformers Part 2-6
18	SANS 60076-11	Power transformers Part 11: Dry type transformers

EARTHING

No	Standard No	Description
1	SANS 10200	Neutral earthing in medium voltage industrial power systems
2	SANS 0292	Earthing of low-voltage (LV) distribution systems
3	SANS 0199	The design and installation of an earth electrode
4	SANS 1063	Earth rods and couplers

LIGHTNING PROTECTION

No	Standard No	Description
1	NRS 042	Guide for the protection of electronic equipment against damaging transients - For applications in the electricity supply industry
2	SANS 10313	The protection of structures against lightning
3	SANS 62305-1	Protection against lightning Part 1- General principles
4	SANS 62305-2	Protection against lightning Part 2-Risk Management
5	SANS 62305-3	Protection against lightning Part 3-Physical damage to structures and life hazard
6	SANS 62305-4	Protection against lightning Part 4-Electrical and electronic systems within structures
7	SANS 61312-1	Protection against lightning electromagnetic impulse Part 1: General principles
8	SANS 61312-2	Protection against lightning electromagnetic impulse (LEMP) Part 2: Shielding of structures, bonding inside structures and earthing
9	SANS 61312-4	Protection against lightning electromagnetic impulse Part 4: Protection of equipment in existing structures
10	SANS IEC 61662	Assessment of the risk of damage due to lightning

LIGHTING

No	Standard No	Description
1	SANS 0114-1	Interior lighting Part 1: Artificial lighting of interiors
2	SANS 0114-2	Interior lighting Part 2: Emergency lighting

BUILDING ELECTRICAL INSTALLATIONS

No	Standard No	Description
1	SANS 10142-1	The wiring of premises Part 1: Low-voltage installations

2	SANS 1239	Plugs, socket outlets and couplers for industrial purposes
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UNINTERRUPTIBLE POWER SUPPLIES

No	Standard No	Description
1	SANS 62040-1	Uninterruptible power systems (UPS) Part 1: General and safety requirements for UPS
2	SANS 62040-2	Uninterruptible power systems (UPS) Part 2: Electromagnetic compatibility (EMC) requirements
3	SANS 62040-3	Uninterruptible power systems (UPS) Part 3: Method of specifying the performance and test requirements

DIESEL STANDBY GENERATOR SETS

No	Standard No	Description
13	SANS 8528-1	Reciprocating internal combustion engine driven alternating current generating sets Part 1: Application, ratings and performance
2	SANS 8528-2	Reciprocating internal combustion engine driven alternating current generating sets Part 2: Engines
3	SANS 8528-3	Reciprocating internal combustion engine driven alternating current generating sets Part 3: Alternating current generators for generating sets
4	SANS 8528-4	Reciprocating internal combustion engine driven alternating current generating sets Part 4: Control gear and switchgear
5	SANS 8528-5	Reciprocating internal combustion engine driven alternating current generating sets Part 5: Generating sets
6	SANS 8528-7	Reciprocating internal combustion engine driven alternating current generating sets Part 7: Technical declarations for specification and design
7	IEC 60034-22	AC generators

RING MAIN UNIT

No	Standard No	Description
1	IEC 60694	Common clauses for MV switchgear standards
2	IEC 62271-200	MV metal-enclosed switchgear and earthing switches
3	IEC 660265-102	AC Disconnectors and earthing switches
4	IEC 62271-100	MV AC circuit breakers
5	IEC 62271-105	MV AC switch-fuse combination
6	IEC 60529	Degrees of protection procured by enclosures (IP code)

C5.2 RAND WATER STANDARD (AUTOMATION)

1. DESIGN

CODE	DESCRIPTION
SAM AAM 00003 Spec	Automation Asset Management Standard Specification
SAM DOAUTO 00001 Pr	Automation Design Procedure

2. PLC

CODE	DESCRIPTION
SAM AAM 00019 Spec	Tag naming Convention
SAM AAM 00015F rev01	Programmable Logic Controller Sheet

3. PANELS

CODE	DESCRIPTION
SAM AAM 00004 Spec	- Automation Panels Standard Specification
SANS 10313	Protection against lightning – Physical damage to structures and life hazard
SANS 10199	The design and installation of earth electrodes
RW 00320 AS 491	Factory Built Assemblies of LV switchgear
RA 29317	Standard Automation Kiosk

4. INSTRUMENTS

CODE	DESCRIPTION
RW AAM 02008	Ultrasonic Clamp-on Flow meter
SAM AAM 00017 Spec	Pressure Measurement Standard Specification
RW AAM 02006	Magnetic Flow Meter
RW AAM 02008	Ultrasonic Clampon Flowmeter
RW AAM 02018	RTD Probe Standard Specification Rev B
SAM AAM 00006Spec	Temperature Measurement Std Spec
RW AAM 01000	Conductivity Specification

RW AAM 01001	pH Specification
RW AAM 01002	Free Chlorine Specification
RW AAM 01003	Turbidity Specification
RW AAM 01005	Ammonia Specification
RW AAM 01007	Total Chlorine Specification
RW AAM 01008	Monochloramine Specification
RW AAM 02001	Gauge Pressure Measurement
SAM AAM 00006Spec	Temperature Measurement Std Spec

5. CABLING

CODE	DESCRIPTION
RW AAM 04000	Profibus Standard
RW AAM 07000	Industrial Ethernet Standard Specification
SAM AAM 00001 Spec	Fibre Optic Cable Standard Specification

6. SCADA

CODE	DESCRIPTION
SAM AAM 00019 Spec	Tag naming Convention
RW AAM 06000	SCADA Standard Specification

7. TELEMETRY

CODE	DESCRIPTION
RW AAM 04004	Telemetry Standard Specification

8. COMMUNICATION NETWORK

CODE	DESCRIPTION
RW AAM 07000	Industrial Ethernet Standard Specification
RW AAM 04000	Profibus Standard

9. CYBER SECURITY

CODE	DESCRIPTION
SAM AAM 00003 Std	AUTOMATION CYBERSECURITY STANDARD

C5.3 RAND WATER STANDARD (ARCHITECTURAL)

Architecture (Standards and Procedures) for Design

CODE	DESCRIPTION
RW ARCH 00001 Spec	RW ARCH 00001 Spec
RW ARCH 00001 Spec	RW ARCH 00001 Spec
SANS 10400	National Building Regulations
ISBN: 978-0-620-74577-2	General Preambles for Trade 2017
ISBN: 978-0-86886-837-0	Standard System of Measuring Building Work

C5.4 RAND WATER STANDARD (CIVIL)

Table X. List of Applicable Technical Specifications.

NO	DOCUMENT TITLE	DOCUMENT NUMBER
1	The structural use of concrete Part 1: Design	SANS 10100-1
2	The structural use of concrete Part 2: Materials and execution of work	SANS 10100-2
3	Detailing for steel reinforcement for concrete	SANS 10144
4	Welding	SANS 10044
5	The general procedures and loadings to be adopted in the design of buildings	SANS 10160
6	The design of foundations for buildings	SANS 10161
7	The structural use of masonry Part 1: Unreinforced masonry walling	SANS 10164-1
8	The structural use of steel	SANS 10162 PART 1
9	Bending dimensions of scheduling of steel reinforcement for concrete	SANS 282

10	Code of practice for design of concrete structures for retaining aqueous liquids	BS 8007
11	Rand Water Functional requirements for chambers	

MECHANICAL

1	SAM DOM 00002 Pr	Mechanical Design Procedure
2	SAM DOM 00002 Pr	Engine Room Design Procedure
3	RW/0310/AS0460	Rand Water Valve specification
4	RW/0310/AS0465	Specification for installation of sluice, reflux, butterfly and ball valves
5	RW-12/1/4-AS0925	Specification for refurbishing of sluice, reflux, butterfly, diaphragm and laner Johnson control valve
6	RW/Main-Bulk-Pump	GENERIC REQUIREMENTS FOR MAIN BULK POTABLE WATER ELECTRIC-MOTOR-DRIVEN PUMP SET
7	MECH-SYS-REQ	MECHANICALSYSTEM REQUIREMENTS
8	RC1065	System specification for access steel work at various Rand Water sites
9	RC01427	Technical specification for electrical powered flow control valves at Rand Water various sites
10	RC01138	Electrically operated overhead cranes for Rand Water Installations
11	RC01391	Blower Specification
12	RC01100	Submersible sump pumps
13	RC01393	Electrically operated penstocks at Rand Water Sites
14	RC01108	Actuator Specification
15	RC01395	Rand Water specification for isolating gates for sedimentation at system 5
16	RC01028	Technical Specification for Desludging Briges
17	RC01399	System specification for sludge pumps at system 5 at zuikerbosch pumping station
18	RC 1432	System specification for a cooling water system for pump sets in an engine room at Rand Water Sites

19	RC01419	System specification for access FRP grating, handrails and ladders in various Rand Water Sites
20	RC 01452	SYSTEM SPECIFICATION FOR FIRE SERVICES AT MAPLETON BOOSTER PUMPING STATION
21	RC 01461	SYSTEM SPECIFICATION FOR BUILDING WATER SERVICES AT MAPLETON BOOSTER PUMPING STATION
22	RC 01448	TECHNICAL SPECIFICATION FOR TWO 200ML/D AND TWO 100ML/D ELECTRIC-MOTOR-DRIVEN PUMP SETS 14, 15, 16 AND 17 AT MAPLETON BOOSTER PUMPING STATION
23	RC 1468-	System specification for Air Conditioning system for control rooms, Server rooms, uninterrupted power supply rooms and battery rooms for Rand Water Sites
24	RC 1467	System specification for Mechanical Ventilation in Engine Rooms and Electrical Switchgear Rooms at Rand Water Sites
25	RC 01401	SYSTEM SPECIFICATION FOR THREE 200ML/D AND TWO 100ML/D ELECTRIC MOTOR-DRIVEN PUMP SET AT ENGINE ROOM
26	MEC-SYS-REQ	MECHANICALSYSTEM REQUIREMENTS
27	RW-Bulk main	GENERIC REQUIREMENTS FOR MAIN BULK POTABLE WATER ELECTRIC-MOTOR-DRIVEN PUMP SET AT VARIOUS RAND WATER PUMPING STATION

Item	Drawing No.	Description
D1	A11791	Standard Flange Dimensions
D2	26809- 04	26809- 04 Standard Actuator Extension SluiceGate
D3	26809- 05	26809- 05 Standard Actuator Extension ButterFly
D4	A 12210	Typical Valve Support details
D5	9548	Insulation Flange
D6	RB 23319/206/1	Typical Layout for Horizontal Fall Arrest System and Components in Engine rooms


C5.5 RAND WATER STANDARD (PROCESS)

PROCESS

DOCUMENT TITLE	DOCUMENT NUMBER
Process Asset Management Standard for Process Piping _Rev 00	SAM AMP 00001
Process Asset Management Standard for Storage Tanks and Vessels_Rev 00	SAM AMP 00003
Process Asset Management Standard for Piping and Instrument Diagrams_Rev_00	SAM AMP 00005
Process Piping	ASME B31.3 - 2008
Welded and Seamless Wrought Steel Pipe	ASME B36.10M-2000
Stainless Steel Pipe	ASME B36.19M-1985
Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators	ASME IX-2002
Design and Construction of Large, Welded, Low-Pressure Tanks, Ninth Edition	API 620 STD, 1998-12, ED 9, ADM 3
Welded Steel Tanks for Oil Storage, Tenth Edition	API 650 STD, 2000-03, ED 10, ADM 1
Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents	API RP 2003 - 1998
ASME Boiler and Pressure Vessel Code	ASME BPVC-VIII-1-2017
Design and Construction of Vessels and Tanks in Reinforced Plastics	BS 4994 - 1987
GRP Tanks and Vessels for use above ground	BS-EN-13121-3-2008-A1-2010
Storage Facilities for Hazardous Chemicals	SANS 310
Categorization and conformity assessment criteria for all pressure equipment	SANS 347-2007
GRP Tanks and Vessels for use Above Ground	SANS53121-1
GRP Tanks and Vessels for use Above Ground	SANS53121-2
GRP Tanks and Vessels for use Above Ground	SANS53121-3
GRP Tanks and Vessels for use Above Ground	SANS53121-4
Process Lead Sheets	A9499 - A9500.
Rand Water Drawing Template for GA and P&ID - A1 Sheet	N/A
Rand Water Drawing Template for PFD - A1 Sheet	N/A

C6. RAND WATER POTABLE WATER QUALITY PRODUCTION SPECIFICATION

Table 1: Rand Water Potable Water Quality Specification

<div style="text-align: center;">  2016 PRODUCTION SPECIFICATIONS </div>						
DATE : February 2016						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
Determinand	Unit of measure	Risk	SANS241:2015	Zb and Vg	Main supply system	Bulk Water Distribution
Microbiological determinants						
<i>E. coli</i>	MPN per 100mL	Acute Health	not detected	Non-detect	Non-detect	Non-detect
Protozoan parasites <i>Cryptosporidium</i> species <i>Giardia</i> species	count per 10L count per 10L	Acute Health Acute Health	not detected not detected	Non-detect Non-detect		
Total Coliforms	MPN per 100mL	Operational	≤ 10	Non-detect	Non-detect	Non-detect
Heterotrophic Plate Count	cfu per 1mL	Operational	≤ 1000	≤ 50	≤ 50	≤ 500
Somatic Coliphages	count per 10mL	Operational	not detected	Non-detect		
Viruses	count per 10L			Non-detect		
Physical and Aesthetic determinants						
Alkalinity as CaCO ₃	mg/L			≥ 55 to ≤ 120		
CCPP as CaCO ₃ (moving 12 month)	mg/L			-2 to +3 inclusive		
Colour as Pt-Co	mg/L	Aesthetic	≤ 15	≤ 10		≤ 10
Conductivity	mS/m	Aesthetic	≤ 170	≤ 100		≤ 100
Hardness as CaCO ₃	mg/L			≥ 20 to ≤ 200		
Odour	TON			≤ 2	≤ 2	≤ 2
pH	pH units	Operational	≥ 5 to ≤ 9.7	≥ 7.6 to ≤ 8.8		≥ 6.2 to ≤ 9.3
Taste	FTN			≤ 2	≤ 2	≤ 2
Turbidity	NTU	Operational	≤ 1	≤ 0.5		≤ 0.5
Turbidity	NTU	Aesthetic	≤ 5			
Total Dissolved Solids	mg/L	Aesthetic	≤ 1200	≤ 685		≤ 685
Chemical- Inorganic Macro determinants						
Ammonia as N (NH ₃ and NH ₄) ^{Note 2}	mg/L	Aesthetic	≤ 1.5	≤ 0.2	≤ 0.2	≤ 1.2
Chloride as Cl	mg/L	Aesthetic	≤ 300	≤ 160		≤ 160
Free chlorine as Cl ₂	mg/L	Chronic Health	≤ 5	≤ 5	≤ 5	≤ 5
Fluoride as F	mg/L	Chronic Health	≤ 1.5	≤ 0.9		≤ 0.9
Monochloramine as Cl ₂	mg/L	Chronic Health	≤ 4.1		≤ 4.1	≤ 4.1
Nitrate as N	mg/L	Acute Health	≤ 11	≤ 6		≤ 6
Nitrite as N	mg/L	Acute Health	≤ 0.9	≤ 0.9		≤ 0.9
Combined nitrate plus nitrite	[NO ₃ / 11.29] + [NO ₂ / 0.91] < 1	Acute Health	[NO ₃ /11.29] + [NO ₂ / 0.91] < 1	≤ 1		≤ 1
Sodium as Na	mg/L	Aesthetic	≤ 200	≤ 110		≤ 110
Sulphate as SO ₄	mg/L	Aesthetic	≤ 250	≤ 135		≤ 135
Zinc as Zn	mg/L	Aesthetic	≤ 5	≤ 2.5		≤ 2.5
Chemical- Inorganic Micro determinants						
Aluminium as Al	µg/L	Operational	≤ 300	≤ 165		≤ 165
Antimony as Sb	µg/L	Chronic Health	≤ 20	≤ 11		≤ 11
Arsenic as As	µg/L	Chronic Health	≤ 10	≤ 9		≤ 9
Barium as Ba	µg/L	Chronic Health	≤ 700	≤ 375		≤ 375
Boron as B	µg/L	Chronic Health	≤ 2 400	≤ 1215		≤ 1215
Cadmium as Cd	µg/L	Chronic Health	≤ 3	≤ 2.75		≤ 2.75
Chromium as Cr (total)	µg/L	Chronic Health	≤ 50	≤ 45		≤ 45
Copper as Cu	µg/L	Chronic Health	≤ 2 000	≤ 1005		≤ 1005
Cyanide as CN (recoverable)	µg/L	Acute Health	≤ 200	≤ 110		≤ 110
Iron as Fe	µg/L	Aesthetic	≤ 300	≤ 155		≤ 155
Iron as Fe	µg/L	Chronic Health	≤ 2000			
Lead as Pb	µg/L	Chronic Health	≤ 10	≤ 9		≤ 9
Manganese as Mn	µg/L	Aesthetic	≤ 100	≤ 55		≤ 55
Manganese as Mn	µg/L	Chronic Health	≤ 400			
Mercury as Hg	µg/L	Chronic Health	≤ 6	≤ 3.5		≤ 3.5
Nickel as Ni	µg/L	Chronic Health	≤ 70	≤ 40		≤ 40
Selenium as Se	µg/L	Chronic Health	≤ 40	≤ 25		≤ 25
Uranium as U	µg/L	Chronic Health	≤ 30	≤ 15		≤ 15

BID DESCRIPTION: APPOINTMENT OF ENGINEERING FIRM/CONSULTANT FOR CONDUCTING A FEASIBILITY STUDY AND THE DETAILED ENGINEERING DESIGN OF THE MIDVAAL REGIONAL WASTEWATER TREATMENT WORKS AT RAND WATER FOR A PERIOD OF 5 YEARS.

Chemical- Organic Determinants						
Total Organic Carbon as C	mg/L	Chronic Health	≤ 10	≤ 7		≤ 7
Phenols	µg/L	Aesthetic	≤ 10	≤ 7.5		≤ 7.5
Trihalomethanes						
Chloroform	µg/L	Chronic Health	≤ 300	≤ 170		≤ 170
Bromoform	µg/L	Chronic Health	≤ 100	≤ 50		≤ 50
Dibromochloromethane	µg/L	Chronic Health	≤ 100	≤ 50		≤ 50
Bromodichloromethane	µg/L	Chronic Health	≤ 60	≤ 40		≤ 40
Combined Trihalomethanes	$\frac{[CHCl_3 / 300] + [CHBr_3 / 100] + [CHBr_2Cl / 100] + [CHBrCl_2 / 60]}{4} < 1$	Chronic Health	$\frac{[CHCl_3 / 300] + [CHBr_3 / 100] + [CHBr_2Cl / 100] + [CHBrCl_2 / 60]}{4} < 1$	≤ 0.8		≤ 0.8
Total Microcystin	µg/L (ELISA method)	Chronic Health	≤ 1	≤ 0.7		
Other Determinants						
Residual disinfectant	mg/L	Operational		≥ 0.2 free chlorine	≥ 0.1 sum of free chlorine and monochloramine	≥ 0.2 free chlorine and ≥ 0.1 sum of free chlorine and monochloramine where applicable
High risk critical success factors						
Residual disinfectant	mg/L	Operational		≥ 0.2 free chlorine	≥ 0.1 (sum of free chlorine and monochloramine)	
ammonia as N	mg/L	Operational				
Turbidity	NTU	Operational		≤ 0.5	≤ 0.2	
Total Coliforms	MPN per 100mL	Operational				
Heterotrophic Plate Count	cfu per 1mL	Operational				
Rand Water Risk Determinands						
Alkalinity as CaCO ₃	mg/L					
CCPP as CaCO ₃ (moving 12 month)	mg/L					
Hardness as CaCO ₃	mg/L					
Viruses	count per 10L					
Odour	TON					
Taste	FTN					
Note 1: MPT researching the matter. Internal operational specifications specific to each site will be defined after the research. Note 2: To mitigate the NO ₂ and NO ₃ risks in the distribution network, while minimising the NH ₃ and NH ₄ content at point of exit at the Booster Sites.						

C7. GUIDELINES FOR FEASIBILITY STUDIES AND REPORTING

Guideline on requirement(s) for feasibility study of an wastewater treatment works

Feasibility Study Steps:

1. Data collection and site assessment
2. Treatment technology selection
3. Design and engineering
4. Economic and financial analysis
5. Environmental and regulatory assessment
6. Risk assessment and mitigation
7. Conclusion and recommendations

Deliverables

1. Technical report
2. Economic analysis report
3. Environmental impact assessment report
4. Design and engineering drawings
5. Project timeline and milestones

Technical Requirements:

1. Effluent water characterization (pH, temperature, Suspended Solids, TDS, COD, BOD, heavy metals)
2. Treatment technology selection
3. Flow rate and capacity (e.g., m³/day)
4. Contaminant removal efficiency (%)
5. Energy consumption and power supply
6. Water quality standards compliance [e.g., Rand Water Production Specification (takes precedence); SANS; WHO; EPA]
7. Plant Availability

Environmental and Regulatory Requirements:

1. Local regulations and permits
2. Land and Rights (Servitudes, Wayleave etc)
3. Discharge standards for plant effluent
4. Hazardous waste management
5. Air quality and noise pollution control

6. Environmental impact assessment

Economic Requirements:

1. Capital costs (equipment, installation)
2. Operating costs (energy, maintenance, labour)
3. Water treatment costs per unit volume (R/m³)
4. Return on investment (ROI) analysis
5. Cost-benefit analysis

Social and Community Requirements:

1. Public acceptance and stakeholder engagement
2. Health and safety risks assessment
3. Water reuse or recycling potential
4. Job creation and local economic benefits
5. Education and training programs

Plant Specific Requirements:

1. Design and Interchangeability of components
2. Modular and scalable architecture
3. Easy operation and maintenance
4. Durability and corrosion resistance
5. Energy consumption: power requirements and energy costs

Additional Considerations:

1. Energy efficiency and renewable energy integration
2. Automated control and monitoring systems
3. Remote monitoring and data analytics
4. Future expansion and upgrade potential

Feasibility Study Outline:

- I. Executive Summary
- II. Introduction
- III. Technical Feasibility
- IV. Environmental and Regulatory Feasibility

- I. Economic Feasibility
- II. Social and Community Feasibility
- III. Plant Design and Operations VIII. Conclusion and Recommendations

C8. DETAILED DESIGN DELIVERABLES

Document Title
<u>Overall</u>
Method Statement (incl. Sequence of Activities - Design and Construction Phases)
Battery Limits Schedules (Process/Mechanical; Automation; Electrical)
Site Locality Plan (inclusive of Plant under Design)
Feasibility Study Report
Inception/Preliminary Design Report
Detailed Design Report
Commissioning Documents
Operating, Maintenance & Logistics Manuals
Training Manuals
<u>Process and Mechanical</u>
Documents Register (listing all deliverables expected)
Mass Balance
PFD (including mass balance)
P&ID
Process Description
Calculations & Register
Material Selection Document
Equipment List
Line List
Tie-in List
Valve List
Special Piping Components List
Equipment Data sheets
Utilities and Consumables List
Relief Summary (i.e. PSV)
Process Safety Description
Control Narrative
Cause and Effect Matrix
System setpoints and limits

Special Piping Components Datasheets (i.e. Flexible Hoses, Sight Glasses etc.)
Material Safety Data Sheets
Functional Specifications / Detailed Technical Specification
<u>Drawings</u>
Drawing Register
Mechanical General Arrangement Drawings
3D Model
3D model register
Equipment GA's
Pipe Routing Isometric Drawings
<u>Automation (Control & Instrumentation)</u>
Instruments List
Instruments power load list
Instrument Datasheets
Cable Block Diagrams
Power Distribution Diagram
Instrument Location Diagram
HMI Location Drawings
Software Design Specification
PLC Architecture (Profibus and Ethernet)
PLC Network Detail
Servers for SCADA & Data Logging
PLC and SCADA power load list
HMI Layout
SCADA mimics
Profibus DP Network
Ethernet Network Architecture for SCADA
Overall Control System Architecture Drawing
<u>Electrical</u>
Electrical Load list
Single Line Diagrams

Electrical Equipment List
Electrical Schematic Diagrams
Electrical Cable Schedule
Cable Routing Drawings
Lighting & Small Power Design and Distribution Board Single Line Diagram
Transformer Data Sheet
GA, Nameplate, Auxiliaries (e.g. CT, Thermal Trip Relays etc.)
Load Flow Analysis Report
Civil
Pre-Investigative Studies, including but not limited to the Geotechnical Investigations
Detailed Civil Layouts
Detailed excavation drawings
Detailed Reinforcements drawings
Detailed Jointing drawings
Architecture
Locality Plan
Plans
Sections
Elevations
Schedules (finishing schedules/ window & door schedules etc.)
Details

C9. OPERATIONS AND MAINTENANCE MANUALS

The Operation and Maintenance Manual(s) shall contain, as a minimum, all the documentation prescribed in this guideline. The manual shall comprise of three volumes covering, Operation and Maintenance – Volume 1, Drawings and Documentation – Volume 2, and Original Equipment Manuals from the manufacturer – Volume 3.

Volume 1 - Operation and Maintenance

Volume 1 of the O&M(s) shall be separated into Part 1 and Part 2, covering Operation and Maintenance, respectively.

Part 1: Operations

This section will detail the objectives of the plant and how the plant will be operated as it relates to the design intent.

	DESCRIPTION
1. GENERAL DESCRIPTION	
1.1. Introduction	A high-level introduction of the plant
1.2. System Overview	Describe in detail the process with illustrations
1.3. Design Parameters and Philosophy	Describe the philosophy of design (incl. properties of the chemical, Flow rates, dosages, number of storage tanks)
2. CONTROL PHILOSOPHY	
2.1. Description	Description of the control philosophy and algorithms. Discuss the main elements of the control system, purpose and objective of the control, operating regimes, modes of operation (auto, manual, etc.).
2.2. PLC configuration	Overview, Programming of the PLC, Configuration of PTQ cards, FFBD Configuration (alarms and control). This is not exhaustive and will be dependent on the nature of installation
2.3. HMI hardware and software configuration	Homepage, trending
2.4. SCADA configuration	Description and configuration of comlink between PLC, HMI and SCADA
2.5. Function Flow Block Diagrams	Drawings of FFBD

	DESCRIPTION
2.6. Alarms, events, trends and interlocks	List of common alarms, list of interlocks.
3. OPERATING INSTRUCTIONS	
3.1. Performance Specification	List the set points and tuning constants used for all equipment.
3.2. Pre-Commissioning and commissioning procedure	Procedure for commissioning and performance testing. Actually commission and performance testing result sheets to be included as well.
3.3. Pre – Operation checklist and Utility start- up	A list of critical checks to be done prior to putting the plant into operation to prevent damage to equipment and injury to personnel
3.4. Start-up procedure	Procedures for start-up
3.5. Normal operating procedures	Procedures for normal operation
3.6. Shutdown procedures	Procedures for shutdown
3.7. Disposal Instructions for consumable items	Instructions for disposal of consumable items
3.8. Special procedures for abnormal conditions	Description of systematic shutdown under abnormal conditions.
3.9. Appendices – Summary of Control Functional Specification	Cause and effect matrix

4. OPERATION PROCEDURE FROM HMI AND SCADA	
4.1. Operation procedure from the HMI	Description of operation from HMI to the detail of training, with screenshots.
4.2. Operation procedure from SCADA	Description of operation from SCADA to the details of training, with screenshots.
5. HEALTH, SAFETY & EMERGENCY	

	DESCRIPTION
PROCEDURE AND PRECAUTIONS	
5.1. Start-up inspections	Critical inspections (visual and otherwise) required prior to start-up and for safe operation, to ensure process operators and maintenance staff safety.
5.2. Precautions while working/testing. power supplies	Safety procedures for working on power supplies and electrical equipment.
5.3. Emergency Procedures	Description of procedures to follow in cases of emergencies such as fire, explosions, chemical spillage, gas leak or any other situation that may arise which require emergency measures to be undertaken.
5.4. General	General emergency procedure and precautions which might not have been covered above.
6. TRAINING MANUAL	Detailed instructions on how the installation should be operated across all its operating modes (Auto, Semi-Auto, and Manual) and under abnormal conditions. These instructions shall have detailed screenshots.

Part 2: Maintenance

This section describes the function of the equipment, cleaning thereof, calibration requirements, troubleshooting, element replacement, flow curves, calculations, and testing, including pictures. It must also include proposed periodic maintenance schedules/intervals and indicate the nature of work that must be carried out.

	DESCRIPTION
1. PROCESS	Process valves, process piping, tanks, vessels, dosing pumps, chlorinators, Evaporators, Vacuum Regulators, Catch Pots, Injectors, Drum Frames, Electric/Manual Hoists, and pressure relief devices. This list is not exhaustive and will be dependent on the nature of installation
2. AUTOMATION	Instrumentation (e.g. pH meters, pressure transmitters, level transmitters, flow meters), PLC, Network, HMI, SCADA, Control Panel. This list is not exhaustive and will be dependent on the nature of installation
3. MECHANICAL	Cranes, pump sets, blowers, valves, pipework, gravity thickeners, and access steelwork. This list is not exhaustive and will be dependent on the nature of installation

4. ELECTRICAL	Distribution Lines, switchgear, cabling, transformers, distribution boards, generators, lighting, motors and UPS. This list is not exhaustive and will be dependent on the nature of installation
5. BUILDINGS	Exterior, Interior, plumbing, and structures. This list is not exhaustive and will be dependent on the nature of plant/installation
6. CIVIL STRUCTURES	Floors, walls, columns, structural steel, and roads. This list is not exhaustive and will be dependent on the nature of plant/installation

Volume 2 – As-built Drawings and Documentation

This section shall contain all as-built drawings, equipment lists, commissioning documentation and calibration/test documentation.

	DESCRIPTION
1. DRAWINGS	These should all the final drawings specified in the tender document, as well as any additional drawings required by the engineer as specified in the technical system specification.
2. EQUIPMENT LIST/EQUIPMENT SCHEDULE	List of all equipment with supplier contact details
3. CABLE SCHEDULES	Schedule of cables
4. INSTRUMENTS LIST /INSTRUMENT SCHEDULE	List of all instruments with supplier contact details
5. SPARE PARTS LISTS FOR INSTRUMENTTION AND EQUIPMENT	List of critical spares and quantities required to ensure operability and reliability.
6. PERFORMANCE TESTING DOCUMENTATION (Actual)	The actual document that was used to check plant performance (not a blank template). Also include proof that the problems found were fixed.
7. COMMISSIONING DOCUMENTATION (Actual)	The actual document that was used to commission the plant (not a blank template). Also include proof that the problems found were fixed.

8. CALIBRATION, TEST CERTIFICATES, FIBRE CABLE OTDR, ELECTRICAL COC	All certificates for tests and calibrations done on instruments,
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Volume 3 – Original Equipment Manuals

	DESCRIPTION
OEMs: MANUALS / USERGUIDES/ OPERATING & MAINTENANCE INSTRUCTIONS OF INSTRUMENTATION AND EQUIPMENT	These should be manuals which include fault diagnosis and troubleshooting guides as provided by the equipment manufacturer. Further, this section should contain detailed actual data sheets of the as-built/installed equipment.

General

- This is a minimum requirement for all O&Ms. Documentation or drawings not listed here but required for different types of infrastructure, as stated in their individual system specifications and tender documents, must be included in the O&M.
- Each manual must have an electronic version of the manual on a cd inserted into each manual. The cd must also contain the baseline versions at Handover of the PLC programme, Protalk configuration with GSD files (for Profibus), HMI programme and SCADA programme.
- Electronic versions of all documents shall be in native format that was used to generate the document (i.e. AutoCAD, MS Excel, MS Word, etc)
- Each page should be inserted into a plastic pocket so that the papers can be kept intact for long periods of time.
- If part of the plant is upgraded, then the Consultant shall integrate existing and new manuals.

C10. TRAINING

The Consultant shall provide comprehensive training on the installation to enable Rand Water operations and maintenance staff to operate, fault find/troubleshoot and maintain the plant to ensure that the plant availability and reliability is high (>95%).

PART C4: SITE INFORMATION

C4. SITE INFORMATION

Rand Water Head office. 522 Impala Road, Glenvista 2058.