TENDER NO: 2024/059

HOWICK WEST CHAMBER 3A UPGRADE AND PIPEWORK.

VOLUME 1 – Tendering Procedures and Returnable Documents

Issued by:

uMngeni-uThukela Water
310 Burger Street
Pietermaritzburg

Tender Queries:

Contact Name: Nosipho Mkhize
Telephone : (033) 341-1062 .

Name of Tenderer: _____

National Treasury CSD Number: _____

Tip-Offs Anonymous Hotline:	Appeals/Objections
Report unethical conduct at uMngeni-uThukela Water on: Toll Free Number: 0800 864 463 Email: umgeniwater@whistleblowing.co.za Toll Free Fax: 0800 212 689 Postal: Freepost KZN665, Musgrave, 4062 SMS: 33490 Online: www.whistleblowing.co.za *Stop theft / fraud / dishonesty / bribery /blackmail / intimidation, and remain anonymous.*	Persons aggrieved by tender award decisions taken by uMngeni-uThukela nWater, may lodge an appeal within **7 calendar days** of the date of the intention to award advertisement. UW shall only consider written appeals/objections clearly stating reasons for appeal directed to: The Supply Chain Management Office, Attention: Supply Chain Management Email: appeals@umgeni.co.za

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Tender Number: (2024/059)

Tender Title: HOWICK WEST CHAMBER 3A - UPGRADE AND PIPEWORK)

T1.1 Tender Notice and Invitation to Tender

Competent and experienced Contractors are invited to Tender for the following:

UPGRADE OF HOWICK WEST CHAMBER 3A AND PIPEWORK

In addition to the Eligibility Criteria specified in Clause F2.1 of the tender document, tenderers are required to fulfil the following:

A CIDB grading of 6 CE or higher is required

Tenderers are required to achieve at least 35% Contract Participation Goals (CPG) including a minimum 10% Black Women participation and another 10% for Local participation of the value of goods, services and works paid to one or more Enterprises (CPG Partner/s) as agreed with UMngeni-uThukela Water before contract award. Tenderers who are the main contractor are not exempt from this requirement and are still required to have a CPG Partner.

Evaluation method:

The tender will firstly be evaluated on eligibility. If found to be eligible, it will be further evaluated in two stages i.e.

- Functionality shall be assessed. A minimum functionality score of seventy (70) points is required for the tender to be considered further.
- Price & Preference goals using the 80/20 Preference Point Scoring System in terms of PPPFA
- In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations 2022, preference points will be awarded for specific goals as stated in the tender.
- Price and Preference goals

1. In compliance with the Preferential Procurement Regulations 2022, the 80/20 or 90/10 preference point system is applicable: points for this bid shall be awarded for:
   a) Price; and (80 or 90) and Preference as defined in SBD 6.1 (20)
2. The Preference Goals that have been identified for this bid is stipulated in SBD 6.1
3. Preferential goals and applicable points for this tender in terms of Preferential Procurement Regulations 2022, are indicated in the table below:

	Description	**80/20**	**Evidence to be provided**
HDI	The entity which is at least 51% black owned	8	BBBEE Certificate/ Sworn Affidavit
RDP	The promotion of enterprises located in KZN	12	Lease Agreement/ Municipal Account/ Letter from the Traditional Authority.
Total points for preferential goals		**20**	

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

The physical address for collection and submission of Tender documents and the submission of Tenders is: **uMngeni-uThukela Water, 310 Burger Street, Pietermaritzburg.**

Documents must be collected during working hours from 09h00 to 15h00 from 07 February 2024 to 19 February 2024

Tender documents shall only be collected during the said period and hours.

Cost of documents : free issue self-download

A compulsory clarification meeting with representatives of uMngeni-uThukela Water will take place at Howick West Reservoir Complex situated at 2 Cherry Road, Howick West, 3290 on 20 February 2024 starting at 11h00.

Only Tenderers who have collected the Tender documents may attend this compulsory meeting.

No tender documents will be issued at the clarification meeting. Therefore if tenderers pay during the collection period, they must ensure collection before the meeting.

Tenderers must ensure that they bring their documents to the clarification meeting for signing purposes. No concessions will be made for tenderers who do not have their tender documents in their possession.

The closing time for submission of Tenders is **12h00** on 14 March 2024

Tenders are to be deposited in the Tender Box located outside the main entrance at **uMngeni-uThukela Water, 310 Burger Street, Pietermaritzburg.**

uMngeni-uThukela 's Water's Standard Conditions of Tender are available on uMngeni-uThukela 's Water's website https://www.umgeni.co.za/wp-content/uploads/2023/07/SCM009-Standard-Conditions-of-Tender.pdf

Persons aggrieved by decisions or actions taken by uMngeni-uThukela 's *Water, may lodge an appeal within 7 calendar days of the date of the intention to award advertisement appearing in the relevant print media.*

The appeal (clearly stating reasons for appeal) and queries with regard to the decision of award are to be directed, in writing only to the Supply Chain Management Office,
Attention: Supply Chain Management
Email: appeals@umgeni.co.za

Note that appeals not addressed to the abovementioned e-mail address will not be considered.

For any other Tender adverts, please visit this website.

uMngeni-uThukela Water Reserves the Right to Award the Contract In Whole or In Part, or not at all.

T1.2 TENDER DATA (INCLUDING SPECIAL CONDITIONS OF TENDER)

The general conditions of tender are the uMngeni-uThukela Water Standard Conditions of Tender (document number: SCM009, a copy of which may be obtained from uMngeni-uThukela Water Supply Chain Management office or can be downloaded from the following website:
https://www.umgeni.co.za/wp-content/uploads/2023/07/SCM009-Standard-Conditions-of-Tender.pdf

For purposes of this Contract the following Special Conditions of Tender shall apply:

F.3.8 Test for responsiveness
Sub-Clause F.3.8.1 Add the following new sub-clause:
"d) meets the minimum Functionality requirements stated in the Tender Data."

F3.11.3 Method 2: Functionality, Price and Preference Goals

Functionality
Each member of the Employer's tender evaluation committee is to independently score each tender in respect of functionality offered in accordance with the provisions of F.3.11.9. The committee is then to calculate the final score for each tender as the average of the score from each committee member, rejecting all tender offers that fail to score the minimum number of points stated in the tender data, if any."

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

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

Clause number	Tender Data
	F.1.1 Actions
F.1.1	The Employer is **uMngeni-uThukela Water**
	F.1.2 Tender Documents
F.1.2	The Tender Documents issued by the Employer comprise the following documents: **VOLUME 1 – Tendering Procedures and Returnable Documents** **Part T1: Tendering procedures** T1.1 Tender Notice and invitation to Tender T1.2 Tender Data **Part T2: Returnable Schedules and Documents** T2.1 List of all Returnable Documents T2.3 Returnable Schedules **VOLUME 2 – Offer, Contract and Price [*Note to compiler: Correct this title if volume 3 is not used. Delete this note]*** **Part C1: Agreements and Contract Data** C1.2 Form of Offer, Acceptance and Schedule Deviations C1.8 Contract Data C1.17 Form of Guarantee **Part C2: Pricing data** C2.2 Pricing Instructions C2.2 Pricing Schedule

Part C3: Scope of work

C3.1	Standard Specifications	C3.2	White
C3.2	Amendments to Standard Specifications	C3.3	White
C3.3	Umgeni Water Particular Specifications	C3.6	White
C3.4	Amendments to the Umgeni Water Particular Spec	C3.7	White
C3.5	Project Specifications.....	C3.10	White

Part C4: Site Information

C4.1	Site Information		
C4.2	Description of Site and Access…….....	C4.3	Green
C4.3	Atmospheric Climate……	C4.3	Green
C4.4	Nature of Ground and Subsoil Conditions……	C4.4	Green
C4.5	Environmental…….....	C4.4	Green

Part C5: Annexures *are bound separately from Vol 2*

VOLUME 3

C5 ANNEXURES

C5.1	UMngeni-uThukela Water Insurance Summary and Claims Procedure
C5.2	Drawings
C5.3	Electrical Specifications
C5.4	Geotechnical Report
C5.5	Environmental Management Plan (EMP)
C5.6	Occupational Health and Safety Specifications
C5.7	UMngeni-uThukela Water Particular Specifications

The Tender Document and the drawings shall be obtained from the Employer or its authorized representative at the physical address stated in the Tender Notice, upon payment of the deposit stated in the Tender Notice. Upon receipt of the Tender documents and prior to the submission of any Tender, the Tenderer shall check the documents issued and the number of pages contained in each document and if any are found to be missing or duplicated or any figure or wording indistinct, the Tenderer shall apply to the Employer's Agent at once to have the same rectified as no liability will be entertained by the Employer or the Employer's Agent in respect of errors in any Tender arising out of any matter referred to in this paragraph. The Tenderer is required to satisfy itself that the Documents received are correct, complete and sufficient to be the basis of a *bona fide* Tender in every respect.

Should any Tenderer not accept that the Documents issued can form the basis of a *bona fide* Tender, the Employer's Agent shall be requested to correct the discrepancy, ambiguity, missing or illegible information, failing which the Tender submitted by the Tenderer shall be taken that the Tenderer accepts the adequacy of the Tender document. .

The submission of a *bona fide* Tender shall absolve the Employer's Agent from any liability whatsoever for any error in a Tender due to the foregoing.

F.1.4 Communication and Employer's agent

F.1.4 The Employer's buyer is :

Tender Queries

Name:	Nosipho Mkhize

	Address:	310 Burger Street, Pietermaritzburg
	Tel:	033 – 341 1062
	Fax:	033 – 341 1101
	E-mail:	nosipho.mkhize@umgeni.co.za
	F.2.1 Eligibility	
F.2.1	uMngeni-uThukela will only consider submissions from tenderers who satisfy the following criteria: a) The tenderer completed the Bidders Disclosure Form (T2.2.2) b) Tenderers are required to achieve at least 35% Contract Participation Goals (CPG) including a minimum 10% Black Women participation and another 10% for Local participation of the value of goods, services and Works paid to one or more Enterprises (CPG Partner/s) as agreed with UMngeni-uThukela Water before contract award. Tenderers who are the main contractor are not exempt from this requirement and are still required to have a CPG Partner. c) A CIDB grading of 6 CE or higher is required,	
	F.2.7 Clarification meeting	
F.2.7	There shall be a compulsory clarification meeting, the details of which are stated in the Tender Notice and Invitation to Tender. Tenderers must sign the attendance list in the name of the tendering entity. Addenda will be issued to and tenders will be received only from those tendering entities appearing on the attendance list.	
	F.2.13 Submitting a Tender offer	
F.2.13.3	Parts of each Tender offer communicated on paper shall be submitted as an original, plus one (1) copy.	
F.2.13.5 and F.2.13.7	The Employer's details and address for delivery of Tender offers are stated in T1.1 **Tender Notice and Invitation to Tender.** **Identification details** The identification details which must be stated in the Tender offer outer package are: **Tender Number** **Title of Tender** **Closing Date** **Closing Time** **Tenderer's Name** **Tenderer's Address** Tenders issued in more than one volume must be returned in the same manner and bound separately as per the Tender volumes issued. *The Tender box is available to the public 24 hours per day and 7 days per week. It is the Tenderer's sole responsibility to ensure that Tenders are placed in the Tender box and only Tenders that have been placed in the Tender box before the stipulated closing date and time will be considered*	

	F2.13.6 Two Envelope tender Procedure
F.2.13.6	A two-envelope system is not applicable
	F.2.15 Closing time
F.2.15	The closing time for submission of Tender offers is as stated in **T.1.1 Tender Notice and Invitation to Tender.**
	F.2.16 Tender offer validity
F.2.16.1	The Tender offer validity period is 120 calendar days from the closing date.
	F.2.19 Inspections, tests and analysis
	F.2.20 Submit securities, bonds, policies, etc.
F.2.20	The Tenderer is required to submit with his Tender a letter of intent from an approved financial institution registered with the Financial Services Board undertaking to provide the PERFORMANCE GUARANTEE - DEMAND GUARANTEE to the format included in Part T2.2 of this procurement document.
	F.2.23 Certificates
F.2.23	The Tenderer is required to submit with his Tender: 1) A Tax Compliance Status letter (with pin) issued by the South African Revenue Services. 2) Central Supplier Database (CSD) Report 3) BBBEE certificate or Sworn affidavit 4) *State* Proof of good standing in terms of the COID Act 5) Company Registration Certificate *[Delete this note]* 6) Required evidence to claim preference goals as stipulated in **TENDER NOTICE AND INVITATION TO TENDER**
	F.3.4 Opening of Tender submissions
F.3.4	Tenders will be opened immediately after the closing time for Tenders as stipulated in T1.1 Tender Notice and Invitation to Tender.
	F3.8 Test for responsiveness
F.3.8	The minimum qualifying Functionality Evaluation Score shall be seventy (70) points
	F.3.11 Evaluation of Tender offers
F.3.11.3	The procedure for the evaluation of responsive tenders is Method 2(Functionality, Price and Preference)
F.3.11.3 (4c) (5c)	The following preference point systems are applicable to all Tenders: 1) 80/20 system for Tenders with a Rand value less than R50 000 000.00, inclusive of VAT, in which 80 points are allocated for price and 20 points for preference in respect of all responsive Tenders received; and 2) 90/10 system for Tenders with a Rand value more than R50 000 000.00, inclusive of VAT, in which 90 points are allocated for price and 10 points for preference in respect of all responsive Tenders received. Note: - 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.

F.3.11.7	- uMngeni-uThukela Water 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 uMngeni-uThukela Water. Scoring Financial Offers
F.3.11.9	The table below lists the returnable schedules that set out the scoring criteria and sub-criteria, and the percentage weighting for the score achieved against the relevant schedule: **Returnable Schedule** — **Weighting %** T2.2.09 Tenderer's Experience 35 T2.2.11 Experience of Key Personnel 35 T2.2.14 Quality Assurance and Environmental Management 10 T2.2.15 Method Statement 10 T2.2.16 Preliminary Programme 10 **Failure to score a single point in any of the criteria listed above will deem the bid to be non-responsive and the bidder will be disqualified.** The score allocated by each Bid Evaluation Committee member for a tender shall be the sum, of the scores relevant to each of the above listed returnable schedules multiplied by the percentage weighting for each as shown above.
	F.3.17 Provide copies of the contracts
F.3.17	The number of paper copies of the signed contract to be provided by the Employer is one (1).
F3.19	Appeals Process Persons aggrieved by decisions or actions taken by uMngeni-uThukela Water, may lodge an appeal within 7 calendar days of the date of the intention to award advertisement appearing in the relevant print media. The appeal (clearly stating reasons for appeal) and queries with regard to the decision of award are to be directed, in writing only to the Supply Chain Management Office, Attention: Supply Chain Management Email: appeals@umgeni.co.za Note that appeals not addressed to the abovementioned email will not be considered. ***uMngeni-uThukela Water Reserves The Right To Award The Contract In Whole Or In Part, or not at all.***

T2.1 LIST OF ALL RETURNABLE DOCUMENTS AND SCHEDULES

The Tenderer shall complete and submit the following returnable schedules and documents:

		Tenderers Check List	Page No.
T2.2.1	Authority for Signatory		T2.3
T2.2.2	Bidders Disclosure		T2.10
T2.2.3	Tax Compliance Status Letter Requirements or CSD Report		T2.13
T2.2.4	Proof of Attendance at the Compulsory Clarification/Site Meeting		T2.15
T2.2.5	Contract Participation Goals (CPG)		T2.16
T2.2.6	Tenderer's Experience		T2.19
T2.2.7	Key Personnel Assigned to the Work		T2.22
T2.2.9	Experience of Key Personnel		T2.30
T2.2.10	Proposed Organization and Staffing	N/A	T2.33
T2.2.11	Tenderer's Schedule of Plant and Equipment	N/A	T2.35
T2.2.12	Quality Assurance and Environmental Management		T2.36
T2.2.13	Method Statement		T2.38
T2.2.14	Preliminary Programme		T2.40
T2.2.15	Registration Certificate / Agreement / ID Document		T2.42
T2.2.16	Amendments, Qualifications and Alternatives		T2.43
T2.2.17	Record of Addenda to Tender Documents		T2.45
T2.2.18	VAT Registration Certificate		T2.46
T2.2.19	Schedule of Proposed Sub-Contractors		T2.47
T2.2.20	Proof of Purchase of Tender Document		T2.48
T2.2.21	Goods and Services Sourced Internationally		T2.49
T2.2.22	SBD 6.1 Preference Points claim in terms of the PPPFA Regulations 2022		[T2.52]
T2.2.23	Letter of Good Standing in terms of COID Act		T2.59
T2.2.24	Tenderer's Financial Standing		T2.60
T2.2.25	Suppliers Health and Safety Declaration		T2.61
T2.2.26	Pro forma OHS Notification		T2.62
T2.2.27	Letter of Intent for Public Liability		T2.64
T2.2.28	Letter of Intent for Performance Guarantee		T2.65
T2.2.29	Registration Certificates		T2.66
T2.2.30	Central Supplier Database (CSD) Report		T2.67

T2.2.1 AUTHORITY FOR SIGNATORY

Fill in the relevant portion applicable to the type of organization

A. COMPANIES

If a Tenderer is a company, a certified copy of the resolution by the board of directors, personally signed by the chairperson of the board, authorizing the person who signs this Tender to do so, as well as to sign any contract resulting from this Tender and any other documents and correspondence in connection with this Tender and/or contract on behalf of the company must be submitted with this Tender, that is before the closing time and date of the Tender.

AUTHORITY BY BOARD OF DIRECTORS

By resolution passed by the Board of Directors on ..... 20.....

Mr/Mrs ..... (whose signature appears below) has been duly authorized to sign all documents in connection with this Tender on behalf of

(Name of Company) .....

IN HIS/HER CAPACITY AS: .....

SIGNED ON BEHALF OF COMPANY: .....
(PRINT NAME)

SIGNATURE OF SIGNATORY: ..... **DATE:** .....

WITNESSES: .....

B. SOLE PROPRIETOR (ONE - PERSON BUSINESS)

I, the undersigned .....

hereby confirm that I am the sole owner of the business trading as

.....

....

SIGNATURE **DATE**

C. PARTNERSHIP

The following particulars in respect of every partner must be furnished and signed by every partner:

Full name of Partner	**Residential Address**	**Signature**
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

We, the partners in the business trading as .....

hereby authorize .....
to sign this Tender as well as any contract resulting from the Tender and any other documents and correspondence in connection with this Tender and /or contract on behalf of

.....	.....	.....
Signature	Signature	Signature
.....	.....	.....
Date	Date	Date

D. CLOSE CORPORATION

In the case of a close corporation submitting a Tender, a certified copy of the Founding Statement of such corporation shall be included with the Tender, together with the resolution by its members authorizing a member or other official of the corporation to sign the documents on their behalf.

By resolution of members at a meeting on .....
20 .....

at
.....

Mr/Ms ....., whose signature appears below, has been authorized to sign all documents in connection with this Tender on behalf of (Name of Close Corporation)

.....

.....

SIGNED ON BEHALF OF CLOSE CORPORATION:

(PRINT NAME) .....

IN HIS/HER CAPACITY AS ..... **DATE:** .....

SIGNATURE OF SIGNATORY: .....

WITNESSES: 1. .....

2. .....

E. CO-OPERATIVE

A certified copy of the Constitution of the co-operative must be included with the Tender, together with the resolution by its members authoring a member or other official of the co-operative to sign the Tender documents on their behalf.

By resolution of members at a meeting on .....
20 .....

at .....

Mr/Ms ....., whose signature appears below, has been authorized to sign all documents in connection with this Tender on behalf of (Name of Co-Operative)

.....

SIGNATURE OF AUTHORIZED REPRESENTATIVE/SIGNATORY:

(PRINT NAME) .....

IN HIS/HER CAPACITY AS .....

DATE: .....

SIGNED ON BEHALF OF CO-OPERATIVE: .....

NAME IN BLOCK LETTERS: .....

WITNESSES: 1. .....

2. .....

F. JOINT VENTURE

If a tenderer is a joint venture, a certified copy of the resolution/agreement passed/reached signed by the duly authorised representatives of the enterprises, authorising the representatives who sign this tender to do so, as well as to sign any contract resulting from this tender and any other documents and correspondence in connection with the tender and/or contract on behalf of the joint venture must be submitted with this tender, before the closing time and date of the tender.

Authority to sign on behalf of the Joint Venture:

By resolution/agreement passed/reached by the joint venture partners on .....20 .....

Mr/Mrs ....., Mr/Mrs .....

Mr/Mrs .....and Mr/Mrs .....
(whose signatures appear below) have been duly authorised to sign all documents in connection with this tender on behalf of:

(Name of Joint Venture) .....

In his/her capacity as: .....

Signed on behalf of (COMPANY NAME): .....
(PRINT NAME)

Signature ..... Date: .....

In his/her capacity as: .....

Signed on behalf of (COMPANY NAME): .....
(PRINT NAME)

Signature ..... Date: .....

In his/her capacity as: .....

Signed on behalf of (COMPANY NAME): .....
(PRINT NAME)

Signature ..... Date: .....

In his/her capacity as: .....

Signed on behalf of (COMPANY NAME): .....
(PRINT NAME)

Signature ..... Date: .....

G. CONSORTIUM

If a tenderer is a consortium, a certified copy of the resolution/agreement passed/reached signed by the duly authorised representatives of the enterprises, authorising the representatives who sign this tender to do so, as well as to sign any contract resulting from this tender and any other documents and correspondence in connection with the tender and/or contract on behalf of the consortium must be submitted with this tender, before the closing time and date of the tender.

Authority to sign on behalf of the consortium:

By resolution/agreement passed/reached by the consortium partners on ..... 20 .....

Mr/Mrs ..... ,
(whose signature appears below) have been duly authorised to sign all documents in connection with this tender on behalf of:

(Name of Consortium) .....

In his/her capacity as: .....

Signature ..... Date: .....

NB: FAILURE TO COMPLETE, SIGN AND DATE THE RESOLUTION AS OUTLINED ABOVE MAY RESULT IN THE TENDERER RENDERED INCOMPLETE AND MAY BE DISQUALIFIED/ ALTERNTATIVELY THE TENDERER MAY ATTACH A SIGNED RESOLUTION ON THE ENTITY'S LETTERHEAD

T2.2.2 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 interest[1] 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 consortium[2] 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 of bidder

T2.2.3 TAX COMPLIANCE STATUS LETTER REQUIREMENTS

It is a condition of a Tender that the taxes of the successful Tenderer **must** be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the Tenderer's tax obligations.

- Bidders must ensure compliance with their tax obligations.
- Bidders are required to submit their unique personal identification number (pin) issued by SARS to enable the organ of state to verify the taxpayer's profile and tax status.
- Application for Tax Compliance Status (TCS) pin may be made via e-filing through the SARS website www.sars.gov.za.
- Bidders may also submit a printed TCS certificate together with the bid.
- In bids where consortia / joint ventures / sub-contractors are involved, each party must submit a separate TCS certificate / pin / CSD number.
- Where no TCS is available but the bidder is registered on the Central Supplier Database (CSD), a CSD number must be provided.
- No bids will be considered from persons in the service of the state, companies with directors who are persons in the service of the state, or close corporations with members in the service of the state.

T2.2.3 TAX COMPLIANCE STATUS LETTER REQUIREMENTS (Continued……..)

[*Tax Compliance Status (TCS) Letter *obtained from SARS to be inserted here]

T2.2.4 PROOF OF ATTENDANCE AT THE COMPULSORY CLARIFICATION / SITE MEETING

CERTIFICATE OF ATTENDANCE

TENDER No. 2024/059

This is to certify that

(Tenderer) .....

of *(address)* .....

.....

.....

was represented by the person(s) named below at the compulsory meeting held for all Tenderers at

(location).....

..... on *(date)* .....

starting at *(time)* .....

I / We acknowledge that the purpose of the meeting was to acquaint myself / ourselves with the site of the works and / or matters incidental to doing the work specified in the Tender documents in order for me / us to take account of everything necessary when compiling our rates and prices included in the Tender.

Particulars of person(s) attending the meeting:

Name: ..... Signature: .....

Capacity: .....

Name: ..... Signature: .....

Capacity: .....

Attendance of the above person(s) at the meeting is confirmed by the Purchaser's representative, namely:

Name: ..... Signature: .....

Capacity: ..... Date and Time: .....

T2.2.5 CONTRACT PARTICIPATION GOALS

Objective
The objective of uMngeni-uThukela Water's empowerment initiative is to bring about meaningful transformation in all procurement projects and in particular in the built environment / construction and consulting industry through achieving one or more of the following objectives:

- Meaningful Economic Participation;
- Local Economic Development;
- Transfer of Technical, Management and Entrepreneurial Skills; and
- Creation of sustainable Black Enterprises

Contract Participation Goals
Contract Participation Goal (CPG) – the **final** value of services paid to the CPG Partner/s based on the **final** contract value.

At the time of awarding the contract the 35% minimum CPG amount will be based on the contract award value exclusive of the following:

- VAT, CPA and Contingencies.

During contract implementation, adjustments relating to Provisional Sums and Contingencies linked to the CPG allocation will be agreed upon between the parties to the contract, as and when the need arises.

CPG Partner/s – Service provider/s selected from uMngeni-uThukela Water's Supply Chain Management (SCM) Enterprise Development Database. However, should the database not contain suitable CPG Partner/s, the tenderer may propose suitable CPG Partner/s for uMngeni-uThukela Water's consideration.

Tenderers (the main contractor irrespective of BBBEE classification) who are on uMngeni -uThukela Water's SCM Enterprise Development Database are not exempt from this requirement and are still required to have a CPG Partner.

Tenderers are required to achieve at least 35% Contract Participation Goals (CPG) including a minimum 10% Black Women participation and another 10% for Local participation and another 10% for Local participation of the value of goods, services and Works paid to one or more enterprises (CPG Partner/s)

- 35% includes any special materials
- 35% excludes VAT, CPA and Contingencies.
- The tenderer will be required to achieve the actual Rand value committed for CPG, adjusted according to the following:
  - Variation Orders – Each VO will be evaluated by the Employer's Agent and the Project Manager to determine whether it should be counted, in its entirety or partially, as part of CPG or not.
  - Re-measurable Items (including CPA, and provisional sums) – Each re-measurable item change will be evaluated by the Employer's Agent and the Project Manager to determine whether it should be counted as part of CPG or not.

Within 2 weeks of the award of contract, the tenderer will be required to submit a cash flow projection for the main contractor and the CPG Partner/s

Applicability
The CPG target is applicable to all contracts to be adjudicated through uMngeni-uThukela Water's procurement process and shall be achieved through the following mechanisms:-

- CPG Partner/s selection is concluded **after** adjudication of tenders and **before** contract award is made.
- The CPG Partner/s shall be selected according to the following criteria:

- CPG Partner/s are to be obtained from uMngeni-uThukela Water's database of suppliers specifically earmarked for CPG purposes.
- In the event of services where uMngeni-uThukela Water does not have an applicable service provider on its database, the tenderer may propose a suitable CPG Partner/s for consideration by uMngeni-uThukela Water.

- Main service provider may propose a suitable CPG Partner/s, but uMngeni-uThukela Water reserves the right to provide or arrange a CPG Partner/s to work with the successful company.
- Sub-contracting of the CPG Partner/s at the same rate / price that the tenderer would have offered to uMngeni-uThukela Water whilst making profit margins consistent to the profit margins that the main contractor would have made under normal trading processes.
- Value of the work to be sub contracted shall be at least **35% (minimum of 10% shall be due to Black Women participation and another 10% for Local participation and another 10% for Local participation)** of the total contract value excluding VAT, CPA and Contingencies.
- CPA is payable to the CPG Partner/s as per the indices stipulated in the contract document.
- The work allocated to the CPG Partner shall be performed by the CPG Partner directly and may not be allocated or sub-contracted out to other contractors/consultants/service providers.
- The main contractor **shall not** substitute any CPG Partner/s without the written approval of uMngeni-uThukela Water.
- The working capital arrangements between the main contractor and the CPG Partner/s must be agreed upon between the two parties prior to commencement of works to ensure that the CPG Partner does not have cash flow challenges during contract implementation.

Invoicing and Payment
The monthly measurement and payment will be according to the following guideline:

- Submission of payment certificate to the Employer's Agent by the Contractor– by 20th of each month, or the nearest previous working day. The submission from the contractor shall include the signature of the CPG Partner indicating agreement with the measurements and rates applicable to the work undertaken by the CPG Partner.
- Submission to uMngeni-uThukela by the Employer's Agent – by 25th of each month, or the nearest previous working day;
- Payment to the Contractor – on the last day of the following month;
- The CPG Partner must be paid within reasonable time but no later than 3 working days after the Main Contractor has been paid by Umgeni Water; and
- The submission from the Contractor must include a schedule that clearly shows the following:
  - Total Contract Sum
  - Total amount payable to CPG Partner/s excluding current month
  - Amount payable to CPG Partner for current month
  - % split of Total amount payable to Main contractor and CPG Partner/s

Monitoring and Reporting on CPG

- uMngeni-uThukela Water will monitor CPG implementation on site. This may include direct contact with CPG Partner/s on site for verification purposes.
- The CPG Partner shall be in agreement with the measurement and payment for work completed, for the purposes of submitting payment certificates, as determined by the Contractor. Should disagreements arise, uMngeni-uThukela Water reserves the right to intervene to resolve the disagreement.
- CPG Partner/s shall attend all contractual meetings relevant to their scope of work including contract award negotiations, monthly contract site meetings and technical meetings.

Eligibility Criteria
For tenders where the CPG target is applicable, those that do not offer a **minimum** CPG participation of **35%** (including minimum 10% Black Women participation and another 10% for Local participation) according to the requirements mentioned above, will be deemed **ineligible**.

DECLARATION REGARDING CONTRACT PARTICIPATION GOALS

I, the undersigned, in submitting the accompanying bid:

_____
(Bid Number and Description)

in response to the invitation for the bid made by: **UMNGENI-UTHUKELA WATER** do hereby make the following
declaration and certify the statements contained herein to be true and complete in every respect:

I certify, on behalf of: _____that:
(Name of Bidder)

1. I have read and I understand the contents of this Declaration and the fully completed bid document accompanying this declaration;

2. I understand and declare that the accompanying bid will, and must, be disqualified if this Declaration is found not to be true and complete in every respect;

3. I understand and declare that in the event that this bid is successful, I will be required to, and shall, fully implement the commitments that are submitted with this bid, in particular regarding the Bidder's contract participation goals and commitments towards the allocation of certain portion of the contract to small and emerging entities (CPG Partner/s). Failure to implement such commitments as outlined in the bid document (in particular, as detailed in the bill of quantities) and or failure to provide the relevant information within the prescribed period as determined in the Letter of Intention to Award the Bid, shall automatically disqualify this bid from further consideration and the Employer has the right to, and must, then award the bid to the next highest ranked bidder; and as a result I or the bidder or any of its directors shall have no recourse against uMngeni-uThukela Water.

4. I am authorized by the bidder to sign this Declaration, and to submit the accompanying bid, on behalf of the bidder;

5. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign the bid, on behalf of the bidder;

6. I am aware that, and do consent to, the disqualification of my or the bidder's future bids with uMngeni-uThukela in the event that the commitments made herein are not fulfilled and that such non-fulfillment amounts to abuse of uMngeni-uThukela Water's supply chain policies and procedures and/or empowerment objectives which must be penalized, over and above the contractual sanctions as agreed to in line with the contract signed with uMngeni-uThukela Water, with a sanction of restricting me and or my company (the bidder) and or any of its directors from conducting business with uMngeni-uThukela Water for a period not exceeding ten (10) years.

7. I consent that should my company (the Bidder) deviate from the commitments and the spirit of the CPG objectives as agreed to, shall amount to a repudiation of the contractual arrangement between the two parties (uMngeni-uThukela Water and the Bidder); and uMngeni-uThukela Water shall have the right to terminate the contract with immediate effect and without giving my company (the Bidder) prior notice to remedy the breach.

_____	_____	_____
Full Names & Surname (Duly authorized)	Signature	Date

_____	_____
Position	Name of Bidder

T2.2.6 TENDERER'S EXPERIENCE

The experience of the Tenderer or joint venture partners in the case of an unincorporated joint venture or consortium will be evaluated on the basis of experience in similar projects or similar areas and conditions in relation to the scope of work.

Tenderers should very briefly describe their experience in this regard relevant to the scope of work and attach this to this schedule. Tenderers must note that the details reflected in the schedule below should have contactable references so that uMngeni-uThukela Water can verify the information. If the references are not contactable the information shall not be considered for evaluation purposes.

UMngeni-uThukela Water reserves the right not to appoint a tenderer should the references generally indicate poor performance on previous projects that are reflected in the table below.

The description should be put in tabular form with the following headings:

Project name	Period /Year	Value of work inclusive of VAT (Rand)	Size (of Infrastructure constructed) See notes below	Company/Client (for whom the project was done)	Contact Details

Note to tenderer:

1. Only information relating to similar projects is to be provided in the above table.
2. Size or capacity of infrastructure shall be stated as
   a. Pipelines : Length and diameter and/or flowrate
   b. Structures : exterior dimensions
   c. Tanks/Reservoirs : volumetric capacity
   d. Roadways : length, width, surface type
   e. Retaining walls: length and height.
3. Copies of completion certificates are to be attached to the last page of this returnable. Information in the table without the certificates attached will not be considered

Scoring of the Tenderer's experience will be as follows: 35

DESCRIPTION	MAX POSSIBLE SCORE
Company experience in projects comprising of reinforced concrete structures (submit proof of previous experience, in the form of completion certificates or reference letters). • 2 projects – 25 points • 3 projects – 35 points 5 additional points for every project more than 3 projects to a maximum of 50 points Company experience in projects comprising of laying steel pipework greater than DN300 diameter and greater than 10m in length (submit proof of previous experience in the form of completion certificates or reference letters). • 2 projects – 25 points • 3 projects – 35 points 5 additional points for every project more than 3 projects to a maximum of 50 points	**100**

T2.2.6 TENDERER'S EXPERIENCE (Continued)

INSERT HERE

T2.2.7 KEY PERSONNEL ASSIGNED TO THE WORK

Insert in the table below the key personnel and their proposed function

KEY PERSONNEL SCHEDULE

No.	Proposed Function	Key Person Name
1.	**Contracts Manager**	
2.	**Site Agent**	
3.	**General Foreman**	

T2.2.8 EXPERIENCE OF KEY PERSONNEL

Provide relevant information as prescribed below for the following Key Persons proposed in the tender to fulfil the following positions:

Key Person Positions
A. Contracts Manager
B. Site Agent
C. General Foreman

The experience of each key person, relevant to the scope of work, will be evaluated from the points below:
1) General experience (total duration of activity), level of education and training and positions held by the key person.
2) The education, training and experience of the person, in the specific sector, field, subject, etc. which is directly linked to the scope of work.

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

Each CV should be structured under the following headings:

1. Personal particulars
   - name
   - date and place of birth
   - place (s) of tertiary education and dates associated therewith
2. Qualifications
3. Name of current employer and position in enterprise
4. Overview last 10 years of experience (year, organization, position and projects)
5. Outline of recent assignments / experience that has a bearing on the scope of work

The scoring of the experience of key staff will be as follows: 35

The proposed project team including CV's showing experience in projects of a similar nature. This must include details of the Contracts Manager; Site Agent and General Foreman. **Experience of Contracts Manager in the Construction projects.** • 3yrs – 7 points • 4yrs – 10 points • 5yrs - 14 points 2 additional points for every year more than 5 years to a maximum of 20 points **Experience of Site Agent in the construction of reinforced concrete structures and steel pipework.** • 3yrs – 15 points • 4yrs - 20 points • 5yrs - 28 points 4 additional points for every year more than 5 years to a maximum of 40 points **Experience of General Foreman in the construction of reinforced concrete structures and steel pipework:** • 3yrs - 15 points • 4yrs - 20 points	**100**

• 5yrs - 28 points 4 additional points for every year more than 5 years to a maximum of 40 points.	

T2.2.8 EXPERIENCE OF KEY PERSONNEL (Continued)

INSERT KEY PERSONNEL CVs HERE

T2.2.9 PROPOSED ORGANIZATION AND STAFFING – Not Applicable

The Tenderer should propose the structure and composition of their team i.e. the main disciplines involved, the key staff member / expert responsible for each discipline, and the proposed technical and support staff and site staff. The roles and responsibilities of each key staff member / expert should be set out as job descriptions. In the case of an association / joint venture / consortium, it should, indicate how the duties and responsibilities are to be shared.

The Tenderer must attach his / her organization and staffing proposals to this page.

The scoring of the proposed organization and staffing will be as follows:

No submission (score 0)	No Organizational and Staffing proposal submitted.
Poor (score 40)	The organization chart is sketchy; the staffing plan is weak in important areas. There is no clarity in allocation of tasks and responsibilities.
Satisfactory (score 70)	The organizational chart is complete and detailed, the technical level and composition of the staffing arrangements are adequate.
Good (score 90)	Besides meeting the “satisfactory” rating, staff are well balanced i.e. they show good co-ordination, complimentary skills, clear and defined duties and responsibilities. Some members of the project team have worked together before on limited occasions.
Very good (score 100)	Besides meeting the “good” rating, the proposed team is well integrated and several members have worked together extensively in the past.

T2.2.9 PROPOSED ORGANIZATION AND STAFFING (Continued)

INSERT HERE

T2.2.10 TENDERER'S SCHEDULE OF PLANT AND EQUIPMENT – Not Applicable

The following are lists of major items of relevant equipment that I / we presently own or lease and will have available for this contract if my / our Tender is accepted.

(a) Details of major equipment that is owned by me / us and immediately available for this contract.

DESCRIPTION *(type, size, capacity etc.)*	QUANTITY	YEAR OF MANUFACTURE

Attach additional pages if more space is required

(b) Details of major equipment that will be hired, or acquired for this contract if my / our Tender is accepted

DESCRIPTION *(type, size, capacity etc.)*	QUANTITY	HOW ACQUIRED	
		HIRE/ BUY	SOURCE

Attach additional pages if more space is required

The Tenderer undertakes to bring onto site without additional cost to the Employer any additional plant not listed but which may be necessary to complete the contract within the specified contract period.

Failure to complete this form properly and correctly, will lead to the conclusion that the Tenderer does not have the necessary plant and equipment resources at its disposal, which will prejudice its Tender.

SIGNATURE: ..... DATE: .....
(of person authorized to sign on behalf of the Tenderer)

T2.2.11 QUALITY ASSURANCE AND ENVIRONMENTAL MANAGEMENT 10

1. Does the Tenderer have a quality management system which is certified in terms of ISO 9001: 2015 ..... | YES | NO |

2. If "yes", Tenderer to supply brief summary of structure of system:

.....

.....

.....

.....

.....

.....

.....

3. If "no", does the Tenderer intend to apply for certification? ..... | YES | NO |

By when?..... | Date |

OR

4. If "no", does the Tenderer have its own system?..... | YES | NO |

.....

5. If "yes", please supply details of the system .....

.....

.....

.....

.....

.....

6. Does the Tenderer have an environmental management system which is certified in terms of ISO 14001 ..... | YES | NO |

7. If "yes", Tenderer to supply brief summary of structure of system:

.....

.....

.....

.....

.....

.....

8. If "no", does the Tenderer intend to apply for certification? | YES | NO |

By when?..... | Date |

OR

9.	If "no", does the Tenderer have its own system?.....	YES	NO

10. If "yes", please supply details of the system .....
.....
.....
.....
.....

If the Tenderer does not intend to apply for certification it shall submit details of the quality / environmental management system presently in place.

The Tenderer shall insert here a copy of the company's quality assurance plan, control procedures and the relevant documentation supporting its commitment to environmental management. The successful Tenderer shall furnish the Employer with a detailed Quality Control Plan (QCP) and Procedure for all materials, such as valves, pumps, motors, pipes, specials and fittings for approval prior to any fabrication, coating, lining and delivery. In the event of these documents being too extensive to be included in the procurement document, an abbreviated version of the master document will be included, referring to the master document.

The critical scope of work to be addressed by the QCP should include at least:

- Construction of a new reinforced concrete control valve chamber No.3A and inlet pipework for reservoir no. 3.
- Demolish existing chamber No.3 roof slab and casting of new roof slab with precast planks.
- Core through existing reservoir wall and installation of DN 600 inlet pipe.
- Trenching and laying of 110mm diameter uPVC scour pipe and fittings.
- V-drains, loffelstein retaining wall, gravel roads and brickwork.

Scoring of Quality Assurance and Environmental Management will be as follows: 10

QUALITY ASSURANCE AND ENVIRONMENTAL MANAGEMENT	
No submission (score 0)	No Quality Assurance Plan & support documents submitted
Poor (score 40)	The approach to Quality and Environmental Management is poor / is unlikely to satisfy project objectives or requirements. The Tenderer has misunderstood certain aspects of the scope of work and does not deal with the critical aspects of the project.
Satisfactory (score 70)	The approach is tailored to address the specific project objectives and methodology and is sufficiently flexible to accommodate changes that may occur during execution. The quality plan and approach to managing risk etc. is tailored to the critical characteristics of the project.
Good (score 90)	The approach is specifically tailored to address the specific project objectives and methodology and is sufficiently flexible to accommodate changes that may occur during execution. The quality plan and approach to managing risk etc. is specifically tailored to the critical characteristics of the project. The Tenderer has environmental management system which is certified in terms of ISO 14 000.

QUALITY ASSURANCE AND ENVIRONMENTAL MANAGEMENT	
Very good (score 100)	Besides meeting the “good” rating, the important issues are approached in an innovative and efficient way, indicating that the Tenderer has outstanding knowledge of state-of-the- art approaches. The approach paper details ways to improve the project outcomes and the quality of the outputs.

T2.2.12 METHOD STATEMENT | 10 |

The method statement must respond to the Scope of Work and outline the proposed approach / methodology. The method statement should articulate what value the Tenderer will add in achieving the stated objectives for the project.

The Tenderer must explain his / her understanding of the objectives of the assignment and the Purchaser's stated and implied requirements, highlight the issues of importance, and explain the technical approach they would adopt to address them. The approach paper should explain the methodologies which are to be adopted, demonstrate the compatibility of those methodologies with the proposed approach. The approach should also include a quality plan which outlines processes, procedures and associated resources, applied by whom and when, to meet the requirements and indicate how risks will be managed and what contribution can be made regarding value management.

The critical scope of work addressed by the method statement should include at least:

- Construction of a new reinforced concrete control valve chamber No.3A and inlet pipework for reservoir no. 3.
- Demolish existing chamber No.3 roof slab and casting of new roof slab with precast planks.
- Core through existing reservoir wall and installation of DN 600 inlet pipe.
- Trenching and laying of 110mm diameter uPVC scour pipe and fittings.
- V-drains, loffelstein retaining wall, gravel roads and brickwork.

The Tenderer must attach his / her approach paper to this page. The approach paper should not be longer than 8 pages.

The scoring of the approach paper will be as follows: | 10 |

Technical approach and methodology	
No submission (score 0)	No Method Statement submitted
Poor (score 40)	The technical approach and / or methodology is poor / is unlikely to satisfy project objectives or requirements. The Tenderer has misunderstood certain aspects of the scope of work and does not deal with the critical aspects of the project.
Satisfactory (score 70)	The approach is generic but tailored to address the general project objectives and methodology.
Good (score 90)	The approach is specifically tailored to address the specific project objectives and methodology and is sufficiently flexible to accommodate changes that may occur during execution. The quality plan and approach to managing risk is specifically tailored to the critical characteristics of the project.
Very good (score 100)	Besides meeting the "good" rating, the important issues are approached in an innovative and efficient way, indicating that the Tenderer has outstanding knowledge of state-of-the- art approaches. The approach paper details ways to improve the project outcomes and the quality of the outputs.

T2.2.12 METHOD STATEMENT (Continued)

INSERT HERE

T2.2.13 PRELIMINARY PROGRAMME

The Tenderer shall detail below or preferably attach a preliminary programme reflecting the proposed sequence and tempo of execution of the main work components. The programme shall be in accordance with the information supplied in the Contract, requirements of the Project Specifications (Vol 2, PS 6, SANS 1921-1, clause 4.3) and with all other aspects of his Tender.

While the table included below may be used it cannot show enough detail to achieve a satisfactory, good or very good score as outlined in the scoring table. Tenders are advised to use scheduling software of their choice to produce a detailed programme that may be attached overleaf.

The Tenderer should note that the contract is required to be completed, commissioned and handed over to the Purchaser by the date specified in the contract data.

PROGRAMME														
Component / sub component	**WEEKS / MONTHS**													

Note: The programme must be based on the completion time as specified in the Contract Data. No other completion time that may be indicated on this programme will be regarded as an alternative offer, unless it is listed in supported by a detailed statement to that effect, all as specified in the Tender Data.

Scoring of the preliminary programme will be as follows: 10

	Suitability of programme
No submission (score 0)	No preliminary programme submitted
Poor (score 40)	Programme is inadequate and/or considered unrealistic and does not achieve required completion date
Satisfactory (score 70)	Programme is considered realistic and adequately shows the main components, subcomponents and compliance with completion date
Good (score 90)	Programme is considered realistic and includes the main components, subcomponents, dependencies and compliance with completion date
Very good (score 100)	Programme is considered realistic and includes the main components, subcomponents, linkages, dependencies, critical path and compliance with completion date

T2.2.13 PRELIMINARY PROGRAMME (Continued)

INSERT HERE

Insert additional schedules here if applicable and update Part C table with the additional appropriate schedules within Part C

T.2.2.14 REGISTRATION CERTIFICATE / AGREEMENT / ID DOCUMENT

Important note to Tenderer: The relevant supporting documents to the organization tendering i.e. Registration Certificates for Companies, Close Corporations and Partnerships, or Agreements and Powers of Attorney for Joint Ventures and Consortiums, or ID documents for Sole Proprietors, all as referred to in the foregoing forms and in T2.1, must be inserted here

INSERT HERE

T2.2.15 AMENDMENTS, QUALIFICATIONS AND ALTERNATIVES

(This is not an invitation for amendments, deviations or alternatives but should the Tenderer desire to make any departures from the provisions of this contract he shall set out his proposals clearly hereunder. uMngeni-uThukela Water will not consider any amendment, alternative offers or discounts unless forms (a), (b) and (c) have been completed to the satisfaction of the Purchaser).

I / We herewith propose the amendments, alternatives and discounts as set out in the tables below:

(a) AMENDMENTS - NOT APPLICABLE

PAGE, CLAUSE OR ITEM NO.	PROPOSED AMENDMENT

[Notes: (1) Proposals for amendments to the General and Special Conditions of Contract are not acceptable, and will be ignored;

(2) The Tenderer must give full details of all the financial implications of the amendments and qualifications in a covering letter attached to his Tender.

(b) ALTERNATIVES - NOT APPLICABLE

PROPOSED ALTERNATIVE	DESCRIPTION OF ALTERNATIVE

[Notes: (1) Individual alternative items that do not justify an alternative Tender, and an alternative offer for time for completion should be listed here.

(2) In the case of a major alternative to any part of the work, a separate Bill of Quantities, programme, etc., and a detailed statement setting out the salient features of the proposed alternatives must accompany the Tender.

(3) Alternative Tenders involving technical modifications to the design of the works and methods of construction shall be treated separately from the main Tender offer.]

(c) UNCONDITIONAL DISCOUNTS

ITEM ON WHICH DISCOUNT IS OFFERED	DESCRIPTION OF DISCOUNT OFFERED

[Note: The Tenderer must give full details of the discounts offered in a covering letter attached to his Tender, failing which, the offer for a discount may have to be disregarded.]

Signature..... Date.....

T2.2.16 RECORD OF ADDENDA TO TENDER DOCUMENTS

I / We confirm that the following communications amending the Tender documents that I / we received from uMngeni-uThukela Water or his representative before the closing date for submission of Tenders have been taken into account in this Tender.

A signed copy of each addendum shall be inserted after this page.

ADDENDUM No	DATE	TITLE OR DETAILS

....

Signature Date

(of person authorized to sign on behalf of the Tenderer)

T2.2.17 VAT REGISTRATION CERTIFICATE

[VAT Registration Certificate obtained from SARS to be inserted here]

T2.2.18 SCHEDULE OF PROPOSED SUB-CONTRACTORS

Important note to Tenderer: The relevant supporting documents to the organization tendering i.e. Registration Certificates for Companies, Close Corporations and Partnerships, or Agreements and Powers of Attorney for Joint Ventures and Consortiums, or ID documents for Sole Proprietors, all as referred to in the foregoing forms and in T2.1, must be inserted here

We notify you that it is our intention to employ the following Sub-Contractors for work in this contract. If we are awarded a contract we agree that this notification does not change the requirement for us to submit the names of proposed Sub-Contractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

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

Signature ..... Date .....

Name ..... Position .....

Tenderer .....

T2.2.19 PROOF OF PURCHASE OF TENDER DOCUMENT

INSERT HERE

T2.2.20 GOODS AND SERVICES SOURCED INTERNATIONALLY

INTRODUCTION

The National Industrial Participation (NIP) Programme, which is applicable to all government procurement contracts that have an imported content, became effective on the 1 September 1996. The NIP policy and guidelines were fully endorsed by Cabinet on 30 April 1997. In terms of the Cabinet decision, all state and State Owned Entity purchases / lease contracts (for goods, works and services) entered into after this date, are subject to the NIP requirements. NIP is obligatory and therefore must be complied with. The Industrial Participation Secretariat (IPS) of the Department of Trade and Industry (DTI) is charged with the responsibility of administering the programme.

1. PILLARS OF THE PROGRAMME

1.1 The NIP obligation is benchmarked on the imported content of the contract. Any contract having an imported content equal to or exceeding US$ 10 million or other currency equivalent to US$ 10 million will have a NIP obligation. This threshold of US$ 10 million can be reached as follows:

(a) Any single contract with imported content exceeding US$10 million.

or

(b) Multiple contracts for the same goods, works or services each with imported content exceeding US$3 million awarded to one seller over a 2 year period which in total exceeds US$10 million.

or

(c) A contract with a renewable option clause, where should the option be exercised the total value of the imported content will exceed US$10 million.

or

(d) Multiple Contractors of the same goods, works or services under the same contract, where the value of the imported content of each allocation is equal to or exceeds US$ 3 million worth of goods, works or services to the same government institution, which in total over a two (2) year period exceeds US$10 million.

1.2 The NIP obligation applicable to Contractors in respect of sub-paragraphs 1.1 (a) to 1.1 (c) above will amount to 30 % of the imported content whilst Contractors in respect of paragraph 1.1 (d) shall incur 30% of the total NIP obligation on a pro-rata basis.

1.3 To satisfy the NIP obligation, the DTI would negotiate and conclude agreements such as investments, joint ventures, sub-contracting, licensee production, export promotion, sourcing arrangements and research and development (R&D) with partners or Contractors.

1.4 A period of seven years has been identified as the time frame within which to discharge the obligation.

2. REQUIREMENTS OF THE DEPARTMENT OF TRADE AND INDUSTRY

2.1 In order to ensure effective implementation of the programme, successful tenderers (Contractors) are required to, immediately after the award of a contract that is in excess of R10 million (ten million Rands), submit details of such a contract to the DTI for reporting purposes.

2.2 The purpose for reporting details of contracts in excess of the amount of R10 million (ten million Rands) is to cater for multiple contracts for the same goods, works or services; renewable contracts and multiple Contractors for the same goods, works or services under the same contract as provided for in paragraphs 1.1.(b) to 1.1. (d) above.

3. TENDER SUBMISSION AND CONTRACT REPORTING REQUIREMENTS OF TENDERERS AND SUCCESSFUL TENDERERS (CONTRACTORS)

3.1 Tenderers are required to sign and submit this Section together with the tender on the closing date and time.

3.2 In order to accommodate multiple contracts for the same goods, works or services; renewable contracts and multiple Contractors for the same goods, works or services under the same contract

as indicated in sub-paragraphs 1.1 (b) to 1.1(d) above and to enable the DTI in determining the NIP obligation, successful tenderers (Contractors) are required, immediately after being officially notified about any successful tender with a value in excess of R10 million (ten million Rands), to contact and furnish the DTI with the following information:

- Tender / contract number.
- Description of the goods, works or services.
- Date on which the contract was accepted.
- Name, address and contact details of the government institution.
- Value of the contract.
- Imported content of the contract, if possible.

3.3 The information required in paragraph 3.2 above must be sent to the Department of Trade and Industry, Private Bag X 84, Pretoria, 0001 for the attention of Mr Elias Malapane within five (5) working days after award of the contract. Mr Malapane may be contacted on telephone (012) 3941401, facsimile (012) 3942401 or e-mail at Elias@thedti.gov.za for further details about the programme.

4. PROCESS TO SATISFY THE NIP OBLIGATION

4.1 Once the successful tenderer (Contractor) has made contact with and furnished the DTI with the information required, the following steps will be followed:

(a) the Contractor and the DTI will determine the NIP obligation;
(b) the Contractor and the DTI will sign the NIP obligation agreement;
(c) the Contractor will submit a performance guarantee to the DTI;
(d) the Contractor will submit a business concept for consideration and approval by the DTI;
(e) upon approval of the business concept by the DTI, the Contractor will submit detailed business plans outlining the business concepts;
(f) the Contractor will implement the business plans; and
(g) the Contractor will submit bi-annual progress reports on approved plans to the DTI.

4.2 The NIP obligation agreement is between the DTI and the successful tenderer (Contractor) and, therefore, does not involve the purchasing institution.

Tender number ..... Closing date .....

Name of tenderer .....

Postal address .....

.....

Signature ..... Name (in print) .....

Date .....

T2.2.20 GOODS AND SERVICES SOURCED INTERNATIONALLY Continued…..

Insert detailed list of goods and services to be sourced internationally and provide rate of exchange and base date.

Description	Value	Base Date	Rate of Exchange

Note to the Tenderer: It will be the successful Tenderer's responsibility to obtain Forward Cover to avoid price increases for the Employer on any goods and services in this category. In failing do that, any increase in prices on these items, after the Commencement Date of the Contract, shall be for the Contractor's account.

T2.2.21 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 80/20 preference point system.
b) 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
SPECIFIC GOALS	20
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:

80/20 **or** **90/10**

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

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:

80/20 **or** **90/10**

$$Ps = 80\left(1 + \frac{Pt - P\,max}{P\,max}\right) \text{ or } Ps = 90\left(1 + \frac{Pt - P\,max}{Pmax}\right)$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the 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 ***[select where applicable to this bid]***	**Number of points allocated (80/20 system) (To be completed by the organ of state)**	**Number of points claimed (80/20 system) (To be completed by the tenderer)**
The entity which is at least 51% black owned		
The promotion of enterprises located in KZN		

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: .....

.....

.....
.....

T2.2.22 .../continued PREFERENCE GOALS SUPPORTING DOCUMENTS

Tenderers not submitting **valid supporting documents in respect of Preference points claimed for specific goals do not qualify for preference points but will not be disqualified from the tendering process**

T2.2.22 LETTER OF GOOD STANDING IN TERMS OF COID ACT

(Compensation for Occupational Injuries and Diseases Act)

INSERT HERE

T2.2.23 TENDERER'S FINANCIAL STANDING

In terms of the standard conditions of Tender, the Tenderer shall provide information about its commercial position, which includes information necessary for the Purchaser to evaluate the Tenderer's financial standing.

To that end the Tenderer must provide with its Tender a bank rating, certified by its banker, to the effect that it will be able to successfully complete the contract at the Tendered amount within the specified time for completion.

However, should the Tenderer be unable to provide a bank rating with its Tender, it shall state the reasons as to why it is unable to do so, and in addition provide the following details of its banker and bank account that it intends to use for project:

Name of account holder: .....

Name of Bank: ..... Branch: .....

Account number: ..... Type of account: .....

Telephone number: ..... Facsimile number: .....

Name of contact person (*at bank:* .....

Failure to provide either the required bank details or a certified bank rating with its Tender, will lead to the conclusion that the Tenderer does not have the necessary financial resources at its disposal to complete the contract successfully within the specified time for completion.

The Purchaser undertakes to treat the information thus obtained as confidential, strictly for the use of evaluation of the Tender submitted by the Tenderer.

SIGNATURE: ..... DATE: .....
(of person authorized to sign on behalf of the Tenderer)

T2.2.24 CONTRACTORS HEALTH AND SAFETY DECLARATION

In terms of Clause 5(1) 9(h) of the OHSA 1993 Construction Regulations 2014 (referred to as "the Regulations" hereafter), a Contractor may only be appointed to perform construction work if the Purchaser is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHSA 1993 Construction Regulations 2014.

To that effect a person duly authorized by the Tenderer must complete and sign the declaration hereafter in detail.

Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHSA 1993 Construction Regulations 2014.

2. I hereby declare that my company / enterprise have the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Purchaser's Health and Safety Specifications.

3. I hereby undertake, if my Tender is accepted, to provide a sufficiently documented Health and Safety Plan in accordance with CR7(1) of the Construction Regulations, approved by the Purchaser or its representative, before I will be allowed to commence with construction work under the contract. I hereby agree that my company/enterprise will not have a claim for compensation for delay or extension of time because of my failure to obtain the necessary approval for the said safety plan.

4. I confirm that copies of my company's approved Health and Safety Plan, the Purchaser's Safety Specifications as well as the OHSA 1993 Construction Regulations 2014 will be provided on site and will at all times be available for inspection by the Contractor's personnel, the Purchaser's personnel, the Employer's Agent, visitors, and officials and inspectors of the Department of Labour.

5. I hereby confirm that adequate provision has been made in my Tendered rates and prices in the bill of quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHSA 1993 Construction Regulations 2014, including the cost for specific items that may be scheduled in the bill of quantities.

6. I hereby confirm that I will be liable for any penalties that may be applied by the Purchaser in terms of the said Regulations for failure on my part to comply with the provisions of the Act and the Regulations as set out in Regulation 30 of the Regulations.

7. I agree that my failure to complete and execute this declaration to the satisfaction of the Purchaser will mean that I am unable to comply with the requirements of the OHSA 1993 Construction Regulations 2014, and accept that my Tender will be prejudiced and may be rejected at the discretion of the Purchaser.

8. I am aware of the fact that, should I be awarded the contract, I must submit the notification required in terms of Regulation 4 of the OHSA 1993 Construction Regulations 2014 *(example attached hereafter)* before I will be allowed to proceed with any work under the contract.

SIGNATURE: ..... DATE: .....
(of person authorized to sign on behalf of the Tenderer)

T2.2.25 PRO FORMA OHS NOTIFICATION

PRO FORMA NOTIFICATION FORM IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993, CONSTRUCTION REGULATIONS 2014

[In terms of Regulation 4 of the Construction Regulations 2014, the successful Tenderer must complete and forward this form prior to commencement of work to the office of the Department of Labour.]

1. (a) Name and postal address of Contractor:

.....

(b) Name of Contractor's contact person:

Telephone number:

2. Contractor's compensation registration number:

3. (a) Name and postal address of Purchaser:

(b) Name of Purchaser's contact person or agent:

Telephone number

4. (a) Name and postal address of designer(s) for the project:

.....

(b) Name of designer's contact person:

Telephone number

5. Name of Contractor's construction supervisor on site appointed in terms of Regulation 6(1):

Telephone number:

6. Name/s of Contractor's sub-ordinate supervisors on site appointed in terms of regulation 6(2).

.....

7. Exact physical address of the construction site or site office:

8. Nature of the construction work:

.....

9. Expected commencement date:

10. Expected completion date:

11. Estimated maximum number of persons on the construction site:

12. Planned number of Sub-Contractors on the construction site accountable to Contractor:

13. Name(s) of Sub-Contractors already chosen:

.....

.....

SIGNED BY:

CONTRACTOR: ..... DATE: .....

PURCHASER: ..... DATE: .....

T2.2.26 LETTER OF INTENT FOR PUBLIC LIABILITY

INSERT HERE

T2.2.27 LETTER OF INTENT FOR PERFORMANCE GUARANTEE

[The Tenderer must attach hereto a letter from the bank or institution with whom it has made the necessary arrangements, to the effect that the said bank or institution will be prepared to provide the required performance guarantee when asked to do so. The Tenderer must also attach proof that the institution that will provide the performance guarantee is registered and in good standing with the Financial Services Conduct Authority.]

]

INSERT HERE

T2.2.28 REGISTRATION CERTIFICATES

Insert required registration Certificates such as CIDB, ECSA, etc. here.

T2.2.29 CENTRAL SUPPLIER DATABASE (CSD) REPORT

INSERT HERE

Disclaimer
Personal Information (PI) requested in this form is mandatory for operational and administrative processes, and to comply with regulatory requirements. Umgeni Uthukela Water will take reasonable steps to ensure that the Personal Information collected on this form is processed responsibly, kept safe and confidential, and does not unjustifiably infringe your privacy. This is in compliance to the Protection of Personal Information Act No. 4 of 2013.

CONTRACT NO: 2024/059

CONTRACT TITLE:

HOWICK WEST RESERVOIR UPGRADE NEW CHAMBER No.3A AND PIPEWORK

VOLUME 2 – Agreements, Contract, Pricing and Scope

Issued by:

UMngeni-uThukela Water
310 Burger Street
Pietermaritzburg
3201

Tender Queries:

Contact Name: Nosipho Mkhize
Telephone: (033) 341-1062

Name of Tenderer: ……

National Treasury CSD Number: ……

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C.1 AGREEMENTS AND CONTRACT DATA

IMPORTANT NOTE ON C1.1:

ALL Tenderers MUST complete and sign Form A: OFFER (the first page hereafter).

Form B: ACCEPTANCE will be signed by the Employer and then only in the case of the successful Tenderer.

Form C: SCHEDULE OF DEVIATIONS must be signed by the Employer as well as the successful Tenderer at the close of the process of offer and acceptance.

Form D: CONFIRMATION OF RECEIPT must be signed by the successful Tenderer on receipt of a fully completed original copy of the Agreement including the Schedule of Deviations, if any.

C1.1 FORM OF OFFER AND ACCEPTANCE

A: OFFER

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

TENDER NO. 2024/059

HOWICK WEST RESERVOIR UPGRADE NEW CHAMBER No.3A AND PIPEWORK

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

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

The offered total of the prices inclusive of Value Added Tax is:

R ..... (*In words* .....

....),

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

FOR THE TENDERER:

Signature: *(of person authorized to sign the tender)*
.....

Name: (*of signatory in capitals)*
.....

Capacity: (*of signatory*)
.....

Name of Tenderer: (*organization*)
.....

Address:
.....

.....

Telephone number: ..... Fax number: .....

CIDB Registration Number of Tenderer:
.....

WITNESS:

Signature: .....

Name: (in capitals) .....

Date: .....

B: ACCEPTANCE

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

The terms of the contract are contained in

C.1 Agreements and Contract Data, (which includes this Agreement)
C.2 Pricing Data, including the Bill of Quantities
C.3 Scope of Work
C.4 Site Information
C.5 Annexures

and the schedules, forms, drawings and documents or parts thereof, which may be incorporated by reference into Sections C.1 to C.5 above.

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

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

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

FOR THE EMPLOYER:

Signature: ……

Name: *(of signatory in capitals)* ……..

Capacity: *(of signatory)* ……

Name of Employer: *(organization)* ……..

Address: ……

……

Telephone number: ..... Fax number: .....

WITNESS:

Signature: ..... **Name:** *(in capitals)* .....

Date: .....

C: SCHEDULE OF DEVIATIONS

The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Tender Data and the Conditions of Tender.

A Tenderer's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.

Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here.

Any change or addition to the tender documents arising from the above agreements and recorded here, shall also be incorporated into the final draft of the Contract.

1. Subject: .....
Details: .....
.....

2. Subject: .....
Details: .....
.....

3. Subject: .....
Details: .....
.....

4. Subject: .....
Details: .....
.....

5. Subject: .....
Details: .....
.....

6. Subject: .....
Details: .....
.....

7. Subject: .....
Details: .....
.....

By the duly authorized representatives signing this Schedule of Deviations, the Employer and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

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

FOR THE TENDERER:

Signature: .....

Name: .....

Capacity: .....

Tenderer: *(Name and address of organization)* .....

.....

Witness:

Signature: .....

Name: .....

Date: .....

FOR THE EMPLOYER:

Signature: .....

Name: .....

Capacity: .....

Employer: *(Name and address of organization)* .....

.....

Witness:

Signature: .....

Name: .....

Date: .....

D: CONFIRMATION OF RECEIPT

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

the …….. (day) of ……..……..…….(month) 202…… (year)

at ..... (place)

FOR THE CONTRACTOR:

Signature: .....

Name: .....

Capacity: .....

Signature and name of witness:

Signature: .....

Name: .....

C1.2 CONTRACT DATA

C1.2.1 CONDITIONS OF CONTRACT

GENERAL CONDITIONS OF CONTRACT

The **General Conditions of Contract for Construction Works, Third Edition (2015)**, published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685 (Short title: "**GCC 2015**"), is applicable to this Contract and is obtainable from www.saice.org.za .

It is agreed that the only variations from the said General Conditions of Contract are those set out hereafter under "Special Conditions of Contract".

SPECIAL CONDITIONS OF CONTRACT

1. GENERAL

These Special Conditions of Contract (SCC) form an integral part of the Contract. They shall amplify, modify or supersede, as the case may be, the GCC 2015 to the extent specified below, and shall take precedence and shall govern.

The clauses of the SCC hereafter are numbered "SCC" followed in each case by the number of the applicable Clause or Sub-Clause in the GCC 2015, and if applicable, the heading, or (where a new condition that has no relation to the existing clauses is introduced) by a number that follows after the last Clause number in the GCC 2015.

SCC 1.1 Definitions

Add the following at the end of Sub-Clause 1.1.1:

SCC 1.1.1.35 "Client", as used in the Occupational Health and Safety Act, 1993 and the Construction Regulations, 2014, shall have the same meaning as "Employer".

SCC 1.1.1.36 "Principal Contractor", as used in the Occupational Health and Safety Act, 1993 and the Construction Regulations, 2014, shall have the same meaning as "Contractor".

SCC 4.4 Sub-Contracting

SCC 4.4.1 ***Insert the following after the existing wording:***

"The Contractor shall not sub-contract any Works to Sub-Contractors who are not appropriately registered and graded by the Construction Industry Development Board (CIDB). Proof of registration and grading shall be submitted to the Employer's Agent prior to the award of any such work to a Sub-Contractor.

The Employer reserves the right to refuse payment to the Contractor for work carried out by Sub-Contractors who were not appropriately registered and graded by the CIDB at the time the work was being carried out.

Subsequent registration and grading by the CIDB of Sub-Contractors shall have no force or effect in curing the non-compliance retrospectively."

SCC 4.4.4 ***Insert the following after the existing wording:***

"The contractual relationship between the Contractor and any of its CPG Partners shall be the same as if the Contractor had appointed the CPG Partner in terms of Clause 4.4.3. However, the requirements of and the procedures set out under PS 12 Selected Sub-Contractors included in Section C.3 Scope of Work shall not apply to CPG Partners.

The contractual relationship between the Contractor and its CPG Partners shall be as agreed upon between the Employer and the Contractor during the process of CPG negotiations prior to the award of the Contract, and as recorded in the Schedule of Deviations."

SCC 4.4.5 ***Insert the following after the existing wording:***

"The provisions of this Sub-clause shall apply to the appointment of CPG Partners."

SCC 4.4.6 ***Insert the following after the existing wording:***

"The provisions of this Sub-clause shall apply to the appointment of CPG Partners."

SCC 4.4.7 ***Insert the following after the existing wording:***

"The provisions of this Sub-clause shall apply to the appointment of CPG Partners."

SCC 4.5 Notices and fees

SCC 4.5.2 **Employer's responsibility for approval**

Insert the following after the existing wording:

"The Employer shall be responsible for obtaining any construction work permit which may be required in terms of Regulation 3(1) of the Construction Regulations, 2014 (promulgated under Section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993))."

SCC 4.5.3 **Contractor's responsibility for consents**

Insert the following after the existing wording:

"Failure by the Contractor to provide in a proper and timeous manner all the necessary information and documents as required by Regulation 3(5) of the Construction Regulations, 2014, or as requested by the Employer or his agent, shall result in any claim which the Contractor may make in connection therewith for an extension of time, any direct or indirect costs, or any damages claim, being rejected."

SCC 4.5.4 **Contractor to be compensated**

Insert the following after the existing wording:

"The costs incurred by the Contractor in providing the necessary information and documents pursuant to the application for a construction work permit required by Regulation 3(1) of the Construction Regulations, 2014 shall be deemed to be included in the Contractor's rates and prices, whether itemized separately in the Bill of Quantities or not."

SCC 5.1 Time calculations

The phrase "*shall be excluded from the calculation of the time-span concerned*" shall be separated from Sub-clause 5.1.1.2 and shall be positioned in a new line below it.

SCC 5.1.1 The entire Sub-clause 5.1.1 shall read as follows:

"5.1.1 Except where otherwise provided in the Contract, where a specific time-span is stipulated in the Contract for carrying out any task, or for the termination of any right, or the duration of any event or circumstance,

5.1.1.1 The special non-working days set out in the Contract Data that fall within the said time-span, as well as

5.1.2 The day on which the time-span commences

shall be excluded from the calculation of the time-span concerned."

SCC 5.3 Commencement of the Works

SCC 5.3.1 ***Insert the following after the existing wording:***

"In the event of a construction work permit being required (as contemplated under Regulation 3 of the Construction Regulations, 2014), commencement of the Works shall only be legally permissible once a construction work permit has been issued by the relevant authority.

The Contractor shall be required to make an allowance of **50 (fifty) days** from the Commencement Date of the Contract in his initial programme of Works required to be submitted in terms of Clause 5.6.1 so as to allow for the construction work permit to be issued by the Department of Labour, provided that should the Contractor fail to include such an allowance of the said 50 days, he shall be deemed to have done so.

In the event that the construction work permit shall have been issued within the 50 (fifty) day allowance period, the Due Completion Date shall be adjusted accordingly by the Employer's Agent, with due cognisance being taken as to the date on which the construction work permit was actually issued."

SCC 5.3.2 ***Insert the following after the existing wording:***

"or alternatively, the Employer reserves the right, in its sole discretion, to grant to the Contractor an extension of time for Practical Completion, but without the payment of additional time-related General Items or any other compensation, for a period of not more than 28 (twenty eight) days, to allow the Contractor to submit the documentation referred to in Clause 5.3.1."

SCC 5.7 Progress of the Works

SCC 5.7.1 ***Substitute the fourth sentence (starting with "Such steps …") with the following:***

"Such steps shall be subject to the approval of the Employer's Agent, which approval shall not be unreasonably withheld".

SCC 5.7.2 ***Delete the second paragraph and substitute with the following:***

"In such an event, the additional costs incurred, by acceding to the Contractor's request, shall be deducted from the amount payable to the Contractor".

SCC 5.14 Completion

SCC 5.14.5.1 ***Amend this Sub-Clause as follows:***

In the second line, substitute the word "Guarantor" with "Contractor".

SCC 6.5 Dayworks

SCC 6.5.1.3 ***Amend this Sub-Clause as follows:***

In the last line, substitute the word “plant” with the words “construction equipment”.

SCC 6.7 Measurement of the Works

SCC 6.7.2 ***Delete the words:***

“The Employer’s Agent shall ascertain and determine the value of the Works but, when required to do so by the Employer’s Agent”.

And insert the following at the end of the paragraph:

“This measurement shall take place on or before, but not later than, the 20th of the month, but should the 20th be a ‘non-working’ day, it shall take place on the last working day prior to the 20th.

SCC 6.9 Vesting of Plant and Materials

SCC 6.9.3 **Identification of Plant and materials**

Add the following at the end of Sub-Clause 6.9.3:

“Storage of Plant

In consideration of receiving, from the Employer, payment on account, after the deduction of retention monies, in respect of items of Plant stored at the Contractor's workshop or his suppliers' premises or his other storage facilities, the Contractor shall complete the standard Employer Certificate of Indemnity. In so doing, the Contractor:

(a) acknowledges that the items of Plant are the sole property of, and are held on behalf of, the Employer;

(b) indemnifies the Employer against any loss or damage whatsoever of or to the said items of Plant whilst in the Contractor's possession or in transit and undertakes to effect adequate insurance against these risks in the name of the Employer and to produce such insurance to the Employer’s Agent;

(c) undertakes to deliver and install, at the site, the said Plant when required by the Employer;

(d) undertakes that no payment has been received, in respect of the said items of Plant, from any other of his clients or employers and that the Employer has prior claim to the value of payments so received for same, prior to all others, from any assets of the Contractor's company; and

(e) undertakes to act in accordance with such instructions as received from the Employer, through its officers or agents, to protect the interests of the Employer.

Payment for Plant stored at the Contractor's workshop or his suppliers' premises or his or any other storage facilities, shall be at the sole discretion of the Employer’s Agent, and the Employer’s Agent reserves the right to amend the requirements of the standard Certificate of Indemnity.”

SCC 6.10 Payments

SCC 6.10.4 Substitute the words “within 28 days” with “on or before but not later than the last day of the month following the month”.

SCC 6.10.5 **Delete this Sub-Clause and replace it with the following:**

When a Defects Liability Period is specified, one half of the retention money shall become due and shall be paid to the Contractor on or before but not later than the last day of the month following the month after the date of issue by the Employer's Agent of a Certificate of Completion in terms of Clause 5.14.4.

The other half shall become due and shall be paid to the Contractor on or before but not later than the last day of the month following the month after the expiration of the Defects Liability Period, which may be extended in terms of Clauses 5.14.4 or 7.8.1, if necessary.

Payment shall be subject to the Contractor submitting a tax invoice, if required by law, to the Employer for the amount due.

SCC 6.10.6.2 ***Amend this Sub-Clause as follows:***

Delete the words "Contractor's Bank" and substitute with the words "Employer's Bank".

SCC 6.10.8 Substitute the words "within 28 days" with "on or before but not later than the last day of the month following the month".

SCC 6.10.9 Substitute the words "within 28 days of the date of such certificate" with "on or before but not later than the last day of the month following the month in which the Employer's Agent has signed such payment certificate."

SCC 8.6 Insurances

The following deletions, substitutions and insertions are effected as indicated below:

SCC 8.6.1 Substitute the word "Contractor" in the second line with "Employer" and insert the words "and all Sub-Contractors, including CPG Partners, engaged in the Works under valid sub-contract agreements with the Contractor" after the word "Contractor" at the end of the Paragraph.

SCC 8.6.1.4 Substitute the word "Contractor" in the sixth line with "Employer".

SCC 8.6.2 Substitute the word "Contractor" in the third line with "Employer".

SCC 8.6.4 Substitute the word "Contractor" in the second line with "Employer".

SCC 8.6.5 Substitute the word "Employer" in the fourth line with "Contractor".

SCC 8.6.6 Substitute the word "Contractor" with "Employer", and "Employer's Agent" with "Contractor", and insert the words "upon request" after the word "shall" and before the word "produce".

SCC 8.6.7 Substitute the word "Contractor" with "Employer," and "Employer" with "Contractor", wherever they appear in this Sub-clause.

Add the following at the end of Sub-Clause 8.6.7:

SCC 8.6.8 The requirements and procedures set out under Annexure C5.1 included under Section C.5 Annexures shall apply to the Contract.

SCC 9.1 Termination of Contract

SCC 9.1.4 **Increased Costs**

Add the following at the end of Sub-Clause 9.1.4:

The provisions of this Sub-clause shall only apply in the event of actual termination of the Contract.

SCC 10.1 Contractor's claim

SCC 10.1.4 Contractor's failure to comply with notice period

Insert the following words in the 3rd line after "Clause 10.1.2":

"or the Contractor fails to comply with the requirements of Clause 10.1.1.3".

SCC 10.1.5 Employer's Agent's ruling on Contractor's claim

Add the following after the existing wording:

"and provided that:

10.1.5.3 in the event that the Employer is required to give specific approval for the said period of 28 days to be extended (as required by Clause 3.2.3 and as stated in the Contract Data), and the Employer's Agent fails to obtain such specific approval within the said 28 day period, the Contractor's claim shall be deemed to have been rejected in its entirety."

SCC 10.2 Dissatisfaction claim

SCC 10.2.3 Employer's Agent's ruling on dissatisfaction

Add the following after the first sentence:

"provided that, in the event that the Employer's Agent fails to give his ruling within the said period of 28 days, the Contractor's dissatisfaction claim shall be deemed to have been rejected in its entirety."

C1.2.2 CONTRACT DATA

PART 1: DATA PROVIDED BY THE EMPLOYER

CONTRACT SPECIFIC DATA

The following Contract Specific Data, referring to the General Conditions of Contract as stated above, are applicable to this Contract:

COMPULSORY DATA	
GCC Ref. Clause No.	
1.1.1.15	**Name of Employer: UMngeni-uThukela Water**
1.2.1.2	**Address of Employer**: Physical: 310 Burger Street Pietermaritzburg 3201 KwaZulu-Natal Postal: P O Box 9 Pietermaritzburg 3200 KwaZulu-Natal Telephone No: 033 341 1111 E-mail: james.voortman@umgeni.co.za Fax No: 033 341 1084
1.1.1.16	**Name of Employer's Agent**: Nwabisa Hina
1.2.1.2	Physical: 310 Burger Street Pietermaritzburg Postal: P O Box 9 Pietermaritzburg 3200 Telephone No: 033 341 1111 E-mail: nwabisa.hina@umgeni.co.za Fax No: 033 341 1538
1.1.1.13	**The Defects Liability Period** is 12 months
1.1.1.26/ 6.7.1	**The Pricing Strategy is** that this shall be a Re-Measurement Contract as defined in Clauses 1.1.1.27 and referred to in Clause 6.7.1
5.3	**Commencement of Works**
5.3.1	The documentation required before commencing with the Works are: 1. Health and Safety Plan (Refer to Clause 4.3); 2. A signed agreement between the Employer and the Contractor for the works to be completed by the Contractor in terms of the provision of Section 37(2) of the Occupational Health and Safety Act (Act No 85 of 1993) and the Construction regulations of February 2014. (Refer to Clause 4.3); 3. Proof of payment to the Employer, that the Contractor had paid all contributions required in terms of the Compensation for Occupational Injuries and Diseases Act (No 130 of 1993). (Refer to Clause 4.3); 4. Initial Programme (Refer to Clause 5.6); 5. Security (Refer to Clause 6.2.1 below); 6. Insurance (Refer Clause 8.6); and Information and documents required from the Contractor for a construction work permit (if applicable) issued in terms of Regulation 3 of the Construction

	Regulations, 2014 (Refer to SCC 4.5.2, SCC 4.5.3, SCC 4.5.4 and SCC 5.3.1 above.
5.3.2	The time to submit the documentation required before commencement with Works execution is fourteen (14) days.
5.5.1/ 1.1.1.14	**Time for Practical Completion** The time for achieving Practical Completion of the entire Works is twenty five (25) weeks.
5.6.1 & SCC 5.3.1	**Programme** The Contractor shall deliver his programme of works within fourteen (14) days from the Commencement Date. **Note: Refer to Project Specifications regarding required format, etc.**
5.8.1 & 5.1.1.1	**Non-working times and special non-working days** The non-working days are Sundays. The special non-working days are: 1. all public holidays as declared in terms of Section 2A of the Public Holidays Act, 1994 (Act No. 36 of 1994); and 2. the year-end break commencing with the close of business on the last working day prior to 16 December and ending with the start of business on the 1st working day in January of the next year.
5.13.1	**Penalty for Delay** The penalty for failing to complete the Works by the Due Completion Date shall be R7 500.00. (exclusive of VAT) per day.
5.16.3	**Latent Defects Liability Period** The latent defect period is as follows: • Civil Engineering Works ten (10) years • Mechanical and Electrical Works three (3) years
6.2.1 & 6.2.2	**Security** The security to be provided by the Contractor shall be a Performance Guarantee (Demand Guarantee) of 10% (ten percent) of the Contract Sum (inclusive of VAT) delivered within the time stated in Clause 5.3.2 above. The Guarantee shall remain valid and enforceable until the Certificate of Completion is issued, whereafter the Guarantee shall be returned to the Contractor. Should the Contractor fail to provide the required Performance Guarantee within the time period stated in Clause 5.3.2 above, or if the Performance Guarantee differs substantially from the *pro forma* included under Section C1.3 Form of Guarantee, a security of 10% (ten percent) of the Contract Sum shall be retained by the Employer, in addition to the retention withheld in terms of Clause 6.10.3 below, subject to the provision that the Contractor may, at any time during the course of the Contract, provide a correctly worded and valid Performance Guarantee in fulfillment of his obligations under the Contract in order to have the security being withheld for this purpose released to him.
6.5	**Dayworks**

6.5.1.2.3	The percentage allowances to cover overhead charges for dayworks which has not been included in the Dayworks Schedule, are as follows: 50% of the gross remuneration of workmen and hourly paid foremen actually engaged in the dayworks; 15% on the net cost of materials actually used. No allowance will be made for work done, or for materials and equipment, for which dayworks rates have been quoted at tender stage.
6.10	**Payments**
6.10.1.5	The percentage limit for Plant and materials referred to in Clause 6.9.1 not yet supplied to Site or not yet built into the Permanent Works is: 80%.
6.10.3	**Retention Money** The percentage retention on the amounts due to the Contractor is 10%. The limit of retention money is 5% of the Contract Price. **A guarantee in lieu of retention money is not permitted.**
8.6.1	**Insurances**
8.6.1.1.2	The Value of Plant and materials supplied by the Employer to be included in the insurance sum is R0 (Zero Rand) (exclusive of VAT).
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is R 1 000 000.00 (one million Rand) (inclusive of VAT).
8.6.1.3	The limit of indemnity for liability insurance: is Public Liability R10 000 000 (Ten Million Rand) (exclusive of VAT).
8.6.1.5	The Contractor is may provide the additional insurances as he/she deems fit.
8.6.2	Deductibles for which the Contractor is liable for payment are: *(subject to annual escalation(s) as per Umgeni Water annual summary of insurance arrangements and claims procedure):*
8.6.2.1	Contract Works Deductible – R25 000 (Twenty Five Thousand Rand) (exclusive of VAT) for each and every incident.
8.6.2.2	Public Liability Deductible – R 15 000 (Fifteen Thousand Rand) (exclusive of VAT) for each and every incident.
8.6.2.3	SASRIA Deductible – 0.1% (Zero Point One Percent) of contract value minimum R 2 500 (Two Thousand Five Hundred Rand) maximum R 25 000 (Twenty Five Thousand Rand) (exclusive of VAT) for each and every incident.
10.5	**Adjudication** Dispute resolution shall be by *ad hoc* adjudication. . The Adjudication Board Rules in GCC 2015 shall apply. The Pro Forma Adjudication Board Member Agreement (GCC 2015 Appendix 5) shall be used for the appointment of members.
10.5.3	The number of Adjudication Board Members to be appointed is 1 (one).
10.7.1	**Arbitration** If a dispute is, after adjudication, still unresolved, the dispute shall be resolved by arbitration.
OPTIONAL DATA	
3.2.3	**Specific approval of the Employer required** The Employer's Agent shall obtain the specific approval of the Employer in writing before carrying out any of the following:

	(1) Any expenditure beyond the approved Contract Sum as defined in terms of Clause 1.1.1.11. (2) The issuing of any instruction to the Contractor to commence carrying out of the Works in terms of **Clause 5.3.1**. (3) The issuing of an instruction to accelerate the progress in terms of Clause 5.7.3. (4) The reduction of a penalty for delay in terms of Clause 5.13.2. (5) The determination of additional or reduced costs arising from changes in legislation in terms of Clause 6.8.4. (6) The agreeing of any adjustment of the sums for general items in terms of Clause 6.11.1. (7) Authorizing the Contractor to repair and make good in terms of Clause 8.2.2.2. (8) The agreeing of an extension to the 28 day period in terms Clause 10.1.5.1. (9) Changes to the Specifications related to Equipment and Materials which may have an impact on the Operation & Maintenance (O&M) of the Works. The onus shall be on the Contractor to obtain confirmation of the Employer's specific approval in respect of the above. Any instruction by the Employer's Agent that is given without the Employer's specific approval shall have no force or effect, and the Contractor shall have no claim against the Employer under such circumstances.
5.4	**Access to the Site**
5.4.2 and C4.2	The access to and possession of the Site shall not be exclusive to the Contractor. The limitations are set out below: (a) The site is a part of a bulk water distribution system that is in continuous operation. UUW retains the right to access the site for normal operational and maintenance activities. (b) During this contract, additional contractors may be appointed to work on other parts of the site. (c) The activities listed above are not anticipated to cause any delay or obstruction to the works in this contract.
6.8	**Adjustment in rates and/prices**
6.8.2	Contract Price Adjustment will not be applicable.
6.8.3	**Variation in cost of special materials** Price adjustments for variations in the cost of special materials is not allowed.
6.9.1.2	**Vesting of Materials** The following Plant and materials shall be subject to the conditions of Clause 6.9.1.2. Plant / Material — Stored at Nil — Nil

PART 2: DATA PROVIDED BY THE CONTRACTOR

The Contractor is advised to read the **General Conditions of Contract for Construction Works, Third Edition (2015)** in order to understand the implications of this Data which is required to be provided.

GCC REF. CLAUSE No	
1.1.1.9	**Name of Contractor**: .....
1.2.1.2	**Address of Contractor:** Physical: ..... Postal: .... Telephone No: ..... Fax No: ..... E-mail: .....
6.2.1	**Security** Security is to be provided by the Contractor shall be as stipulated in the data provided by the Employer in Clauses 6.2.1 and 6.2.2.

C1.3 FORM OF GUARANTEE

[Note to Tenderer: This form should not be completed for the tender, but will be completed by the appointed Contractor.]

PRO FORMA FORM OF PERFORMANCE GUARANTEE - DEMAND GUARANTEE

Name of Project: ……..

Contract Number & Title: ……

Name and address of Beneficiary:

.....
(whom the Contract defines as the Employer)

We have been informed that (… *name of Contractor and company registration number* …) (hereinafter called the "Principal") is your contractor under the above-named Contract, which requires him to obtain a Performance Guarantee.

At the request of the Principal, we (… *names and capacities of persons authorised to issue the guarantee …) of (… name of Financial Institution registered with the Financial Services Board …)* hereby irrevocably undertake to pay you, the Employer, any sum or sums not exceeding in total the amount of (… *amount in figures and words* …) (the "guaranteed amount"), upon receipt by us of your demand in writing and your written statement stating:

that the Principal is in breach of his obligation(s) under the Contract.

Any demand for payment must contain your authorised representative's signature. The demand must be received by us at this office on or before (… *the date 70 days after the date on which the Completion Certificate for the Works is due to be issued* …), when this guarantee shall expire and shall be returned to us.

We have been informed that the Beneficiary may require the Principal to extend this guarantee if the Completion Certificate under the Contract has not been issued by the date 28 days prior to such expiry date. We undertake to pay you such guaranteed amount upon receipt by us, within a period of 7 days, of your demand in writing and your written statement that the Completion Certificate has not been issued for reasons attributable to the Principal, and that this guarantee has not been extended.

This guarantee shall be governed by South African Law and shall be subject to the Uniform rules for Demand Guarantees, published as number 458 by the International Chamber of Commerce, except as stated above.

Signed at …… on this ……. day of …….. 20 …….

Guarantors' names and signatures: ……..

Witnesses' names and signatures: ……..

C1.4 ADJUDICATION BOARD MEMBER AGREEMENT

[Note to Tenderer: This form should not be completed for the tender, but will be completed by the appointed Contractor.]

PRO FORMA
ADJUDICATION BOARD MEMBER AGREEMENT

This Agreement is entered into between:

Adjudication Board Member: (*Name, physical address, postal address, e-mail address, fax number, telephone number and mobile number.*)

Contractor: (*Name, physical address, postal address, e-mail address, fax number, telephone number and mobile number.*)

Employer: (*Name, physical address, postal address, e-mail address, fax number, telephone number and mobile number.*)

The Contractor and the Employer will hereinafter be collectively referred to as "the Parties".

The Parties entered into a Contract for (*name of project*) which provides that a dispute under or in connection with the General Conditions of Contract for Construction Works, Third Edition (2015) must be referred to (*ad hoc adjudication / standing adjudication*)* (Delete as applicable).

The undersigned natural person has been appointed to serve as Adjudication Board Member and together with the undersigned Parties agree as follows:

1. The Adjudication Board Member accepts to perform his duties in accordance with the terms of the Contract, the General Conditions of Contract for Construction Works' Adjudication Board Rules and this Agreement.
2. The Adjudicator undertakes to remain independent and impartial of the Contractor, Employer and Employer's Agent for the duration of the Adjudication Board proceedings.
3. The Adjudication Board Member agrees to serve for the duration of the Adjudication Board proceedings.
4. The Parties may at any time, without cause and with immediate effect, jointly terminate this Agreement.
5. Unless the Parties agree, the Adjudication Board Member shall not act as arbitrator or representative of either Party in any subsequent proceedings between the Parties under the Contract. No Party may call the Adjudication Board Member as a witness in any such subsequent proceedings.
6. The standing Adjudication Board's duties shall end upon the Adjudication Board Member(s) receiving notice from the Parties of their joint decision to disband the Adjudication Board.
7. The Adjudication Board Member shall be paid in respect of time spent upon or in connection with the adjudication including time spent traveling:
    - 7.1 A monthly retainer of (*amount*) for (*number*) of months, and/or
    - 7.2 A daily fee of (*amount*) based on a (*number*) hour day, and/or
    - 7.3 An hourly fee of (*amount*), and/or

7.4 A non-recurrent appointment fee of (*amount*) which shall be accounted for in the final sums payable.

8. The Adjudication Board Member's expenses incurred in adjudication work shall be reimbursed at cost.

On submission of an invoice for fees and expenses to the Parties, the Parties shall pay the full amount within 28 days of receipt of the invoice. Late payment of such invoice shall attract interest at prime plus 3% points compounded monthly at the prime rate charged by the Adjudication Board Member's bank.

This Agreement is entered into by:

(Signature):	*(Signature):*.....	*(Signature):*.....
Name:.....	**Name***:*.....	***Name****:*.....
Place: ……	Place:……	Place:……
Date:……..	Date:……..	Date:…….
who warrants that he/ she is duly authorized to sign for and on behalf of the **Contractor**	who warrants that he/ she is duly authorized to sign for and on behalf of the **Employer**	the **Adjudication Board Member**

C1.5 AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT No. 85 OF 1993

[Note to Tenderer: This form should not be completed for the tender, but will be completed by the appointed Contractor.]

PRO FORMA
AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT No 85 OF 1993

THIS AGREEMENT is made between .....

(hereinafter called the EMPLOYER) of the one part, herein represented by: .....

.....

in his capacity as: ..... ;

AND: .....

(hereinafter called the CONTRACTOR) of the other part, herein represented by: .....

.....

in his capacity as: .....

duly authorized to sign on behalf of the Contractor.

WHEREAS the CONTRACTOR is the Mandatary of the EMPLOYER in consequence of an agreement between the CONTRACTOR and the EMPLOYER in respect of

CONTRACT No: ***2024/059***

HOWICK WEST RESERVOIR UPGRADE NEW CHAMBER No.3A AND PIPEWORK

for the supply , installation and commissioning of the works;

AND WHEREAS the EMPLOYER and the CONTRACTOR have agreed to enter into an agreement in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act No 85 of 1993, as amended (hereinafter referred to as “the ACT”);

NOW THEREFORE the parties agree as follows:

1. The CONTRACTOR undertakes to acquaint the appropriate officials and employees of the CONTRACTOR with all relevant provisions of the ACT and the Regulations promulgated in terms thereof.

2. The CONTRACTOR undertakes to fully comply with all relevant duties, obligations and prohibitions imposed in terms of the ACT and Regulations: Provided that should the EMPLOYER have prescribed certain arrangements and procedures that same shall be observed and adhered to by the CONTRACTOR, his officials and employees. The CONTRACTOR shall bear the onus of acquainting himself / herself / itself with such arrangements and procedures.

3. The CONTRACTOR hereby accepts sole liability for such due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures, if any, imposed by the ACT and Regulations, and the CONTRACTOR expressly absolves the EMPLOYER and the EMPLOYER’S AGENT from being obliged to comply with any of the aforesaid duties, obligations, prohibitions, arrangements and procedures in respect of the work included in the Contract.

4. The CONTRACTOR agrees that any duly authorized officials of the EMPLOYER shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the CONTRACTOR has complied with his undertakings as more fully set out in paragraphs 1 and 2 above, which steps may include, but shall not be limited to, the right to inspect any appropriate site or premises occupied by the CONTRACTOR, or to take such steps it may deem necessary to remedy the default of the CONTRACTOR at the cost of the CONTRACTOR.

5. The CONTRACTOR shall be obliged to report forthwith to the EMPLOYER any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the ACT and Regulations, pursuant to work performed in terms of this Agreement, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.

Thus signed at ..... for and on behalf of the **CONTRACTOR**

on this the ..... day of ..... 20 .....

Signature:

Name and

Surname:

Capacity:

Witness:

1. .....
2. .....

Thus signed at .....for and on behalf of the **EMPLOYER**

on this the ..... day of ..... 20 .....

Signature:

Name and

Surname:

Capacity:

Witness:

1. .....
2. .....

C2.1 PRICING INSTRUCTIONS

1. GENERAL

The Bill of Quantities forms part of the Contract Documents and must be read and priced in conjunction with all the other documents comprising the Contract Documents, which include the Conditions of Tender, Conditions of Contract, the Specifications (including the Project Specification) and the Drawings.

The Tenderer is advised to check the number of pages and should any be found missing or in duplicate or the figures or writing indistinct or these Bill of Quantities contain any obvious errors, the Tenderer must inform the Employer's Agent at once and have it rectified. No liability whatsoever will be admitted in respect of errors due to the foregoing.

Should there be any doubt or obscurity as to the meaning of any particular item, the Tenderer must obtain an explanation of it, in writing, from the Employer's Agent. No claims for extras arising from any such doubt or obscurity will be admitted after delivery of the tender.

2. DESCRIPTION OF ITEMS IN THE SCHEDULE

The Bill of Quantities has been drawn up generally in accordance with Civil Engineering Quantities 1990 issued by the South African Institution of Civil Engineers.

The short descriptions of the items in the Bill of Quantities are for identification purposes only and comply in general with the measurement and payment clauses of the Standardized Specifications, the Project Specifications and the Particular Specifications, read together with the relevant clauses of the Scope of Work and directives on the Drawings, set out what ancillary or associated work and activities are included in the rates for the operations specified.

3. QUANTITIES REFLECTED IN THE SCHEDULE

The quantities given in the Bill of Quantities are the estimated quantities of work to be done, and for a Re-Measurement Contract, will be subject to re-measurement during the execution of the work. The Contractor shall obtain the Employer's Agent's detailed instructions for all work before ordering any materials or executing work or making arrangements for it. Any additional works or any extension of work quantities over and above that contained in the Bill of Quantities shall be agreed before the work is completed in the form of an Extra Works Authorization in the case of additional works or a Change Order in the case of an increase in quantities, whichever is the applicable. All documentation must be signed by the Employer's Agent before the work is commenced and such additional works or increased quantities will not be paid for if certified for payment without the approved documentation.

The Works as finally completed in accordance with the Contract shall be measured and paid for as specified in the Bill of Quantities, and the contract price for the completed contract shall be computed at the relevant unit rates and prices, all in accordance with the General and Special Conditions of Contract, the Specifications and Project Specifications and the Drawings. Unless otherwise stated, items are measured net in accordance with the Drawings, and no allowance has been made for waste.

The validity of the Contract will in no way be affected by differences between the quantities in the Bill of Quantities and the quantities finally certified for payment.

4. PRICING OF THE BILL OF QUANTITIES

All unit prices, extensions and totals must be filled in **black ink.** Unit prices, extensions and totals submitted in electronic format will not be acceptable.

The prices and rates to be inserted by the Tenderer in the Bill of Quantities shall be the full inclusive prices to be paid by the Employer for the work described under the several items, and shall include full compensation for all costs and expenses that may be required in and for the completion of the work and maintenance during the defects liability period of all the work described and as shown on the Drawings as well as all overheads, profits, incidentals and the cost of all general risks, liabilities and

obligations set forth or implied in the documents on which the Tender is based. Reasonable unit rates and prices shall be entered in the Bill of Quantities as these will be used as a basis for assessment of payment for additional work that may have to be carried out.

Each item shall be priced and extended to the "Total" column by the Tenderer, with the exception of the items for which only rates are required, or items which already have Prime Cost or Provisional Sums affixed thereto. If the Contractor omits to price any items in the Bill of Quantities, then these items will be considered to have a nil rate or price.

All items for which terminology such as "inclusive" or "not applicable" have been added by the Tenderer will be regarded as having a nil rate which shall be valid irrespective of any change in quantities during the execution of the Contract.

The Tenderer shall fill in rates for all items where the words "rate only" appears in the "Total" column. "Rate Only" items have been included where:

(a) an alternative item or material is contemplated and may be used at the discretion of the Employer's Agent;
(b) variations of specified components in the make-up of a pay item may be expected; and
(c) no work under the item is foreseen at tender stage but the possibility that such work may be required is not excluded.

For "Rate Only" items, no quantities are given in the "Quantity" column but the quoted rate shall apply in the event of work under this item being required. The Tenderer shall, however, note that in terms of the Tender Data, the Tenderer may be asked to reconsider any such rates which the Employer may regard as unbalanced.

All rates and amounts quoted in the Bill of Quantities shall be in Rand and cents and shall include all levies and taxes (other than VAT). VAT will be added in the summary of the Bill of Quantities.

5. GOODS AND SERVICES SOURCED INTERNATIONALLY

It will be the Contractor's responsibility to obtain Forward Cover to avoid price increases for the Employer on any goods and services in this category. In failing to do that, any increase in prices on these items, after the Commencement Date of the Contract, shall be for the Contractor's account.

6. PROVISIONAL SUMS

Where Provisional sums or Prime Cost sums are provided for items in the Bill of Quantities, payment for the work done under such items will be made in accordance with Clause 6.6 of the General Conditions of Contract for Construction Works, Third Edition (2015) (GCC 2015). The Employer reserves the right, during the execution of the works, to adjust the stated amounts upwards or downwards according to the work actually done under the item, or the item may be omitted altogether, without affecting the validity of the Contract.

The Tenderer shall not under any circumstances whatsoever delete or amend any of the sums inserted in the "Amount" column of the Bill of Quantities and in the Summary of the Bill of Quantities unless ordered or authorized in writing by the Employer before closure of tenders. **Unauthorized changes made by the Tenderer to provisional items in the Bill of Quantities, or to the stated provisional percentages and sums in the Summary of the Bill of Quantities, will not be tolerated and any changes to same shall be considered to be an alternative tender and thus non-responsive.**

7. CORRECTION OF ENTRIES

Incorrect entries shall not be erased or obliterated with correction fluid but must be crossed out neatly. The correct figures must be entered above or adjacent to the deleted entry, and the alteration must be initialed by the Tenderer.

8. ARITHMETICAL ERRORS

Arithmetical errors found in the Bill of Quantities as a result of faulty multiplication or addition will be corrected by the Employer's Agent at the tender evaluation stage, as set out in the Standard Conditions of Tender Clause F3.9.

9. MONTHLY PAYMENTS

Unless otherwise specified in the Specifications and Project Specifications, progress payments in Interim Certificates, referred to in Clause 6.10 of the GCC 2015, in respect of "sum" items in the Bill of Quantities shall be by means of interim progress installments assessed by the Employer's Agent and based on the measure in which the work actually carried out relates to the extent of the work to be done by the Contractor.

10. CONTINGENCY

The sum provided under contingency in the Bill of Quantities is under the sole control of the Employer and may be deducted in whole or in part and shall only be expended by written order of the Employer as a Variation Order.

11. ASSET CODES

The alphabetical characters appearing in the "AC" column (if applicable) in the Bill of Quantities are for the Employer's administrative purposes only and do not have any relevance to the rates tendered.

Note to document compiler: The extreme right hand column of the BoQ is to be titled "AC" and the relevant Asset Code from the list below inserted for each major section in the BoQ.

C = Civil infrastructure
M = Mechanical infrastructure
E = Electrical infrastructure
I = Instrumentation

Note to document compiler: Select from the above list for each major section in the Bill of Quantities

12. UNITS OF MEASUREMENT

The units of measurement described in the Bill of Quantities are metric units for which the standard international abbreviations are used. Abbreviations used in the Bill of Quantities, including some non-standard abbreviations, are as follows:

mm	=	millimetre	h	=	hour
m	=	metre	kg	=	kilogram
km	=	kilometre	t	=	ton (1000 kg)
m^2	=	square metre	No.	=	number
m^2.pass	=	square metre-pass	sum	=	lump sum
ha	=	hectare	MN	=	meganewton
m^3	=	cubic metre	MN.m	=	meganewton-metre
m^3.km	=	cubic metre-kilometre	P C sum	=	Prime Cost sum
ℓ	=	litre	Prov sum	=	Provisional sum
kℓ	=	kilolitre	%	=	percentage
MPa	=	megapascal	pers. Days	=	person days
kW	=	kilowatt			

C2.2 BILL OF QUANTITIES

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 1*** *(SANS 1200 AA)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 1				
	SANS 1200 AA	**PRELIMINARY AND GENERAL (SMALL WORKS)**				
	PSAA 8.3	**FIXED CHARGE ITEMS**				
1.1.1	8.3.1	Contractual requirements	Sum	1		
	PSAA 8.3.2	Establishment of Facilities on the Site				
	8.3.2 a	Facilities for Engineer				
1.2.1	PSAB 3.2	Furnished office	Sum	1		
1.2.2	PSAB 5.2	Ablution and Latrine facilities	Sum	1		
1.2.3	PSAB 4.1	Cell phone	Sum	1		
1.2.4		Carport (2 bays)	Sum	1		
1.2.5		Vehicle for Engineer	Sum	1		
1.2.6	PSAB 3.1	Contract signboard as per standard Umgeni Water Specification (C5.3) as per dwg no. I01/CIV/005	Sum	1		
	8.3.2 b	Facilities for Contractor				
1.3.1		Offices and storage sheds	Sum	1		
1.3.2		Ablution and latrine facilities	Sum	1		
1.3.3		Tools and equipment	Sum	1		
1.3.4		Water supplies, electric power, communications	Sum	1		
1.3.5		Dealing with water	Sum	1		
1.3.6		Access	Sum	1		
1.3.7		Plant	Sum	1		
1.3.8	8.3.3	Other fixed charge obligations	Sum	1		
1.3.9	8.3.4	Removal of site establishment	Sum	1		
		Provide for 24 hour security on site	Sum	1		
	PSAA 8.4	**TIME RELATED ITEMS**				
1.4.1	8.4.1	Contractual requirements	Sum	1		
1.4.2		Operation and maintenance of facilities on site for duration of construction (unless otherwise stated)	Sum	1		
	8.4.2 a	Facilities for Engineer				
1.5.1		Furnished office	Sum	1		
1.5.2	PSAB 5.2	Ablution and Latrine facilities	Sum	1		
1.5.3	PSAB 4.1	Cell phone	Sum	1		
1.5.4		Carport	Sum	1		
1.5.5	PS 15	Vehicle for Engineer	Sum	1		
	8.4.2 b	Facilities for Contractor				
1.6.1		Offices and storage sheds	Sum	1		
1.6.2		Ablution and latrine facilities	Sum	1		
1.6.3		Tools and equipment	Sum	1		
					CARRIED FORWARD	

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
					BROUGHT FORWARD	
1.6.4		Water supplies, electric power, communications, dealing with water, and access	Sum	1		
1.6.5	PSAA 8.5	Dealing with water	Sum	1		
1.6.6		Access	Sum	1		
1.6.7		Plant	Sum	1		
1.6.8		Supervision for duration of construction	Sum	1		
1.6.9		Company and Head Office overhead costs for duration of construction	Sum	1		
1.6.10		Other time related obligations (specify)	Sum	1		
1.6.11		The Contractor shall allow the sum for Operation, Health and Safety Act compliance	Sum	1		
1.6.12		Time related obligations to comply with the requirements of the Environmental specifications(ECO).	Sum	1		
1.6.13		Time related obligations to comply with the requirements of the Quality Control/Quality Assurance.	Sum	1		
1.6.14		Appointment of Community Liaison Officer (CLO) for the duration of the project to supervise and manage unskilled labour and community relations	Sum	1		
1.6.15		The Contractor is to provide a standby generator at the site camp	Sum	1		
1.6.15		Provide for 24 hour security on site	Sum	1		
1.6.16		Handling cost and profit in respect of 1.6.12	%			
		Insurance				
		The contractor is directed to the Insurance Manual - Annexure A - and is required to be aware of the Contractors and Employers insurance obligations				
1.7.1		Cost for providing insurance reflected on Annexure A	SUM	1		
	8.5	**DAYWORKS**				
		Plant				
		Inclusive of supervision, transport and fuel				
1.8.1		Compressor: state make and model	Hrs	18		
1.8.2		Welding unit complete with generator	Hrs	18		
1.8.3		Grader (CAT 140G or Similar).	Hrs	18		
1.8.4		Pedestrian Roller(Bomag BW 90 or Similar)	Hrs	18		
1.8.5		Water Truck(5000litres)	Hrs	18		
1.8.6		Tipper Truck(10m³)	Hrs	18		
1.8.7		Backhoe TLB (CAT 428 or equivalent)	Hrs	18		
1.8.8		Dewatering pump including generator and accessories (50mm pump, 600 l/m)	Hrs	18		
					CARRIED FORWARD	
					BROUGHT FORWARD	

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		Labour				
		Provide the following categories of labour. Rates shall include for all allowances, overheads, profit, supervision, transporting and use of small tools				
1.9.1		Unskilled labour	Hrs	18		
1.9.2		Semi-skilled labour	Hrs	18		
1.9.3		Welder, API 1104 certified	Hrs	18		
1.9.4		Other Artisan	Hrs	18		
1.9.5		Foreman	Hrs	9		
1.9.6		Testing Reservoir for water tightness in accordance with the Engineer's requirements	SUM	1		
1.9.7		Sterilizing of reservoir in accordance with the Engineer's requirements	SUM	1		
1.9.8	PS 5.2	As built drawings	SUM	1		
					SECTION 1 : TOTAL CARRIED TO SUMMARY	

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 2*** *(SANS 1200 C)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 2				
	SANS 1200 C	**SITE CLEARANCE**				
	8.2.1	Clear and grub site				
2.1.1		Within the working area	m^2	250		
		Topsoil				
2.2.1	PSC 8.2.10	Remove topsoil to nominal depth of 150 mm and stockpile on site	m^2	250		
		DEMOLITIONS AND ALTERATIONS				
		Existing inlet chamber No.3				
		Demolition, dismantle and remove structures including making good				
		Drawing IN/A02/CI.00425/CIV/002				
2.3.1		Safely take out and remove existing precast concrete stairway including handrails and set aside for re-use including relocation to a new position	No	1		
2.3.2		Safely take out and remove existing Loffelstein bricks and set aside for re-use	m^2	13		
		Drawing No. IN/A02/CI.00425/CIV/003				
2.4.1		Saw cut through existing 250mm thick reinforced walls for roof demolition (existing chamber No.3)	m	15		
2.4.2		Demolition of 200mm thick reinforced roof slab (existing chamber No.3), break up roof slab, including removal from site and safely dispose of rubble (broken concrete and reinforcing).	m^2	14		
2.4.3		Cutting back into existing 250mm thick walling to level with underside of roof slab, exposing wall reinforcing all around the chamber parameters. See detail '1' and detail '2'.	m	15		
2.4.4		Core drill 125mm diameter opening through 350mm thick wall (existing chamber No.3). See detail '3'.	No	1		
2.4.5		Breaking down 400 x 300 x 670mm high existing concrete plinth support under valve	No	1		
		Take out, plug on both sides and safely remove the following pipework, fittings, etc, including cutting, disconnecting, making good, etc.				
2.5.1		Safely dismantle and remove existing DN 300 control valve with altitude and flow control and set aside for re-use.	No	1		
2.5.2		Safely dismantle and remove DN 300 restrained flange adaptor	No	2		
					CARRIED FORWARD	

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
					BROUGHT FORWARD	
2.5.2		Safely dismantle and remove DN 300 restrained flange adaptor	No	2		
2.5.2		Safely dismantle and remove DN 300 restrained flange adaptor	No	2		
2.5.3		Dismantle and remove DN 300 x 1 545 F/F, straight M.S, F.O.E. Restrained flange 300 F/F from plain end with DN 200 flanged stub 300 C/F from end of main section and 450 C/F.	No	1		
2.5.4		Safely dismantle and remove DN 100 resilient seal gate valve, F.B.E with non rising spindle and hand wheel. Set aside for re-use	No	1		
2.5.5		Dismantle and remove DN 100 x 300 F/F, M.S, straight flange to suit DN 100 one end, and DN 200 other end.	No	1		
2.5.6		Safely dismantle and remove DN 100 variant double acting air valve, flanged and set aside for re-use	No	1		
2.5.7		Safely dismantle and remove DN 300 butterfly valve F.B.E with hand wheel and gearbox positioned right-hand side and set aside for re-use	No	1		
2.5.8		Dismantle and remove 160 x 65 x 19.1 kg/m heavy duty hot dipped galvanised taper flange channel pipe support including removing 350 x 100 x 10mm heavy duty hot dipped galvanised flat plate with M12 bolts and 10mm thick grout and make good.	No	1		
2.5.9		Remove and set aside fibreglass ladder and handrails to re-use	No.	1		
		New inlet chamber No.3A				
		Take out both sides and safely connect new pipework into existing including cutting, disconnecting, making good, etc.				
2.6.1		Cut into existing DN 500 M.S pipe to connect new DN 500 M.S pipe.	No	2		
2.6.2		Cut into existing scour pipe to connect new 110mm diameter uPVC scour pipe	No	2		
		Reservoir				
2.7.1		Safely take down, remove and set aside PVC down pipes including relocation to a new position	No	1		
2.7.2		Safely take down and remove 2 x roof drains and set aside for re-use see Drawing No. IN/A02/CI.00425/CIV/002)	No	2		
2.7.3		Safely take down, remove and set aside reservoir access ladder and fill existing bolt holes with sika grout 212 (or similar) including relocation to a new position (see notes on Drawing No. IN/A02/CI.00425/CIV/002)	No	1		
2.7.4		Saw cut through existing approximately 465mm thick reinforced reservoir wall to form 900 x 895mm opening - see drawing No. IN/A02/CI.00425/CIV/006 for detail '5'	No	1		
					CARRIED FORWARD	

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
					BROUGHT FORWARD	
		Chamber 12				
2.8.1		Safely take out and remove existing Loffelstein bricks and set aside for re-use	m^2	60		
					SECTION 2 : TOTAL CARRIED TO SUMMARY	

Contract No: 2024/ 059
Howick West New Chamber 3A and Pipework ***Section 3*** *(SANS 1200 DA)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 3				
	SANS 1200 DA	**EARTHWORKS (SMALL WORKS)**				
		New inlet chamber No.3A				
		Restricted Excavation				
		Excavation in all materials and use for embankment, or backfill, or dispose at Umgeni Municipality Landfill site				
	8.3.2	Restricted excavation not exceeding 2m deep				
3.1.1		Pipe Trenches	m^3	82		
3.1.2		Chamber	m^3	64		
	8.3.2	Restricted excavation exceeding 2m deep and not exceeding 4m deep				
3.2.1		Pipe trenches	m^3	2		
	8.3.2b	Extra over item 1 above for excavation in:				
3.3.1		Intermediate material	m^3	15		
3.3.2		Hard rock material	m^3	4		
3.3.3	PSDA 8.3.2b	Boulder excavation, Class A	m^3	4		
	8.3.3	Overhaul (1km free haul)				
		Long overhaul (provisional)				
3.4.1		Up to 40km	m^3.km	5920		
		Backfilling				
3.5.1		Approved selected backfill material from the excavations placed and compacted in 300mm layers to minimum 90% MOD AASHTO (without clay content)	m^3	116		
3.5.2	8.3.4	Imported G5 granular material from commercial sources placed in 200mm layers and compacted to minimum 98% MOD AASHTO density	m^3	25		
		Existing services (Eskom, Telkom, Water, Drainage, Sewer, Storm water, rising mains, etc)				
3.6.1	8.3.5	Locate all existing services using specialist equipment and excavate by hand to expose such services	Sum	1		
		Compaction				
3.7.1		Compaction of ground surface under floors to 98% MOD AASHTO dry density	m^2	82		
					SECTION 3 : TOTAL CARRIED TO SUMMARY	

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 4*** *(SANS 1200 DK)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 4				
	SANS 1200 DK	**LOFFELSTEIN RETAINING WALLS**				
		New inlet chamber No.3A and existing chamber 12				
		Excavations				
4.1.1		Excavation for Loffelstein retaining wall	m³	61		
4.1.2		Excavation for slab at bottom of Loffelstein retaining wall	m³	37		
4.1.3		Intermediate material	m³	25		
4.1.4		Hard rock material	m³	10		
4.1.5		Boulder excavation, Class A	m³	10		
4.1.6		Long overhaul (provisional)				
4.1.7		Up to 40km	m³.km	3920		
		Backfilling				
4.2.1		19mm stone to be wrapped with one layer of bidim geotextile membrane	m³	37		
4.2.2		Geotextile membrane	m²	122		
4.2.3		Approved selected backfill material from the excavations placed and compacted in 300mm layers to minimum 90% MOD AASHTO (without clay content) under concrete slab around chambers at bottom of retaining wall	m³	21		
		Loffelstein retaining wall				
4.3.1		Loffelstein retaining wall to existing reservoir banks	m²	122		
		20MPa/19mm Concrete				
4.4.1		Concrete to fill Loffelstein retaining wall	m³	11		
4.4.2		Concrete aprons around chambers at bottom of retaining walls	m³	16		
4.4.3		Concrete to 100mm V-drain	m³	5		
4.4.4		Mesh ref '193' to concrete apron slabs	m²	103		
		Drainage pipe				
4.5.1		150 dia slotted "cordrain" HDPE pipe to fall 1:200	m	12		
4.5.2		75mm dia x 500long drain pipe spaced at 500mm intervals	m	12		
4.5.3		19mm washed stone wrapped in U24 bidim	m³	1		
		Grassing				
4.6.1		Grassing to existing drain at chamber no.12	m²	36		
		Precast stairways				
4.7.1		Concrete precast stairways including handrails to new inlet chamber 3A (re-use existing precast stairs where possible)	No	2		
				SECTION 4 : TOTAL CARRIED TO SUMMARY		

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 5*** *(SANS 1200 DM)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 5				
	SANS 1200 DM	**EARTHWORKS (ROADS, SUBGRADE)**				
	8.3.1	Clear and grub site				
5.1.1		Within the working area	m^2	1116		
	8.3.2	Preparation of site				
5.2.1		Remove topsoil to nominal depth of 150 mm and stockpile on site	m^2	1116		
		Use in-situ ground to form of 1500mm wide v-drain on one side of the gravel road	m	184		
	8.3.4	Cut to fill, borrow to fill				
		(a) Material in compacted layer thicknesses of 200mm and less:				
5.3.1		(i) Compacted to 90% of modified AASHTO density	m^3	10		
5.3.2		(ii) Compacted to 93% of modified AASHTO density	m^3	5		
	8.3.6	Extra over for excavating and breaking down material in:				
5.4.1		(a) Intermediate excavation	m^3	3		
5.4.2		(b) Hard excavation	m^3	2		
5.4.3		(c) Boulder excavation class A	m^3	1		
5.4.4		(d) Boulder excavation class B	m^3	1		
	8.3.7	Cut to spoil, including free-haul up to 1.0 km. Material obtained from:				
5.5.1		(a) Soft excavation	m^3	160		
5.5.2		(b) Intermediate excavation	m^3	48		
5.5.3		(c) Hard excavation	m^3	24		
5.5.4		(d) Boulder excavation class A	m^3	16		
5.5.5		(e) Boulder excavation class B	m^3	8		
	8.3.8	Removal of unsuitable material (including free-haul of 1.0 km):				
5.6.1		(a) Layer thicknesses of 200 mm and less:				
5.6.2		(i) Stable material	m^3	26		
5.6.3		(ii) Unstable material	m^3	26		
	8.3.12	Overhaul (1km free haul)				
5.7.1		Overhaul on material hauled in excess of 1.0 km. (ordinary over haul)	m^3.km	1600		
	8.3.16	Gravel surface layer				
		Gravel layer G7 (natural gravel) cement stabilised (5%) compacted to:				
5.8.1		(i) 93% of modified AASHTO density	m^3	100		
					SECTION 5 : TOTAL CARRIED TO SUMMARY	

Howick West New Chamber 3A and Pipework ***Section 6*** *(SANS 1200 G)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 6				
	SANS 1200 G	**CONCRETE (STRUCTURAL)**				
		Existing reservoir				
6.1.1	8.7	"Sikacrete 214" or similar approved	m^3	1		
6.1.2	8.7	"Sikaswell-S-2" or similar approved	m^3	0.5		
		Formwork				
6.2.1	8.1.1.2	Boxing in 30 x 10mm grove in reservoir walls	m	4		
6.2.2	8.1.1.2	10 x 10mm recess all around pipe	m	2		
6.2.3	8.1.1.2	15 x 10mm recess	m	4		
6.2.4	8.2.4	Shuttering to reservoir wall as per drawing No. IN/A02/CI.00425/CIV/016	m^2	8		
		Existing inlet chamber No.3				
6.3.1		Precast roof planks 'Type 1' see detail '2' drawing No. IN/A02/CI.00425/CIV/003	No	3		
6.3.2		Precast roof planks 'Type 2' see detail '2' drawing No. IN/A02/CI.00425/CIV/003	No	2		
	8.4.3	30MPa/19mm Concrete				
6.4.1		Roof slab	m^3	2		
		Smooth formwork				
6.5.1	8.2.5	Roof slab 200mm high	m	17		
6.5.2	8.2.2	Roof slab soffits	m^2	8		
		Boxing Out				
6.6.1	8.2.6	700mm Diameter manhole opening - see Drawing No. IN/A02/CI.00425/CIV/003 for details	No	1		
		New inlet chamber No.3A				
6.7.1	8.7	Non-shrink grout	m^3	1		
6.7.2		Precast roof planks 'Type 1' see detail '1' Drawing No. IN/A02/CI.00425/CIV/006	No	4		
6.7.3		Precast roof planks 'Type 2' see detail '1' drawing No. IN/A02/CI.00425/CIV/006	No	3		
		Unreinforced concrete				
6.8.1	8.4.2	75mm Blinding	m^2	15		
		Reinforced concrete				
	8.4.3	30MPa/19mm Concrete				
6.9.1		Floor slab	m^3	4		
6.9.2		Walls	m^3	11		
6.9.3		Roof slab	m^3	2		
					CARRIED FORWARD	
					BROUGHT FORWARD	
		15MPa/19mm Mass concrete				

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
6.10.1		1m x 0755m x 0.75m thick mass concrete to bottom of existing ladder	Sum	1		
		20MPa/19mm Mass concrete				
6.11.1		To duck foot	m^3	3		
	8.2.2	Smooth formwork				
6.12.1		Vertical walls	m^2	80		
6.12.2		Roof slab soffits	m^2	7		
	8.2.5	Narrow Widths				
6.13.1		Floor slab 250mm high	m	16		
6.13.2		Roof slab 200mm high	m	17		
		Boxing Out				
6.14.1		250 x 250mm air vent opening through 250mm thick chamber walls	No	6		
6.14.2		500mm Diameter pipework openings through 350mm thick chamber walls	No	2		
6.14.3		700mm Diameter manhole opening through 200mm thick roof slab - see Drawing No. IN/A02/CI.00425/CIV/006 for detail '3'	No	1		
6.14.4		100mm Diameter opening through 350mm thick wall for scour pipe - see Drawing No. IN/A02/CI.00425/CIV/005 for detail '6'	No	1		
		Miscellaneous Formwork				
6.15.1	8.1.1.2	25mm chamfered edge to chamber walls	m	6		
		Reinforcement				
	8.3.1	High Tensile Steel Bars				
6.16.1		Of various diameters	t	3.8		
		Mild Steel Bars				
6.17.1	8.3.1	Of various diameters	t	1		
		Unformed surface finishes				
6.18.1	8.4.4b	Steel floated finish	m^2	29		
		Sundries				
6.19.1		250 x 250 x 3mm "Mentis" expanded mesh welded to both inside and outside faces (mesh ref no, 130 mild steel (galvanised) including 25 x 5 x 75mm long fishtails both ends mild steel (galvanised)	No	6		
6.19.2		75mm kicker	m	15		
6.19.3		Screed to fall 150mm to 50mm	m^2	11		
					CARRIED FORWARD	
					BROUGHT FORWARD	
		Testing				

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
6.20.1		Testing Reservoir for water tightness in accordance with the Engineer's requirements	Sum	1		
6.20.2		Sterilizing of reservoir in accordance with the Engineer's requirements	Sum	1		
6.20.3		Testing for 28 day concrete strength - concrete cube tests - set of 6	Sets	15		
6.20.4		Testing for compaction of *in situ* and backfill material (Mod. AASHTO density tests)	SUM	1		
					SECTION 6 : TOTAL CARRIED TO SUMMARY	

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 7*** *(SANS 1200 HA)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 7				
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**				
	PSHA 8.3	**Pipe supports**				
7.1.1		Supply and install valve pipe support to existing Chamber No.3 including, anchors, baseplate, channel and two drilled holes to suit pipe as per drawing No. IN/A02/CI.00425/CIV/013	No	3		
7.1.2		Supply and install valve pipe support to new inlet Chamber No.3A including, anchors, baseplate, channel and two drilled holes to suit pipe as per drawing No. IN/A02/CI.00425/CIV/013	No	3		
					SECTION 7 : TOTAL CARRIED TO SUMMARY	

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 8*** *(SANS 1200 L)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 8				
	SANS 1200L	**MEDIUM PRESSURE PIPELINES**				
		For notes pertaining to pipework please refer to the relevant drawing				
		The following items are to include for connecting to reservoir, chambers, excavation, backfilling, jointing, laying to falls, connecting to storm water manholes, etc.				
		Existing inlet chamber No.3				
		Drawing No. IN/A02/CI.00425/CIV/004				
8.1.1		Item 1a: DN300 Grade X42 steel through flange, PN10 rated. (Inside diameter to match OD of existing pipe)	No	3		
8.1.2		Item 1b: DN 300 Grade X42 steel blank flange, PN10 rated. Supplied loose.	No	1		
8.1.3		Item 2: DN300 x 600 F/F, straight grade X42 flanged both ends, with DN100 flanged stub 300 C/F from end of main section and 450 C/F.	No	1		
8.1.4		Item 6: DN300 x 850 F/F, straight, grade X42 steel, F.O.E., with restraining flange 300 C/F from plain end.	No	1		
8.1.5		Item 8: DN300 x 750 F/F, straight, grade X42 steel, F.O.E, with restraining flange 300 C/F from plain end (length to be confirmed on site).	No	1		
		New inlet control chamber No.3A				
		Drawing No. IN/A02/CI.00024/CIV/008				
8.2.1		Item 1: DN600 x 90° Medium radiused duck - foot with 4 segmented bend, F.O.E with DN 900 x 600. Radius = 1 220mm see detail '1' for duck - foot base (Bell mouth and duck - foot base to be supplied loose and welded to item 1 inside the reservoir).	No	1		
8.2.2		Item 2: DN 600 x 3 610 F/F S/S straight steel pipe flanged both ends (length to be confirmed on site prior to fabrication).	No	1		
8.2.3		Item 3: DN 600 x 90° Medium radiused 4 segmented bends flanged both ends, with a DN 80 x 400mm long pipe (air nozzle) welded to first segment of bend on crown of pipe; 1 220mm C/F both ends, radius = 1 220mm.	No	1		
8.2.4		Item 4: DN 600 x 1 157 F/F, straight pipe. Flanged both ends, with puddle flange 425mm from one end.	No	1		
					CARRIED FORWARD	
					BROUGHT FORWARD	

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
8.2.5		Item 5: DN600 M.S x 90° Medium radiused 4 segmented bends flanged both ends, 1 220 C/F, R = 1 220.	No	1		
8.2.6		Item 6: DN 600 x 3 346 F/F, straight pipe. Flanged both ends (length to be confirmed on site prior to fabrication).	No	1		
8.2.7		Item 7: DN600 M.S x 90° Medium radiused, duckfoot, 4 segmented bend, flanged both ends 1 220mm C/F both ends, radius = 1 220mm see detail '1' for duckfoot base.	No	1		
8.2.8		Item 8: DN 600 x 500 Concentric reducer 570mm long flanged to end, with DN 500 x 1 590mm F/F straight, plain ended. Restraining flange 300 C/F from plain end. Puddle flange 865mm from flanged end.	No	1		
8.2.9		Item 8a: 50mm Dia x 75mm long mild steel socket plain end welded to pipe (Item 8) other end female	No	1		
8.2.10		Item 8b: Elbow C - mi 54mm Dia brass elbow	No	1		
8.2.11		Item 8c: 54 - 22mm Dia multi step brass	No	1		
8.2.12		Item 8d: 15mm Dia x 100mm long copper pipe CL 2 domestic inside chamber	No	1		
8.2.13		Item 8e: Elbow C - C 15mm Dia	No	2		
8.2.14		Item 8f: 15mm Dia x 500mm long copper pipe CL 2 domestic inside chamber	No	1		
8.2.15		Item 8g: Sampling tap (S/S)	No	1		
8.2.16		Item 9: DN 500 Restrained flange adaptor, with 10 No. x M24, grade 4.6 or higher steel restraining bolts equally spaced around circumference of flanges.	No	4		
8.2.17		Item 10: DN500 'Bermad' or similar approved globe pattern control valve, full - bore pattern, double - chamber, altitude control function. Flanged based on 1 250mm F/F dimension.	No	1		
8.2.18		Item 11: DN500 x 900mm F/F straight, flanged one end, plain other end. Restraining flange 300mm C/F from plain end.	No	1		
8.2.19		Item 12: DN500 Butterfly valve, flanged. Gearbox and hand wheel left - hand side, upstream based on 222mm F/F dimension.	No	1		
8.2.20		Item 13: DN500 x 1 350mm F/F Straight, flanged both ends. DN100 x 300mm F/F flanged stub 300mm C/F from one flange end, puddle flange supplied loose to be welded in face on site to be in centre of chamber wall.	No	1		
8.2.21		Item 14: DN100 Resilient seal gate valve, F.B.E with non rising spindle and hand wheel. (70% local content).	No	1		
					CARRIED FORWARD	
					BROUGHT FORWARD	

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
8.2.22		Item 15: DN100 'Vent - o mat' or similar, vacuum - breaker air valve, flange ended.	No	1		
8.2.23		Item 16: DN500 Special as detailed with 2 x DN 500 x 27.5° medium radius (R = 1 020mm) bends with double mitred segments each ends.	No	1		
8.2.24		Item 17: DN500 x 4 425mm F/F, Straight, flanged one end, plain other end. Restraining flange 300mm C/F from plain end.	No	1		
8.2.25		Item 18: DN500 'Through' flange, welded to existing pipe	No	2		
8.2.26		Item 19: DN500 x 53° Lateral as detailed. Flanged all ends (Flange on lateral ends supplied loose to be welded in place to suit on site).	No	1		
8.2.27		Item 20: DN500 'Through' flange	No	1		
8.2.28		Item 21: DN500 Blank flange	No	1		
		uPVC pipework to New inlet chamber No.3A and existing chamber No.3				
		Drawing No. IN/A02/CI.00425/CIV/002				
8.3.1		Item 1: DN 100 x 1 635 F/F, M.S, straight pipe, flanged one end and plain other end	No	1		
8.3.2		Item 2: DN 100 x SG iron flange adaptor	No	6		
8.3.3		Item 3: DN 110 x 90° pressure bend	No	1		
8.3.4		Item 4: DN 100 x 1 450 F/F, M.S, straight pipe, flanged one end and plain other end.	No	1		
8.3.5		Item 5: DN 100 x 82°, M.S, 'Y' piece (dimensions as shown) flanged all ends	No	1		
8.3.6		Item 6: DN 100 x 65°, M.S, lateral (dimensions as shown) flanged all ends	No	1		
8.3.7		Item 7: 110mm uPVC scour pipe	m	25		
		15mm polycop pipe				
8.4.1		From outside existing chamber (tap off existing sensor line) to new control valve 3A. Including reducing down to 3/8" hydraulic tubing inside new chamber from 15mm polycop to main control valve	m	17		
					SECTION 8 : TOTAL CARRIED TO SUMMARY	

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 9*** *(PSAZA)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 9				
	PSAZA	**MISCELLANEOUS**				
		Existing chamber No.4				
9.1.1		New GRP Ladders complete and installed as per details on Drawing No. IN/A02/CI.00425/CIV/009.	No	1		
9.1.2		New GRP safety loops complete and installed as per details on Drawing No. IN/A02/CI.00425/CIV/009	No	1		
9.1.3		New 595mm high NFX brickwork plinth including backfilling with sand and 85mm thick concrete slab complete see Drawing No. IN/A02/CI.00425/CIV/009	Item	1		
		New Inlet chamber No.3A				
		Ladders				
9.2.1		Supply and fix in position fibreglass ladder to inlet chamber No.3A approx. 2800mm long, as per Drawing No. IN/A02/CI.00425/CIV/011 including bolts, brackets, etc.	No	1		
9.2.2		Supply and fix in position fibreglass handrail on chamber roof slab 900mm long as per Drawing No. IN/A02/CI.00425/CIV/011 including bolts, etc.	No	1		
		Manhole Cover and Frame				
9.3.1		700mm Diameter sheet material compound 'smc' manhole and frame, with locking mechanism & key. - complete including supply of manhole cover and frame etc. - as per detail on Drawing No. IN/A02/CI.00425/CIV/006	No.	1		
		Air vents				
9.4.1		Mentis expanded mesh welded to both inside and outside faces (mesh ref no. 130 mild steel - hot dipped galvanised)	No.	6		
		Existing Inlet chamber No.3				
		Galvanised manhole Cover and Frame				
9.5.1		700mm Diameter sheet material compound 'smc' manhole and frame, with locking mechanism & key. - complete including supply of manhole cover and frame etc. - as per detail on Drawing No. IN/A02/CI.00425/CIV/003	No	1		
					CARRIED FORWARD	

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
					BROUGHT FORWARD	
		Existing chamber No.12				
		Drawing no. IN/A02/CI.00425/CIV/010				
9.6.1		Core drill roof slab for air vents. See typical ventilator detail 6649	No	2		
9.6.2		100mm Diameter x 2mm thick stainless steel pipe air vents. See typical ventilator detail 6649	No	2		
9.6.3		350 x 350 x 2mm thick S10 S/S plate to be epoxied to the outside wall face over the air vents.	No	6		
		Chamber No.2				
		Sump detail see drawing no. IN/A02/CI.00425/CIV/009				
		50mm wide x 5mm thick x 440mm long mild steel flat bar welded to underside of flat plate (hot dipped galvanised)	No.	4		
		Chamber No. 1, No.3 and No.3A				
9.8.1		200mm wide block stencil paint labels	Sum	3		
					SECTION 9 : TOTAL CARRIED TO SUMMARY	

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 10*** *(PS19)*

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 10				
	PS19	**ELECTRICAL WORKS**				
		Cable Work				
10.1.1		Supply and install a 300 meter long 4mm^2 3 core PVC insulated, PVC bedded SWA PVC sheathed 600/1000V copper conductor cable	m	300		
10.1.2		Supply and install 300 meter long 1mm^2 8 core cable PVC insulated, PVC bedded SWA PVC sheathed 600/1000V copper conductor cable from the PLC/Marsh cabinet	m	300		
10.1.3		Supply and install the cable mild steel hot deep galvanized heavy duty cable ladder 150 mm wide, including all bends and extensions accessories	m	150		
10.1.4		Supply of cable way and cable termination including accessories	Sum	1		
10.1.5		Excavate 300m long 550mm deep and 500mm wide trench for both power and control cables.	m³	85		
10.1.6		Supply and install the cable marking tape, and labeling equipment	Sum	1		
10.1.7		Supply of soft river sand for bedding and back filling	m³	85		
10.1.8		Rehabilitator the ground and reinstate to the original state or better.	Sum	1		
10.1.9		Dispose all rock that was excavated all rubble.	m³	85		
10.1.10		Supply and install concrete cubes cable markers	No	20		
10.1.11		Conduct underground service detection before any excavations take place for the duration of the project	Sum	1		
		Retrofits on the Panel				
10.2.1		Supply and install panel for instruments (mounted panel, cable entry bottom, degree of protection IP54)	Sum	1		
		Chamber 3A panel				
10.3.1		Supply and install wall mounted panel chamber 3A, cable entry bottom, degree of protection IP54	Sum	1		
					CARRIED FORWARD	
					BROUGHT FORWARD	

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		Control and Instrumentation				
10.4.1		Reprogram the PLC to cater for the new instrumentation. Control philosophy to be provided Umgeni Water.	Sum	1		
10.4.2		Reprogram the SCADA system in the control room to cater for the new instrumentation. Control philosophy to be provided Umgeni Water	Sum	1		
10.4.3		Bermad level control Valve with Bi-level vertical float (P 450-66 or similar approved)	Sum	1		
		Telemetry System				
10.5.1		Reprogram the telemetry system to cater for the as new instrumentation.	Sum	1		
		Earthing				
10.6.1		Supply and installation of 25mm² copper earth conductor buried under ground bonded to the existing earth mat and connected to the earth bar inside the new chamber No (3A) and to an earth test point mounted on the chamber	Sum	1		
10.6.2		Bond the all conductive material in the chamber including the electrical DB	Sum	1		
10.6.3		Supply and install 1.5 meters earth rods including clamps and accessories	No	15		
10.6.4		Conduct earth resistance test and issue earthing & lightning protection Certificate of Compliance	Sum	1		
		Cathodic protection				
10.7.1		Conduct CP test on the existing CP before and after the new Pipeline is installed and submit test reports	Sum	1		
10.7.2		Bond the existing pipe to the new pipe and ensure there is continuity between all new pipes using 16mm² thermowelded on to the pipes and cover using appropriate insulation as per UW specifications	Sum	1		
10.7.3		Allow for excavation and backfilling to access the existing CP system	Sum	1		
		General				
10.8.1		As built drawings and OEM for Electrical, Instrumentation, CP and lightning protection and earthing as per Umgeni Water OEM specifications	Sum	1		
					SECTION 10 : TOTAL CARRIED TO SUMMARY	

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework ***Section 11***

Item No.	Pay Reference	Description	Unit	Quantity	Rate	Amount R
		SECTION NO. 11				
		PROVISIONAL SUMS				
		Environmental rehabilitation				
11.1.1		Allowance for specialist environmental rehabilitation on the site	Prov. Sum	1	R 850000	R 850 000.00
11.1.2		Contractor's mark up on above Item	%	R850000		
		Health and Safety Agent				
11.2.1		Provide the sum for a Health and Safety Agent, fully inclusive rate covering the Professional services of an approved professionally registered Pr CHSA to administer, monitor, report for, document, approve work and represent the Client at all H&S levels as required by SACPCMP and DoL for the full duration of the Contract. (This Provisional Sum has been informed by the UUW Pr H&S Agent and based on the UUW H&S Project Specification).	Prov. Sum	1	R 300 000	R 300 000.00
11.2.2		Contractor's mark up on above Item	%	R300 000		
					SECTION 11 : TOTAL CARRIED TO SUMMARY	

SUMMARY OF BILL OF QUANTITIES

Contract No: 2024 / 059
Howick West New Chamber 3A and Pipework

SUMMARY		
Section	**Description**	**Amount**
		R . c
1	**PRELIMINARIES AND GENERAL**	
2	**SITE CLEARANCE**	
3	**EARTHWORKS**	
4	**LOFFESTEIN RETAINING WALLS**	
5	**EARTHWORKS (ROADS, SUBGRADE)**	
6	**CONCRETE (STRUCTURAL)**	
7	**STRUCTURAL STEELWORK**	
8	**MEDIUM PRESSURE PIPELINES**	
9	**MISCELLANEOUS**	
10	**ELECTRICAL WORKS**	
11	**PROVISIONAL SUMS**	
A : SUB-TOTAL *(Use to calculate CPG amount and percentage)*		
B : CONTINGENCIES = 10% of Sub-Total A *(The provisional amount provided here may only be expended at the sole discretion of the Engineer, and the Employer reserves the right, during the execution of the works, to adjust the stated sum downwards or to omit it entirely without affecting the validity of the Contract.)*		
C : SUB-TOTAL = A + B		
D : VALUE ADDED TAX = 15% of Sub-Total C *(Provisional amount based on current rate of VAT)*		
TOTAL = C + D **Carry to "SECTION A : OFFER" of C1.1 : FORM OF OFFER AND ACCEPTANCE**		

SIGNED ON BEHALF OF TENDERER: .....

C3.1 STANDARD SPECIFICATIONS C3.2

C3.2 AMENDMENTS TO THE STANDARD SPECIFICATIONS C3.4

INTRODUCTION C3.5
PSAA: GENERAL C3.5
PSAB: EMPLOYER'S AGENT'S OFFICE C3.10
PSC: SITE CLEARANCE C3.12
PSDA: EARTHWORKS (Small Works). C3.15
PSDB: EARTHWORKS (Pipe Trenches) C3.23
PSDK GABIONS AND PITCHING C3.30
PSG: CONCRETE (Structural) C3.32
PSHA: STRUCTURAL STEELWORK (Sundry Items) C3.49
PSHC: CORROSION PROTECTION OF STRUCTURAL STEELWORK. C3.52
PSL: MEDIUM PRESSURE PIPELINES C3.55
PSLB: BEDDING (Pipes) C3.62
PSLE: STORMWATER DRAINAGE C3.63
PSZA: MISCELLANEOUS ITEMS C3.67

C3.3 UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATIONS C3.68

C3.4 AMENDMENTS TO THE UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATIONS C3.69

C3.5 PROJECT SPECIFICATIONS C3.72

STATUS ..... C3.73.
PS-1 PROJECT DESCRIPTION C3.73
PS-2 OVERVIEW AND DETAILS OF CONTRACT C3.72
PS-3 DESCRIPTION OF SITE AND ACCESS C3.74
PS-4 NATURE OF GROUND AND SUBSOIL CONDITIONS C3.74
PS-5 DRAWINGS C3.74
PS-6 CONSTRUCTION AND MANAGEMENT REQUIREMENTS C3.76
PS-7 CONSTRUCTION PROGRAMME C3.77
PS-8 SITE FACILITIES AVAILABLE C3.78
PS-9 SITE FACILITIES REQUIRED C3.78
PS-10 OCCUPATIONAL HEALTH AND SAFETY ACT C3.78
PS-11 ENVIRONMENTAL MANAGEMENT C3.80
PS-12 SELECTED SUBCONTRACTORS C3.80
PS-13 LAISONS WITH STATUTORY BODIES C3.80
PS-14 LOCATION OF EXISTING PIPEWORK C3.80
PS-15 VEHICLE FOR ENGINEER C3.80
PS-16 LANDSCAPING C3.81
PS -17 QUALITY C3.81
PS-18 VALVES C3.81
PS-19 ELECTRICAL SPECIFICATIONS C3.82
PS-20 SURVEY C3.82
PS-21 GUIDELINES FOR THE RECRUITMENT OF LOCAL LABOUR C3.82
PS-22 CORROSION PROTECTION C3.82
PS-23 FEATURES REQUIRING SPECIAL ATTENTION C3.83
PS-24 SAFEGUARDING OF EXCAVATIONS C3.84
PS-25 FORMWORK C3.84

PS-26 DESIGNATED STORAGE AREAS C3.84
PS-27 RETURNS C3.84
PS-28 ORDER OF PRECEDENCE OF DOCUMENTS C3.84
PS-29 CONTRACT ESCALATION C3.85
PS-30 LIGHTNING PROTECTION C3.85
PS 31 COST OF COMPLIANCE WITH OHSA CONSTRUCTION REGULATIONS C3.85

C3.1 STANDARD SPECIFICATIONS

The standard specifications on which this contract is based are the South African Bureau of Standards Standardized Specifications for Civil Engineering Construction SABS 1200 series. Although not bound in nor issued with this Document, the following Sections of the Standardized Specifications of SABS 1200 shall form part of this Contract:

("SABS" has been changed to "SANS, without change to the contents of the specifications.)

AA	1986	-	GENERAL (Small Works)
AB	1986	-	EMPLOYER'S AGENT'S OFFICE
C	1982	-	SITE CLEARANCE
DA	1990	-	EARTHWORKS (Small Works)
DB	1989	-	EARTHWORKS (Pipe Trenches)
DK	1984	-	GABIONS AND PITCHING
DM	1981	-	EARTHWORKS (Roads, Subgrade)
G	1982	-	CONCRETE (Structural)
HA	1990	-	STRUCTURAL STEELWORK (Sundry Items)
HC	1988	-	CORROSION PROTECTION of STRUCTURAL STEELWORK
L	1983	-	MEDIUM PRESSURE PIPELINE
LB	1983	-	BEDDING (Pipes)
LC	1981	-	CABLE DUCTS
LE	1982	-	STORMWATER DRAINAGE
MM	1984	-	ANCILLARY ROADWORKS

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

SANS 1921 (2004): Construction and Management Requirements for Works Contracts
Part 1: General Engineering and Construction Works;
Part 2: Accommodation of Traffic on Public Roads Occupied by the Contractor;
Part 5: Earthworks activities which are to be performed by hand;

SANS ISO 1461 (2009): Hot – Dip galvanised coatings on fabricated iron and steel articles.

SANS 1083: 2006: Aggregates from natural sources – Aggregates for concrete

SANS 50197 – 1 and 2: Common cement

SANS 50413 – 1- and 2: Masonry cement

SANS 62305 – 1 to 4: Protection against lightning

AASHTO M194 "Chemical Admixtures for Concrete"

ASTM A 666: Standard Specification for Annealed or Cold – Worked Austenitic Stainless Steel Sheets Strip, Plate and Flat Bar

Preface on Interim Situation until Full Suite of SANS Series of Specifications are Available

The Bill of Quantities is based on the SABS 1200 system of specifications and measurement.

Where SANS specifications are available, these have been incorporated into the "Contract" section of this document.

Where overlapping specifications from the SANS 2001 series of specifications occur the appropriate SABS 1200 specifications have been incorporated in the Project Specifications. In such cases, the requirements of the latter shall prevail over the requirements of the SANS specification(s).

The payment clauses in the Bill of Quantities are based on the SABS 1200 series of specifications for consistency and the Tenderer is required to ensure that he has priced all of the requirements pertaining to the SABS specifications.

C3.2 AMENDMENTS TO STANDARD SPECIFICATIONS

INTRODUCTION

In certain clauses the standard, standardized and particular specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternative or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains additional specifications required for this particular Contract.

The number of each clause and each payment item in this part of the project specifications consists of the prefix PS followed by a number corresponding to the number of the relevant clause or payment item in the standard specifications. The number of a new clause or payment item, which does not form part of a clause or a payment item in the standard specifications and which is included here, is also prefixed by PS, but followed by a new number which follows on the last clause or item number used in the relevant section of the standard specifications.

PSAA: GENERAL (Small Works)
(Applicable to SABS 1200 AA – 1986)

PSAA 3 MATERIALS

PSAA 3.1 Quality and Samples

Add to the Sub-Clause:
No used or recycled material may be used in the Works unless expressly authorized by the Employer's Agent.

Materials specified as being to the approval of a Standards Bureau shall bear the official mark of the appropriate standard.

Samples of concrete aggregates and pipe bedding material are to be delivered to an approved laboratory.

PSAA 4 PLANT

PSAA 4.1 Contractor's Office and Stores (Refer SANS 1921-1 Clause 4.14)

Add to the Sub-Clause:
Neither housing nor shelters are available for the Contractor's employees, and the Contractor shall make his own arrangements to house his employees and transport them to site.

The Employer will place an area of ground at the disposal of the Contractor at the Howick West Reservoir site to enable him to erect his site offices, workshops and stores. The temporary facilities and ablution facilities shall comply with the requirements of the Local Authority.

On completion of the Works or as soon as the Contractor's facilities are no longer required the Contractor shall remove such facilities and clear away all surface indications of their presence. The site is to be rehabilitated as described elsewhere.

PSAA 5 CONSTRUCTION

PSAA 5.1 SURVEY

PSAA 5.1.1 Setting out of the works

Add to the Sub-Clause

Main survey bench marks will be indicated to the Contractor by the Employers Agent as a main reference for all setting out work and all additional control points required by him/her for the correct setting out of the works shall be placed in position by the Contractor using these bench marks as reference. Elevation and co-ordinates for these benchmarks will be supplied by the Employers Agent. Benchmarks will be to mean sea level (MSL).

PSAA 5.1.2 Preservation and Replacement of Pegs Subject to Land Survey Act (Refer SANS 1921 - 1 Clause 4.15)

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Add to the Sub-Clause:
Before the commencement of construction work in the vicinity of boundaries, the Contractor, under the direction of the Employer's Agent, shall search for plot pegs where boundaries have not been established by the erection of walls or fences and the Contractor shall compile a list of such pegs that are apparently in their correct positions. At the completion of the contract, the Contractor shall expose the pegs that were listed

at the commencement of the construction and the Employer's Agent will arrange for any such pegs that are missing to be replaced at the Contractor's expense.

All plot boundary pegs shall be marked with fencing droppers which shall be painted.

As the construction of the Works may necessitate the removal and re-location of certain survey beacons the Employer will make the necessary application to the Surveyor-General and, notwithstanding the provisions of Sub-Clause 5.1.2 will meet the costs of the re-survey by a Land Surveyor of these servitude beacons in their new position.

The Employer will accordingly indemnify the Contractor against all costs implied in Sub-Clause 5.1.2 in respect of those beacons which may have to be removed by the Contractor.

The Employer's Agent will arrange for any pegs that are missing to be replaced at the Contractor's expense.

All survey reference marks shall be clearly marked and protected by the erection of three fencing standards.

PSAA 5.1.3 STAFF AND METHOD OF WORKING

All measuring, setting out and leveling shall be performed by competent staff conversant with this type of work. Field books and calculations shall be kept available and submitted for checking and approval when required by the Engineer. All setting out information, reference peg data, sketches and levels shall be recorded in a neat and presentable form for submission to the Engineer.

PSAA 5.1.4 DISPLACEMENT OF BENCHMARKS

Should the Contractor cause displacement of any survey benchmark indicated by the Engineer or should the Engineer suspect that displacement of a benchmark has resulted due to an action of the Contractor, the said benchmark shall be checked for line and level by the Engineer and, if necessary, be re-positioned correctly. The costs for this work shall be borne by the Contractor.

PSAA 5.1.5 PAYMENT

There shall be no separate payment for survey or setting out work as described above, or for checking reference pegs for line and level, supplying and establishing line and level during construction and protection of pegs. All such work shall be deemed to be included in the rates quoted in the Schedule of Quantities

PSAA 5.2 Protection of Underground Services (Refer SANS 1921 - 1 Clause 4.17)

Delete title and substitute the following:
Protection of Visible and Underground Services (Sub-clause 5.2)

PSAA 5.3 Safety (Refer to SANS 1921-1 Clause 4.18)

Add to the Sub-Clause

The minimum acceptable safety standard are as laid out in the latest version of the Occupational Health and Safety Act(Act 85 of 1993). The Contractor shall provide safety equipment for his/her workers as well as for up to 3 visitors to the site

All work and particularly work carried out in the proximity of buildings, bridges, tanks

and or other structures shall be carried out in conformance with the regulations framed under Occupational Health and Safety Act, 85 of 1993 and the Minerals Act, 50 of 1991, including shoring where necessary, to ensure the safety of structures that are at risk.
The Contractor shall make available for the duration of the contract safety helmets, gumboots and any other necessary safety equipment for sole use by the Engineer and his representative(s).

PSAA 5.4 Ground and Access to works

Add the following:
"On completion of operations the Contractor shall restore the ground surface, wherever it may have been disturbed, to its original condition by filling all ruts with material similar to the material in the rut and levelling the ground and where necessary, planting grass and shrubs as may be required. Any boundary fences which have been removed or damaged by his operations and activities shall be repaired and/or reinstated at the Contractors expense. Ground restoration must include proper placement of topsoil profile

PSAA 6 TOLERANCES

PSAA 6.2 Degrees of Accuracy

Add to Sub-Clause:

Generally, Degree of Accuracy II shall be applicable to the whole of the Works, unless specified otherwise (refer specifically to PSDA 6 and PSG 6).

PSAA 8 MEASUREMENT AND PAYMENT

PSAA 8.2.2 Time-related Items

Re-word the third and fourth lines to read:

"incremental amounts (calculated by the division of the remainder of the tendered sum by the number of remaining months of the duration of construction as assessed by the Engineer) will be"

Add to the Sub-Clause:

Notwithstanding the provisions of Sub-Clause 8.2.2, an approved extension of time will not qualify the Contractor to receive any payment for that portion of fixed charge and value-related items which has become regarded as "time-related" items in terms of PSA 8.2.2 above.

PSAA 8.3 SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS

PSAA 8.3.2 Establishment of Facilities on the Site

PSAA 8.3.2.2 Facilities for Contractor

For this contract the facilities for the Contractor will not be measured and paid for separately as itemised in Sub-Clause 8.3.2.2. The sub-items (a) to (j) are to be consolidated into one item and payment under Item PSA 8.3.2.2 shall be deemed to cover all these sub items.

PSAA 8.4 SCHEDULED TIME-RELATED ITEMS

PSAA 8.4.2 Operation and Maintenance of Facilities on Site

PSAA 8.4.2.2 Facilities for Contractor

Consolidate sub-items (a) to (j) of Clause 8.4.2.2 into one item as in PSA 8.3.2.2. Payment under PSA 8.4.2.2 shall be deemed to cover sub-items (a) to (j).

PSAA 8.5 Temporary Works – Dealing with Water on Works

The tendered sum(s) shall cover the cost of providing, operating and maintaining the necessary equipment and other temporary works for dealing with groundwater in trenches and excavations.

PSAB: Engineer's Office
(Applicable to SABS 1200 AB – 1986)

PSAB 2 INTERPRETATIONS

PSAB 2.3 Definitions

Delete the first two lines and substitute the following:

For the purposes of this specification the definitions given in SABS 1200 AA shall apply:

PSAB 3 MATERIALS

PSAB 3.1 Name Boards

In the 3rd line delete "the South African Institution of Civil Engineers" and substitute with "uMngeni - uThukela Water".

Add the following:

The position of the nameboards will be subject to the Engineer's approval and must in no way obstruct sight lines for road, rail or pedestrian traffic. The nameboards shall conform to the standard layout and design as formulated by uMngeni-uThukela Water, (drawing available from Engineer). All arrangements regarding permission and approval from the controlling authority as far as location are concerned are the Contractor's responsibility.

PSAB 3.2 OFFICE BUILDING(S)

Delete the first sentence and replace with the following:-
The Contractor shall supply and furnish one air-conditioned "Kwikjack" or similar approved (6m x 3m) office for the use of the Engineer and his/her staff, and one air-conditioned "Kwikjack" or similar approved (9m x 3.4m) conference facility for conducting meetings.

Add to the Sub-Clause:

In addition to the furnishings listed under sub-items (a) to (i), the following shall be provided and properly maintained:

(j) Electrical installation to include a light and two 15A plug points plus two adequately sized air conditioning units (for heating and cooling) for each unit
(k) One refrigerator of at least 100 litre capacity
(l) One kettle of at least 2 litre capacity
(m) One tea set comprising six cups and saucers, six teaspoons, one teapot, one sugar bowl and one milk jug
(n) Covered parking for two vehicles
(o) Un-covered parking space for two vehicles
(p) Two "Barhold" or similar wall mounted racks each with 6 clamps suitable for hanging A0 sized drawings
(q) One large meeting table
(r) Ten additional chairs
(s) One A0 sized drawing board
(t) Rain gauge
(u) One microwave oven
(v) Two UPS power points

(w) 12 seater meeting table
(x) 12 additional chairs
(y) One HP x A3 black and white laser printer

PSAB 4 PLANT

PSAB 4.1 TELEPHONE

Delete Sub-Clause and substitute the following:-

The Contractor shall provide one portable cellular (with minimum 8W output power, 18 hours standby and 3 hours talk time) telephones shall be made available for the sole use by the Engineer or his Representative for the duration of the contract.

The Contractor shall, provide a wireless modem that allows a computing device to access the internet through a mobile phone company's network such as a 4G card.

PSAB 5 CONSTRUCTION

PSAB 5.2 ENGINEER'S OFFICE *(Refer SANS 1921-1 Clause 4.14)*

Add to the Sub-Clause:-

The toilet facilities provided for the sole use of the Engineer or his Representative(s) shall be of the chemical type, maintained in a hygienic and sanitary condition and shall be removed on completion of the works. The facilities provided shall conform to the local health authority requirements as applicable and the Contractor shall pay all sanitary feeds and charges.

PSAB 8 MEASUREMENT AND PAYMENT

PSAB 8.1 Scheduled Items

Delete the 1st sentence and substitute the following:

Items will be scheduled in terms of Sub-Clauses 8.3.2 & 8.4.2 of SABS1200 AA.

PSAB 8.2.1 Fixed and Time-related Charges

Delete the 1st sentence and substitute the following:

The terms of Sub-Clause 8.2 of SABS 1200 AA shall apply.

Add to the Sub-Clause:

The Tenderer is to include, under the Time-Related Charges, a sum of R 300,00 per week for a period of time equal to the Time for Completion of the Contract (see Contract Data) to cover the cost of the Engineer's telephone calls.

PSC: Site Clearance
(Applicable to SABS 1200 C – 1980)

PSC 1.2 ENVIRONMENTAL COMPLIANCE
Add new Sub-Clause:

All site clearance shall be carried out in accordance with the Project Environmental Management Plan.

PSC 2.1 DEFINITIONS

Add to the Clause:

Environmental Control Officer (ECO) – Either an uMngeni-uThukela Water Environmental Management staff member or an Environmental Consultant will be assigned to the project on a part or full-time basis. The Environmental Control Officer will be part of the Project Staff and will advise the Engineer on all environmental matters relating to the works, in terms of this specification and the project specification, if applicable.

PSC 3 MATERIALS

PSC 3.1 DISPOSAL OF MATERIAL

ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION PROJECTS – Clause PSZB 5.2

Replace the second paragraph with the following:

Fencing wire shall be neatly wound into rolls or coils and all such wire, together with all fence posts and other re-usable material from structures, etc. shall be stacked at designated sites.

Material obtained from clearing must be disposed of off-site by the Contractor at his expense. Disposal of combustible material by burning will not be permitted. The Contractor will be held responsible for observing the by-laws and regulations of the local authority."

PSC 5 CONSTRUCTION

PSC 5.4 Grubbing

In the fourth line delete "200 mm" and substitute 300mm.

PSC 5.6 Conservation of Topsoil

Add to the Sub-Clause:

Refer to:

ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION PROJECTS – Clause PSZB 5.3 CONSERVATION OF TOPSOIL

PSC 8 MEASUREMENT AND PAYMENT

PSC 8.2 SCHEDULED ITEMS

PSC 8.2.10 Heading to read:

Remove Topsoil to a Nominal Depth of 200 mm and Stockpile …… Unit : m^3

Add to the Sub-Clause:

The topsoil, where approved by the Employer's Agent, shall be conserved for later use by stockpiling clear

of the working area.

PSDA: EARTHWORKS (SMALL WORKS)

PSDA 3 MATERIALS

PSDA 3.1.2 The following table and definitions shall replace Classes of Excavation

SOIL AND ROCK CLASSIFICATION

Description of Hardness				Unconfined Compression Strength (MPa)
Category	**Class**	**Description**	**Field Indicator Tests**	
A	R0	Decomposed rock (soil)	Material crumbles between fingers. Easily removed by pick and shovel	< 1
	R1	Very soft rock	Material crumbles under firm (moderate) blows with the sharp end of geological pick and can be peeled off with a knife; it is too hard to cut a triaxial sample by hand. SPT refusal	1 to 3
B	R2	Soft rock	Can just be scraped and peeled with a knife; firm blows of the pick point leave indentations 2mm to 4mm in specimens	3 to 10
	R3	Medium hard rock	Cannot be scraped or peeled with a knife; hand-held specimen can be broken with the hammer end of a geological pick with a single firm blow	10 to 25
C	R4	Hard rock	Point load tests shall be conducted for distinguishing between these categories. These results may be verified by means of uniaxial compressive-strength tests	25 to 70
	R5	Very hard rock		70 to 200
	R6	Extremely hard rock		> 200

Classification after Core Logging Committee, South African Section, Association of Engineering Geologists: 'A Guide to Core Logging for Rock Engineering' Bulletin of the Association of Engineering Geologists, Vol XV, No 3, 1978

1. In Table 1 categories A, B and C can be equated to the following regarding definitions

Category A (R0 and R1)	Soft excavation
Category B (R2 and R3)	Intermediate excavation
Category C (R4, R5 and R6)	Hard Rock excavation

As a refinement Category C R4 can be defined as boulder excavation, where boulders shall mean any rock mass with a hardness of at least R3 which will pass through a square opening with dimensions equal to 1 000 x 1 000mm but will not pass through a 200 x 200mm opening.

To further assist with classification of materials the Contractor is requested to fill in the Returnable Schedule T.2.2.17 Excavation Progress Rates.

In pricing the Bill of Quantities the Contractor must take into account soil/rock classifications and the progress rates he has entered into the Returnable schedule.
In the Bill of Quantities the Contractor is given the opportunity to classify the soil/rock to be excavated in terms of Table 1 and to apply his rates according to his experience and know-how.

New Sub-Clause

PSD-3.1.2.1 Soft (Class A1) Material Suitable for Hand Excavation

With reference to SANS 1921 - 5: (Earthworks activities which are to be performed by hand) Classes of excavation Where labour-intensive methods applicable to targeted labour are specified, soft excavations shall be further defined as follows:

"Soft (Class A1) material suitable for hand excavation

Soft excavation for labour-intensive work where excavations are to be carried out by hand methods, shall be excavation in material that can be efficiently removed and loaded with picks, shovels and other hand tools by an average able-bodied person or group of persons. Soft excavation shall include small boulders that can be removed by hand methods.

Soft excavation can be further broken down by introduction of an additional class such as "Soft Excavation Class A1", which is excavation defined as soft, but which can only be excavated with difficulty.

The criteria for classifying Soft Excavation Class A1 shall be as follows:

Granular Material: -

Dense material with high resistance to penetration by the point of a geological pick; several blows are required for removal of material; 7 to 15 blows of the dynamic cone penetrometer are required to penetrate 100mm; and

Cohesive Materials –

Stiff to very stiff material requiring 6 to 8 blows of the dynamic cone penetrometer to penetrate 100 mm, where:

"stiff" material can be indented by thumbnail; slight indentation produced by pushing a geological pick point into the soil; cannot be moulded by fingers; and where:

"very stiff" material can be indented by thumbnail with difficulty; slight penetration of point produced by blow of geological pick.

Where soft excavation Class A1 material is encountered, it shall be measured and paid for as an extra over soft excavation."

PSDA: Earthworks (Small Works)
(Applicable to SABS 1200 DA – 1988)

PSDA 3.2 EMBANKMENTS & BACKFILL

PSDA 3.2.1 General

Embankment material shall be compacted to 90% modified AASHTO density.

PSDA 3.3 Backfilling and Embankments

Add new Sub-Clause :

Sufficient suitable material for forming embankments and backfilling around structures, foundations, footings and the like, shall be temporarily stockpiled in the vicinity of the structures. All other material from the excavations shall be disposed of as directed by the Engineer.

PSDA 4 PLANT

PSDA 4.3 COMPACTION PLANT

Add new Sub-Clause :

Where plant is used for applying the dynamic load, controlling the moisture content and grading or mixing must be capable of achieving the compaction specified using the material available for the construction of the Works.

PSDA 4.4 RESTRICTION ON USE OF PLANT

Add new Sub-Clause:

Where the Contractor finds it impractical to use mechanical plant for excavation or to complete portions of the work due to restrictions caused by difficult access or the presence of existing structures, pipelines or services shown on tender drawings, the Contractor will be deemed to have satisfied himself as to the alternative requirements when entering rates against the appropriate items in the Bill of Quantities as no claim for extra payment based on the inability to use plant in such circumstances will be considered.

PSDA 5 CONSTRUCTION

PSDA 5.1.1.1 Barricading and Lighting (Refer SANS 1921-1 Clause 4.18.2 and 4.18.3)

Delete the Sub-Clause and substitute :

Without limiting any obligation which the Contractor may have in terms of any Act, Ordinance or other legislation, the Contractor shall ensure that all excavations which are accessible to the public or which is adjacent to a public road or thoroughfare, or by which the safety of persons may be endangered are protected as set out in Clause 13 of the General Safety Regulations of the Occupational Health and Safety Act, 1993 and that Watchmen are employed to ensure that barricades, barriers and lights are effective at all times.

Trench excavations shall be protected by means of at least two horizontal double sided red/white; chevron tapes approved by the Engineer. The tapes shall be stretched tightly between supports along both sides and ends of the excavation at levels approximately 0,45m and 1,12m above the ground. The supports shall consist of poles or iron standards securely planted in solid ground at not more than 10m centres so as to enclose the spoil and the excavations

Bridges for vehicles and/or pedestrians shall be provided along the route of the work as and where may be considered necessary by the Engineer. They shall consist of a number of suitably sized steel plates laid across open excavated trenches. They shall be protected on each side by a stout two rail time fence, at least 1m high, consisting of 150 x 75mm time verticals set firmly into the ground, 75mm

x 50mm rails securely fastened to them. At least 4 lamps or reflective markers must be provided at each crossing.

Where construction is in, or across, public roads the barricades or barriers and temporary road signs shall be erected. All such signs and positioning thereof shall comply with the requirements set out in Road Note 13 read in conjunction with the SA Road Traffic Signs Manual.

PSDA 5.1.1.2 Safeguarding of Excavations (Refer SANS 1921-1 Clause 4.18.3)

In Sub-Clause (a) delete the words "Machinery and Occupational Safety Act" in the third and fourth lines and substitute "regulations to the Occupational Health and Safety Act, 1993".

PSDA 5.1.1.3 Explosives (Refer SANS 1921-1 Clause 4.7)

Add the following:

The Engineer shall be notified at least 24 hours beforehand of the Contractor's intention to use explosives on site. Similarly surrounding communities must be given appropriate prior notification.

It shall be incumbent on the Contractor to make himself aware of the restrictions to blasting imposed by electric transmission or telephonic lines and other similar services. Where the presence and location of electric transmission or telephonic lines etc. are known or are shown on the Engineer's drawing at tender stage the Contractor must make allowance in his rates and programmes for restrictions and delays which may result from restrictions imposed by the authorities.

PSDA 5.1.1.3 a) Use of Explosives (New Sub-Clause) (Refer SANS 1921-1 Clause 4.7)

Generally, the Contractor will be permitted to use explosives for breaking up rock and hard material during excavations, for demolishing existing structures and for such other purposes where it may normally be required, subject to the following conditions:

(i) The Engineer or Inspector of Explosives shall have the power to prohibit the use of explosives in cases where in his opinion, the risk of injury or damage to persons, property or adjoining structures is too high

(ii) A copy of each blasting permit issued to workmen, and of each permit issued to the Contractor to cover the purchase, storage and transport of explosives, shall be handed to the Engineer. The Contractor shall grant the Engineer access to all records maintained for the Inspector of Explosives or the Government Mining Engineer, as the case may be.

(iii) Before any blasting is undertaken, the Contractor, together with the Engineer shall examine and measure up any buildings, houses or structures in the vicinity of the proposed blasting and establish and record together with the owners thereof the extent of cracking or damage that may exist before commencement of blasting operations. It is advised that a photographic record will be required of neighbouring structures before blasting commences. These structures will be pointed out by the Engineer. It shall be the responsibility of the Contractor to make good at his own expense any further damage to such houses, buildings or structures which is a result of the blasting.

(iv) Where there is reasonable danger of damage to power and telephone lines or any other property, the Contractor shall suitably adapt his methods of blasting, the size of the charges and use adequate protective measures such as cover blasting in order to limit the risk of damage as far as possible.

PSDA 5.1.1.3 b) Limitations for Blasting (New Sub-Clause)

a) Approval of Methods and Keeping of Records

No blasting work may be carried out prior to the Engineer's approval being given in writing
Prior to starting any drilling for the first section of blasting, the Contractor shall submit for approval to

the Engineer, details of the proposed overall methods of blasting that will be used on site, including spacing, depth and pattern of holes, charging levels (kg/m^3), spacing and positioning of relays, method of blast initiation, precautions to prevent 'fly rock', maximum charge per relay, traffic arrangements during blasting, and any other details he may consider relevant. These details shall be submitted in writing and supported with sketches at least 7 days before the commencement of drilling and blasting.

The Engineer will evaluate these details in relation to the given limitations and prior to giving his approval, will indicated to the Contractor any changes that may possibly be needed to comply with the limitations.

For all subsequent blasts, the Contractor shall, at least 24 hours beforehand, notify the Engineer of the intention to blast and at the same time shall note if any changes will be made relative to the approved method.

The Engineer reserves the right to order the Contractor to modify his method of drilling and blasting, or to employ reduced blasting, without thereby invalidating the Contract. The Contractor shall have no claim for extra payment, over and above his tendered rates, due to his being ordered to use such a different method of drilling or blasting or reduced charges, regardless of any prior approval by the Engineer of any previous method.

After every blast, the Contractor shall, within 24 hours, submit to the Engineer details of the actual total mass of explosives used, the approximate volume of material loosened and the maximum simultaneous mass of explosives detonated (maximum charge per relay).

Notwithstanding any approval given by the Engineer, the Contractor shall at all times be responsible for the safety of the Works, persons, animals and property in the vicinity of the Site during blasting operations.

b) Vibrations

Blasting vibrations are caused by the transmission of the shock wave from the explosion charge through the material being blasted. This shock wave could cause damage to structures in the vicinity of the blasting if the vibrations are not limited to acceptable levels. Damage to structures is closely associated with peak particle velocity of the ground vibrations in the vicinity of the structure. Advisable maximum levels for peak particle velocity are given in Table 2.

Table 2

MAXIMUM PARTICLE VELOCITIES (VIBRATION)

Maximum peak particle velocity (mm/s)	Effect on people and buildings
0,5	Threshold of human perception unlikely to cause damage of any type
5	Limit for blasting adjacent to historical monuments
25	Limit for blasting near private dwellings in order to reduce disturbance to residents to a minimum
50	Limit for blasting adjacent to residential structures on good foundations
84	Limit for property owned by concern doing the blasting (ie. minor plaster cracks acceptable)
120	Recommended maximum level for blasting adjacent to sturdy reinforced concrete structures

The peak particle velocity V is related to the distance D from the blast and the maximum mass of explosive E instantaneously detonated (maximum charge per relay) by the general equation:

$$V = \left(\frac{k}{D}\right)^m xE^n$$

where k, m and n are constants for a particular set of circumstances. V is in mm/s, D is in metres and E is in kilograms. Experimentation has shown that n = 0,5 but k and m have to be determined for each site by means of vibration measurements. However blasting can be safely conducted without vibration measurements or expert advice if the following relationship is used:

$$V = \left(\frac{1150}{D}\right) xE^{0.5}$$

which gives the maximum charge levels for V = 50 mm/s listed in Table 3

Table 3

MAXIMUM CHARGE LEVELS

Minimum distance from nearest blast hole structure (m)	Maximum charge mass per relay (kg)
10	0,19
20	0,76
30	1,7
40	3,0
50	4,7
60	6,8
70	9,3
80	12,1
90	15,3
100	18,9

Only detonating relays of at least 20 milliseconds delay interval must be used.

The above relationship can be used to calculate charge mass for other velocity limits. However, if higher charge levels have to be used for practical reasons, expert advice and possibly vibration measurements will be required.

Notwithstanding the above blasting limits, the Contractor shall at all times be responsible for the safety of the Works, person, animals and property in the vicinity of the Site during blasting operations.

PSDA 5.1.1.3 c) <u>Negligence (New Sub-Clause)</u>

The Contractor shall be liable for all damages to services caused as a result of the Contractor's negligence.

PSDA 5.1.3 Existing Services (Refer SANS 1921-1 Clause 4.17)

Add to the Sub-Clause :

All existing services on the site may not be shown on the Drawings or be visible on the site. The Engineer may order excavation by hand in order to search for and expose services. An item has been included in the Bill of Quantities to cover the cost of such work if so ordered by the Engineer.

Where a service is damaged because of the Contractor's negligence, he shall be liable for the costs involved in the repair of the service and any other costs consequent upon the interruption of the damaged services.

PSDA 5.1.5 Excessive Pollution (Refer SANS 1921-1 Clause 4.19)

Add the words “noise and”, before the word “dust” in the first line.

PSDA 5.1.6 Excavated Material not to Endanger or Interfere (Refer SANS 1921-1 Clause 4.10)

Delete the last sentence and substitute :

“All material that is unsuitable or not required for backfilling shall be disposed of at an appropriate landfill site for spreading by others. No additional payment will be made for these activities.”

PSDA 5.2.1 Site Preparation

Delete the last sentence and substitute :

“Material so removed shall be disposed of by the Contractor to Sites designated by the Engineer”.

PSDA 5.2.2 Excavation (Refer SANS 1921-1 Clause 4.10)

Add new Sub-Clauses :

(h) Where outside shuttering is ordered by the Engineer, the excavations shall be carried out for an extra width of not more than 600mm all around the structure, measured from the base of the face to be shuttered, to allow for the shuttering to be fixed, this extra excavation and refilling where necessary is to be measured and paid for under quantities allowed for this purpose in the Bill of Quantities. Outside shuttering shall be used for the construction of all major structures unless ordered otherwise by the Engineer.

(i) Where permanent concrete is to be placed against an excavated face, the excavation shall be trimmed to ensure that there is no projection greater than 20 mm protruding into the excavation profile.

(j) The Contractor shall not spoil, waste or stockpile excavated material without approval. The Contractor shall so plan his cut-to-fill operations that all excavated material is used in the manner that is most appropriate.

The Contractor shall conserve all suitable surplus material and he shall not borrow, spoil or waste any material unnecessarily. If excavated material designated for a particular purpose becomes contaminated, is incorrectly used or becomes unavailable through injudicious planning of excavation operations, the Contractor shall replace the contaminated material and make good any shortfall with material of quality at least equal to that of the said selected material.

Where selection of excavated material is required, the method of excavation shall be so arranged as to avoid double handling. Wherever possible excavated material shall be placed in its final position without being stockpiled. If stockpiling is unavoidable, materials intended for different uses shall be stockpiled separately

PSDA 5.2.3.1 <u>Embankments</u>

In the thirteenth line delete “600mm” and substitute “300mm”

In the sixteenth line delete “300mm” and substitute “150mm”

Delete the nineteenth line and substitute the following :

Each layer shall be compacted to achieve 90% modified AASHTO density except where indicated otherwise on the Drawings

PSDA 5.2.3.2 <u>Restricted Backfill and Compaction at Structures</u>

Delete the eighth and ninth lines and substitute :

“not exceeding 250mm and compacted by means of mechanical tampers to achieve a 90% modified

AASHTO density except where indicated otherwise on the Drawings."

PSDA 5.2.5.2 Topsoiling

Delete the wording of Sub-Clause 5.2.5.2 and replace with the following:

"Where scheduled, topsoil shall be placed in accordance with PSZC 2.2 of the Particular Specification for Environmental Management of Construction Projects. Prior to placing, the surfaces to receive topsoil shall be prepared by pulling horizontal ruts into the soil with the tines of a front-end loader or other suitable method to retard erosion of the topsoil."

PSDA 5.2.5.3 Grass and other vegetation

Delete the working of Sub-Clause PSDA 5.2.5.3 and replace with the following:

"Where scheduled vegetation re-establishment shall be undertaken in accordance with PSZC 4 of the Particular Specification for Environmental Management of Construction Projects".

PSDA 6 TOLERANCES

PSDA 6.1 DEGREE OF ACCURACY.

Replace the words ' Degree of Accuracy III ' with ' Degree of Accuracy II '

PSDA 6.2 PERMISSIBLE DEVIATIONS

Add the following permissible deviations for work to Degree of Accuracy II :

6.2(a)	1		± 300mm
	2		± 100mm
	3		± 50mm
	4	From direction of slope	Nil
		Between 1/100 and 1/300	10%
		1/400 and flatter	5%
6.2(b)	1		± 35mm
	2		± 50mm
	3		± 50mm
	4		± 15mm
6.2(c)	1	Read "-2%+1%" in place of "±2%	

PSDA 6.3 EXCAVATION BY MECHANICAL MEANS

Add to the Sub-Clause :

Where bulk excavation is carried out by earthmoving equipment, such excavation will only be allowed to within a level of 300mm, or less as ordered by the Engineer, above the general level to which the ground has to be reduced, the balance of the bulk excavation being carried out by hand or by other means approved by the Engineer.

PSDA 7 TESTING

PSDA 7.1 TAKING AND TESTING OF SAMPLES

Add to the Sub-Clause:

The Contractor shall make arrangements with a soils testing laboratory to undertake the following tests and to pass the test results to the Engineer. The costs of such tests shall be included in the rates

tendered for the appropriate item in the Bill of Quantities.

a) Material imported from outside the Contract Site as working surfaces, sub-grade improvement or for fill material

One CBR and indicator test per 200m³ of compacted material brought on site. (river sand will normally be exempted from this requirement). A sample and one CBR and indictor test of the material proposed for importation shall be submitted to the Engineer for approval prior to the commencement of importation.

b) Fill Material in Place

One density and moisture content per 100m³ of compacted fill

c) Compacted Sub-Grade or Finished Level

One density and moisture content per 200m² of compacted surface area.

Should any of the above density tests fail to comply with the specified requirements, the Contractor shall at his own expense remedy the failure and submit a new test to the Engineer.

PSDA 8 MEASUREMENT AND PAYMENT

Throughout this clause delete “Drawing DA-2” wherever it appears and substitute “Fig DA-2”

PSDA 8.1.1 Basic Principles

Delete the third line of the first sentence and substitute :

“material in backfilling, forming embankments, etc., including any necessary additional offloading, stock-piling and reloading and the cost of disposal of any”

PSDA 8.1.3 Basic Principles

Delete the third line and substitute :

“will be measured as part of the bulk excavation or restricted excavation, as applicable”.

PSDA 8.3.1(a) Excavation

Delete and replace with:

<u>Remove topsoil to nominal depth of 200mm stockpile and maintain</u>……Unit : m²

The rate shall cover the cost of removing topsoil to a nominal depth of 200mm, stockpiling, and preventing dust and noise nuisance.

PSDA 8.3.2 Restricted Excavation

b) <u>Extra-over for</u>

Add to the Sub-Clause

(3) boulder excavation Class A Unit m³

(4) boulder excavation Class B Unit m³

Delete the last two lines and substitute :

(a) above for any portion of the excavated material that is classified as intermediate, hard rock, boulder Class A or boulder Class B as applicable.

PSDA 8.3.9 Additional Compaction (New Sub-Clause)

Where so scheduled additional compaction over that required to achieve 90% Mod AASHTO density in order to achieve the scheduled higher density shall be paid for by the volume so compacted
…….Unit m³

The rate shall include for all additional plant, labour and materials necessary to achieve the additional compaction scheduled.

PSDA 8.3.10 Survey of Surrounding Structures before Blasting (New Sub-Clause)
……..……..Sum

The rate shall cover the cost to examine and measure up any buildings, houses or structures in the vicinity of the proposed blasting and establish and record together with the owners thereof the extent of cracking or damage that may exist before commencement of blasting operations. The rate shall cover the cost of providing a photographic record of neighbouring structures before blasting commences.

PSDA 8.3.11 Protection of Structures / Buildings (New Sub-Clause) ……..Sum

The rates shall cover the cost of examining and measuring up any buildings, houses or structures that encroach within the pipeline servitude and establishing and recording, together with the owners thereof. The general condition and/or damage that may exist before commencement of blasting operations, including the cost of providing a photographic record, the costs of reduced working width, and the costs of any special working methods required to protect the structure throughout the course of the nearby construction work. This shall include, where required, but is not necessarily limited to, the use of shoring or lateral trench support and the placing of barriers to demarcate restricted working area in the vicinity of the structure.

PSDB: Earthworks (Pipe Trenches)
(Applicable to SABS 1200 DB – 1989)

PSDB 3 MATERIALS

PSDB 3.1 CLASSES OF EXCAVATION

Replace the whole Sub-Clause with: -

The following table and definitions define Classes of Excavation

SOIL AND ROCK CLASSIFICATION

Description of Hardness				Unconfined Compression Strength (MPa)
Category	**Class**	**Description**	**Field Indicator Tests**	
A	R0	Decomposed rock (soil)	Material crumbles between fingers. Easily removed by pick and shovel	< 1
	R1	Very soft rock	Material crumbles under firm (moderate) blows with the sharp end of geological pick and can be peeled off with a knife; it is too hard to cut a triaxial sample by hand. SPT refusal	1 to 3
B	R2	Soft rock	Can just be scraped and peeled with a knife; firm blows of the pick point leave indentations 2mm to 4mm in specimens	3 to 10
	R3	Medium hard rock	Cannot be scraped or peeled with a knife; hand-held specimen can be broken with the hammer end of a geological pick with a single firm blow	10 to 25
C	R4	Hard rock	Point load tests shall be conducted for distinguishing between these categories. These results may be verified by means of uniaxial compressive-strength tests	25 to 70
	R5	Very hard rock		70 to 200
	R6	Extremely hard rock		> 200

Classification after Core Logging Committee, South African Section, Association of Engineering Geologists: 'A Guide to Core Logging for Rock Engineering' Bulletin of the Association of Engineering Geologists, Vol XV, No 3, 1978

2. In Table 1 categories A, B and C can be equated to the following regarding definitions

Category A (R0 and R1)	Soft excavation
Category B (R2 and R3)	Intermediate excavation
Category C (R4, R5 and R6)	Hard Rock excavation

As a refinement Category C R4 can be defined as boulder excavation, where boulders shall mean any rock mass with a hardness of at least R3 which will pass through a square opening with dimensions equal to 1 000 x 1 000mm but will not pass through a 200 x 200 mm opening.

To further assist with classification of materials the Contractor is requested to fill in the Returnable schedule T.2.2.17 Excavation progress rates.

In pricing the Bill of Quantities the Contractor must take into account soil/rock classifications and the progress rates he has entered into the Returnable schedule.

In the Bill of Quantities the Contractor is given the opportunity to classify the soil/rock to be excavated in terms of Table 1 and to apply his rates according to his experience and know-how.

New Sub-Clause

PSDB-3.1.1 Soft (Class A1) material suitable for hand excavation

With reference to SANS 1921 - 5: (Earthworks activities which are to be performed by hand).

Classes of excavation

Where labour-intensive methods applicable to targeted labour are specified, soft excavations shall be further defined as follows:

"Soft (Class A1) material suitable for hand excavation

Soft excavation for labour-intensive work where excavations are to be carried out by hand methods, shall be excavation in material that can be efficiently removed and loaded with picks, shovels and other hand tools by an average able-bodied person or group of persons. Soft excavation shall include small boulders that can be removed by hand methods.

Soft excavation can be further broken down by introduction of an additional class such as "Soft Excavation Class A1", which is excavation defined as soft, but which can only be excavated with difficulty.

The criteria for classifying Soft Excavation Class A1 shall be as follows:

Granular Material

Dense material with high resistance to penetration by the point of a geological pick; several blows are required for removal of material; 7 to 15 blows of the dynamic cone penetrometer are required to penetrate 100 mm; and

Cohesive Materials

Stiff to very stiff material requiring 6 to 8 blows of the dynamic cone penetrometer to penetrate 100 mm, where:

"stiff" material can be indented by thumbnail; slight indentation produced by pushing a geological pick point into the soil; cannot be moulded by fingers; and where:

"very stiff" material can be indented by thumbnail with difficulty; slight penetration of point produced by blow of geological pick.

Where soft excavation class A1 material is encountered, it shall be measured and paid for as an extra over soft excavation".

PSDB 3.3 Selected Granular Material
(for bedding material (padding) for steel pipes see PSLB 3.1)

PSDB 3.5 BACKFILL MATERIAL

..... (a)..... In the third line delete "150mm" and substitute "100mm".

....(b)..... In the second line delete "P.I not exceeding 12" and substitute "P.I not exceeding 6".

PSDB 3.5(c) STABILIZED BACKFILL (NEW SUB-CLAUSE)

Add new Sub-Clause:

Where shown on the drawings or as directed by the Engineer, backfill shall be stabilised with 8% cement by mass. The backfill material shall have a plasticity index not exceeding 10 and all material must pass through a sieve of aperture size not exceeding that specified in SANS 1200LB, Sub-Clause 3.2, as amended.

The dry materials shall first be mixed in a concrete mixer after which sufficient water is to be added to produce the stiffest consistency available for placing and compacting with vibrators.

PSDB 3.6 MATERIALS FOR REINSTATEMENT OF ROADS AND PAVED AREAS

Delete the Sub-Clause and substitute:

Material used in the reinstatement of roadways shall fall into the following relevant categories:

(a) Foundation material recovered from the excavation of trenches across existing roadways which, if so instructed by the Engineer, shall be set aside and re-used as sub-base material.

(b) New material which shall conform to the requirements of:

(i) Clause 3.2.1 of SANS 1200ME for the Sub-base
(ii) Clauses 3.2 and 3.3 of SANS 1200MF for the Base course
(iii) Clause 3.2.2 of SANS 1200ME for the Gravel Wearing Course
(iv) Clause 3 of SANS 1200MH for the asphalt surfacing

PSDB 3.7 SELECTION

Delete the second sentence and substitute the following:

The Contractor is not required to use selective methods of excavating but shall, if so instructed by the Engineer, screen or otherwise treat excavated material in order to produce material suitable for the bedding cradle or the bedding blanket.

PSDB 4 PLANT

PSDB 4.1 EXCAVATION EQUIPMENT

In the first line delete “The Contractor” and substitute: “In sections deemed to be excavated by mechanical means, the Contractor”

Add to the Sub-Clause:

Should any portion of a pipe trench exceed the specified depth, the Contractor will be held responsible for any additional costs which may arise as a result of such over-excavation. Concrete filling or imported compacted fill may be ordered by the Engineer to make good any over-excavation.

PSDB 5 CONSTRUCTION

Add new Sub-Clause:

PSDB 5.1.2.2 Special Water Hazards

Add to the Sub-Clause:

The Engineer may direct the Contractor to implement subsoil drainage measures at certain sections of the pipe trench where ground water seepage is considered significant. Such drainage measures shall consist of a free draining granular material placed underneath or alongside the pipe, or in separate drainage trenches.

PSDB 5.1.2.3 Sloping Ground

Delete the Sub-Clause and substitute :

The Contractor shall be responsible throughout the duration of the Contract, inclusive of the Defects Liability Period, for the provision of all soil erosion preventative measures necessary to protect the trenches, pipeline(s) and land utilized by the Contractor during the Contract from any adverse effects of soil erosion, settlement, scour, etc., resulting from the construction of the Works.

Cross embankments, generally extending across the full width of the working strip, consisting of low

earth mounds shaped to rounded form and so oriented as to have a fall of 1% along their length, shall be constructed with compacted material having a minimum density of 90% modified AASHTO density and minimum dimensions and maximum spacings dependent on the slope of the ground along the length of the pipeline, as indicated in the following table:

Slope of Ground	Minimum Height	Minimum Base Width	Maximum Spacing
0% - 5%	No cross-embankments required		
5% - 10%	300 mm	1,2 m	40 m
10% - 15%	375 mm	1,5 m	30 m
Greater than 15%	450 mm	1,7 m	20 m

The height of the cross-embankments for a distance of 1 metre on either side of the trench centreline shall be raised 150mm above the remainder of the cross-embankment to allow for settlement. In order to form a satisfactory drainage channel upstream of each cross-embankment (at a slope of 1%) the crown over the backfilled trench shall be removed for a distance of 0,5m upstream of the cross-embankment.

Cross-embankments shall be constructed to the same minimum standards and dimensions indicated above wherever artificial slopes have been formed on the working strip or other areas used during construction and, with the approval of the Engineer, are permitted to be so left.

Payment will be made for the construction of cross-embankments in accordance with Sub-Clause 8.3.4(c), provided construction thereof has been either ordered or approved by the Engineer prior to the commencement of such construction.

PSDB 5.1.2.5 <u>Concrete Anchor Blocks where gradient equals or exceeds 25%</u>

Add New Sub-Clause

Where the grade of the pipe equals or exceeds 25% the Contractor shall provide concrete anchor blocks with reference to drawing number 46083, Payment shall be effected by clause 8.2.11 of SABS 1200 L

PSDB-5.1.5 <u>Stability of Trench Excavations</u>

Add New Sub-Clause

The precautions for excavations as specified in Clause 5.1.1 of Section 1200D, 1200DA, and the relevant clauses in PSD and PSDA, shall also apply to all trench excavations.

The Contractor shall take all the steps necessary to ensure that no person is required or allowed to work in a trench or any other unsupported overhanging excavation which is more than 1,5m deep, and any excavation which has not been adequately supported, shored or braced if there is any danger whatsoever of the sides of the excavation collapsing. The support, shoring or bracing to be designed and constructed by the Contractor, shall be strong and sturdy enough to support the sides of the excavation in question.

PSDB 5.2 MINIMUM BASE WIDTHS

In the 5th line, delete the word "<u>External</u>" and replace with "<u>Nominal</u>."

Add to the Sub-Clause:

Trench sides shall be as near vertical as possible in order to minimise the quantity of backfill material required and to avoid possible difficulties where pipelines have to be installed parallel to existing services, fences, hedges, etc and to minimise the loading on the pipe.

The base width for trenches for cables, ducts and unbedded flexible continuous piping, of external diameter less than 125mm laid at a depth not exceeding 1,5m, shall be equal to the external diameter

of the cable, duct or pipe, plus a side allowance of 200mm on either side.

PSDB 5.4 EXCAVATION

Add to the Sub-Clause:

Where the pipe trench crosses surfaced roads the Contractor shall neatly cut two parallel grooves into and through the "black top" before excavating between the grooves. The grooves are to be set back at least 200mm from the edge of the excavation face to prevent ravelling of the cut edge. The cost of this operation, where not scheduled separately, will be held to be covered in the general rates for excavation.

PSDB 5.4.1 Open Trench Limits (New Sub-Clause)

Add new Sub-Clause:

The maximum allowable length of open trench with no pipe laid shall not exceed 100m on any single construction front.

The total length of open trench on all construction fronts shall not exceed 500 metres (without the approval of the Engineer)

PSDB 5.5 TRENCH BOTTOM (MOVED TO PART PSLB 5.3(A))

PSDB 5.5.1 Jointing Holes (New Sub-Clause)

Jointing holes shall be cut of sufficient length and depth to allow for the proper making or bolting of pipe joints and to ensure that joint collars or sleeves do not rest on the trench bottoms. After the pipework has been inspected, tested and approved by the Engineer, the jointing holes shall be refilled with selected soft material free from stone (padding materials as specified under PSLB in the case of coated steel pipes) and then rammed to provide a continuous uniform support for the pipework. No specific payment will be made for forming and refilling holes, the cost of which is deemed to be included in the tendered rates.

PSDB 5.6 BACKFILLING

PSDB 5.6.1 General

Add to the Sub-Clause:

Notwithstanding the requirements of Sub-Clauses 5.6.1 and 5.6.6, no pipe joint or pipe fitting shall be covered by either blanket or backfill material prior to the successful completion of the visual inspection and pressure testing of the relevant section of the pipeline.

All backfilling shall be carried out by hand and the Contractor must price his tender accordingly. No mechanical plant shall be used in backfilling without prior written consent of the Engineer.

PSDB 5.6.2 Material for Backfilling

Delete second paragraph and substitute the following:

Hard rock material shall not be used for, or incorporated into, the backfill above the bedding layers without the Engineer's approval.

Add to the Sub-Clause:

The final 100mm of the trench shall be backfilled with topsoil which was previously stockpiled (in accordance with the Environmental Specification). Care must be taken to ensure that the trench is slightly overfilled so that it does not become a rivulet in wet weather.

PSDB 5.6.3 Disposal of Soft Excavation Material

Delete the Sub-Clause and add the following:

Refer to UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATION FOR ENVIRONMENTAL

MANAGEMENT OF CONSTRUCTION PROJECTS, Clause PSZB 6.2 EXCAVATION AND BACKFILLING

PSDB 5.6.4 Disposal of Intermediate and Hard Rock Material

Delete the Sub-Clause and add the following:

Refer to UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATION FOR ENVIRONMENTAL
MANAGEMENT OF CONSTRUCTION PROJECTS, Clause PSZB 6.2 EXCAVATION AND BACKFILLING

PSDB 5.6.8 Transport for Earthworks for Trenches

Delete the Sub-Clause and substitute:

The requirements of Sub-Clause 5.2.6 of SANS 1200DA as applicable shall apply.

PSDB 5.7 COMPACTION

PSDB 5.7.1 Areas not Subject to Traffic Loads

Add to the Sub-Clause: refer to PSLB 5.1.4.

PSDB 5.7.2 Areas Subject to Traffic Loads

Add to the end of the sentence:

…for a distance extending 2m on each side of the carriage-way at each crossing.

PSDB 5.9 REINSTATEMENT OF SURFACES

PSDB 5.9.4 Bitumen Roads, Sub-Base and Base

Add to the Sub-Clause:

The rates shall include for the costs of reinstating all surfaces and inclusive of all layers to their original condition before the commencement of construction.

PSDB 5.9.5 Bitumen Roads: Surfacing

PSDB 5.9.5.1 General

Add to the Sub-Clause:

The rates shall cover the costs of reinstating all surfaces, kerbing and drainage channels to their original condition before the commencement of construction.

PSDB 5.11 TRENCH WALL STABILITY (NEW SUB-CLAUSE)

Add new Sub-Clause:

Notwithstanding the requirements of PSDB 5.4.1, the Contractor shall take responsibility for the length of trench open at any time and if collapse of the side walls occurs for any reason, the responsibility will be the Contractor's and he will reinstate and make good at his own cost.

Attention is drawn to the requirements of Sub-Clause PSD 5.1.1.2.

PSDB 8 MEASUREMENT AND PAYMENT

PSDB 8.1.4 Basic Principles

Add to Sub-Clause:

No additional payment will be made for excavating and backfilling bell (fox) holes as the cost of that work will be deemed to be included in the rates for trenching.

PSDB 8.3.1(c) Remove topsoil to a minimum depth of 200mm ……Unit : m²

PSDB 8.3.2 Excavation

b) Extra-over item (a) :

Add at the end the following sub-items:-

(3) Hand excavation and backfill where ordered by the Engineer .....Unit: m³

(4) Backfill stabilized with 8 % cement where directed by the Engineer .....Unit: m³

(5) Boulder excavation Class A ..……Unit: m³

(6) Boulder excavation Class B ..... Unit: m³

The rates for (4) above shall include full compensation for selecting, mixing, backfilling and compacting of the stabilized material to 90% of modified AASHTO density.

Measurement of Extra Over for (5) and (6) above will not apply to any length of trench in soft material more than 2m long. Surplus boulder material from trench excavation shall where applicable, be disposed of as per

UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATION FOR ENVIRONMENTAL
MANAGEMENT OF CONSTRUCTION PROJECTS, Clause PSZB 6.2 EXCAVATION AND BACKFILLING

PSDB 8.3.4(c) Cross Embankments, cross walls and concrete anchor blocks (Refer to Clause PSDB 5.1.2.3, PSDB 5.1.2.4 and PSDB 5.1.2.5 above)

Add new Sub-Clause:

Payment for cross embankments will be by volume of embankment constructed in accordance with the specification……Unit: m³

Payment for cross walls will be by volume including containing material……. …..…. Unit : m³

Payment for concrete anchor blocks, shall include shuttering and material, and measurement will be by volume of concrete ……..…… Unit: m³

PSDB 8.3.5 Existing Services that Intersect or Adjoin a Pipe Trench

b) <u>Services that adjoin a trench</u>

Add to the end of the Sub-Clause:

(v) all work involved in locating the service by hand excavation

(vi) notifying and attending upon the proprietor of the service

(vii) supporting and protecting the service while the pipeline is installed, inspected, tested and backfilled.

PSDK: Gabion and Pitching
(Applicable to SABS 1200 DK – 1996)

PSDK 3 MATERIALS

PSDK 3.1.1.1 Quality

Add to the Sub-Clause:

The stone shall be subjected to the weathering test.

The stone shall be subjected to the durability test.

PSDK 3.1.2 Gabion Cages

Add to the Sub-Clause

The wire used for the fabrication of wire mesh cages and for lacing and bracing oparations shall be plain zinc-coated mild steel wire. No PVC coating will be acceptable.

The gabion baskets shall be as follows:

Gabion boxes shall be constructed of double twisted, hexagonal wire mesh gabion of normal 80mm mesh, with minimum 3.4mm diameter frame wire and minimum 2.7mm diameter mesh wire. For lengths 2m and greater partitions shall be placed at 1m centre. All wire is to be mild steel in accordance with Clause 4.2.1 of SANS 1580-2005.

The revet (reno) mattresses shall be as follows:

The revet mattresses shall be constructed of double twisted, hexagonal wire mesh gabion of normal 60mm mesh, with minimum 2.5mm diameter frame wire and minimum 2.7mm diameter mesh wire. For lengths 2.2m and greater partitions shall be placed at 2m centre. All wire is to be mild steel in accordance with Clause 4.2.1 of SANS 1580-2005.

PSDK 3.1.3 Geotextile

Add to the Sub-Clause

Unless otherwise stated in the Project Specification the Geotextile filter blanket shall consist of “non-woven ” needle-punched polyester fabric having a mass of between 150 and 250g/m², pore size of between 160 and 210 micron as defined by the franzius institute.

PSDK 3.2.1 Stone

In Table 2, Column 2, for extra heavy, replace 300 with 500

PSDK 5 CONSTRUCTION

PSDK 5.1.3 Size of cages

New Sub-Clause

The size of cages for gabions shall be a maximum of 3 000 x 1 000 x 1 000mm and shall be divided into cells having a volume not greater than one cubic metre. The size of cage for mattresses shall be a maximum of 2 000 x 1 000 x 300mm and shall be divided into cells having a volume not greater than 0.3m³.

PSDK 5.1.4 Diaphragms

New Sub-Clause

Each diaphragm shall be connected in the same manner to the sides and top panels in addition to the bottom panel.

PSDK 5.2.3 Assembly

Add to the Sub-Clause

All gabion and mattresses cages shall be connected to adjacent gabion and/or mattress cages by lacing the adjacent selvedge's together with 2.2mm diameter galvanized steel wire in accordance with Sub-Clause 4.3.2 of SANS 1580, the same wire to be used for lacing.

PSDK 5.2.4 Rock Filling

Add the following

Particular care shall be taken in filling gabions and mattresses so as to ensure that the voids in the rock fill are reduced to the minimum which can be reasonably achieved. In order to minimise the voids in the rock filling, the filling shall proceed in layers not exceeding 300mm deep and each layer shall be rodded and barred so as to compact the rock fill before filling of the next layer commences. Where appropriate, hand packing of selected rock particles shall be carried out.

PSDK 5.2.4.2 Mattresses Used in Revetments and Aprons

Add to the Sub-Clause

Where gabion and mattresses are placed in exposed positions the rock particles forming the exposed faces shall be specially selected so as to present a fair and even surface.

PSDK 5.3.4 Wired Pitching

Add to the Sub-Clause

The areas in which wired or grouted wire pitching is to be used will be indicated on site by the Engineer.

PSDK 8 MEASUREMENT AND PAYMENT

PSDK 8.2.3 Extra Over 8.2.2 for Packing Stone for Exposed Face

Add to the Sub-Clause

The method of selecting and packing stone for exposed faces as schedule shall be specified in Sub-Clause 5.2.7 – Special Finish

PSG: Concrete (Structural)
(Applicable to SABS 1200 G – 1982)

PSG 2 DEFINITIONS

PSG 2.3 a) General

Adverse weather

Delete the figure **"**25°C" and replace with **"32**°C"

PSG 2.3 d) <u>Concrete finishes:-</u>
Add new Sub-Clause

Generally, the concrete is to be finished to the tolerances stated in Clause 6.2.3 for the relevant degree of accuracy.

For **"WATER RETAINING STRUCTURES"** the finishes are to as listed below: -

(I) FORMED SURFACES: CLASSES OF FINISH

a) Class F1 Surface Finish

After repair work has been done to surface defects, no further treatment of the as-stripped finish will be required. This finish is required on concealed formed surfaces

b) Class F2 Surface Finish

This finish shall be equivalent to that obtained from the use of square-edged timber panels and boards wrought to the correct thickness, or shutter boards or steel forms arranged in a regular pattern. This finish is intended to be left as struck. Although minor surface blemishes and slight discolourations will be permitted, large blemishes and severe stains and discolouration shall be repaired where so directed by the Engineer.

c) Class F3 Surface Finish

This finish shall be that obtained by first producing a Class F2 surface finish with joint marks which form an approved regular pattern to fit in with the appearance of the structure. All projections shall then be removed, irregularities repaired and the surface rubbed or treated to form a smooth finish of uniform texture, appearance and colour.

(II) UNFORMED SURFACES: CLASSES OF FINISH

a) Class U1 Surface Finish (rough)

The top surface shall be screeded off with a template to the required cross-section and tamped with a tamping board to compact the surface thoroughly and to bring mortar to the surface, so as to leave the surface slightly rough but generally at the required elevation.

b) Class U2 Surface Finish (floated)

The surface shall first be given a Class U1 surface finish and after the concrete has hardened sufficiently, it shall be wood-floated to a uniform surface free from trowel marks. For non-skid surfaces such as on those exposed to pedestrian traffic, the surface shall then be given a broom finish. The corrugations so produced shall be approximately 1mm deep, uniform of appearance and width and shall be perpendicular to the centre line of the pavement.

c) Class U3 Surface Finish (smoothly finished)

The surface shall first be given a Class U1 surface finish, and after the concrete has hardened sufficiently, it shall be floated with a steel float to a smooth surface to within 5mm of the position shown on the drawings, and to within 2mm of the required level.

PSG 3 MATERIALS

PSG 3.2 CEMENT

PSG 3.2.1 Applicable specifications

Delete the sub-clause and replace with the following:

SANS 50197-1 and -2: Common cements, and SANS 50413-1 and -2: Masonry cement.

These specifications will be applicable to this contract and the descriptions and types of cements, where specified, will be based on the designations as defined in these specifications.

No Ordinary Portland Cement having an equivalent sodium monoxide content (calculated as Na_20 + 0.658 K_20) exceeding 0.60 percent by mass of the cement may be used in any reinforced concrete other than in combination with an approved coarse aggregate, which has been shown by testing to be non-reactive in respect of potential alkali-aggregate reaction.

All cement and cement extenders used on the project shall comply with SANS EN 197-1 and SANS 1491 respectively.

Unless agreed to otherwise by the Engineer, the cement used on the works shall be either Type Cem I, Type Cem II/A-S or Cem II/B-S (all of minimum strength Class 32,5) – refer table 1 of SANS 50197-1.

All cement of a particular type shall be supplied from the same source for the duration of the Contract.

PSG 3.2.2 Alternative Types of Cement

Add to the Sub-Clause:

Pulverised Fly Ash (PFA) used on the works shall be from an approved source and shall comply with the requirements of SANS 1491 part II

PSG 3.2.3 Storage of Cement

Add to the Sub-Clause:

Cement shall not be kept in storage for longer than 8 weeks without the Engineer's permission. Cement, if not delivered in bulk for storage in an approved silo, must be stored in a separate room with a raised floor constructed of heavy planks supported on bricks, or similar. This room must be completely damp-proof and well ventilated. Cement must be used in the order that it is delivered. Any bags of cement that show any degree of hydration or setting shall be removed from the site and replaced at the Contractor's expense.

PSG 3.3 WATER

Add to the Sub-Clause:

If potable water is not used in the concrete, samples of the water that it is proposed to use for the concrete shall be submitted to the Engineer for his approval in terms of

Clause 3.1.

PSG 3.4 AGGREGATES

PSG 3.4.2 Use of Plumbs

PSG 3.4.2 g) *Add New Sub-Clause:*

The use of plumbs will not be permitted in any of the strength concrete specified on the Works.

PSG 3.4.4 Aggregate quality

Add New Sub-Clause:

Fine and coarse aggregates must comply fully with the requirements of SANS 1083.

Records of grading analysis tests on all the aggregate shall be kept.

Fine aggregate must be clean, naturally occurring, siliceous sand or approved crushed rock. The broken shell content determined in accordance with SANS Method 5840 must not exceed 30 percent by mass. In addition, for water retaining structures the following shall apply: fine aggregate grading is to comply with the table below. It may be necessary to blend two sands in order to meet the grading envelope. The maximum variance of the fineness modulus (FM) of the fine aggregate shall not exceed 0.2. Revision to the submitted mix design must be carried out where this becomes unavoidable.

SIEVE SIZE (MM)	% PASSING
4,75	100 – 90
2,36	100 – 75
1,18	96 – 60
0,60	60 – 40
0,30	40 – 20
0,15	20 – 10
0,075	6 – 3 (6 – 15)*

***** If crusher sand

The coarse aggregate shall all be retained on a screen with 4,75mm nominal aperture size with the exception of dust content, which shall not exceed 0,5 percent by mass. Flakiness indices determined in accordance with SANS Method 5847 must not exceed 30 percent in the case of 26,5mm aggregate size and 25 percent in the cast of 19,0mm aggregate size respectively.

PSG 3.5 ADMIXTURES

PSG 3.5.1 Approval of Admixtures Required

Add to the Sub-Clause:

Admixtures may be used in concrete mixes provided their use has been approved by the Engineer. To facilitate approval, the Contractor shall provide the following information: -

- The trade name of the admixture, its source and the manufacturer's recommended method of use

- Typical dosage rates and possible detrimental affects of under-dosage and over-dosage.
- Whether compounds (such as those containing chloride in any form as an active ingredient) likely to cause corrosion of the reinforcement or deterioration of the concrete are present and, if so, the chloride content (expressed as chloride ions or as equivalent anhydrous calcium chloride) by mass of admixture.
- The method and accuracy of dispensing the admixture.
- Generally, admixtures that improve workability and water retention shall comply with AASHTO M194 “Chemical Admixtures for concrete”

PSG 4 PLANT

PSG 4.2 BATCHING PLANT

Add to the Sub-Clause:

Reports on the calibration of weight batching plant, clearly stating the date of the test, shall be submitted to the engineer.

In addition, when concrete is being mixed for **water retaining structures** the following shall apply:

The batching of concrete shall be done by weigh batching only, volume batching will not be permitted.

The Contractor shall ensure, by regular examination, calibration and tests, that the batching system functions efficiently and accurately and that hoppers and cement containers are kept dry and clean. Proof of examination and calibration, clearing stating date of test shall be submitted to the Engineer.

No mixed concrete shall be deposited directly onto the ground prior to placing. A board or other suitable platform is to be provided onto which the mixed concrete can be deposited whilst it awaits placing.

Excess concrete from mixing shall be deposited in a designated area awaiting removal to an approved landfill site, or for use in the reservoir embankment.

The Contractor will contain wash water from cement mixing operations, by directing the water into a sump for collection. The material contained in the sump will be removed to an appropriate landfill site, or included in the reservoir embankment.

PSG 4.5 FORMWORK

PSG 4.5.1 Design

Add to the Sub-Clause:

The Contractor shall submit detailed proposals for the formwork and support work to the Engineer at the beginning of thr contract. The formwork shall be designed to limit deflection to a value not exceeding 1/360th of the span between supports.

PSG 4.5.3 Ties

Add to the Sub-Clause:

The spacing and method of fixing shutters and filling of voids shall be subject to the approval of the Engineer.

For water-retaining structures: -

(a) If sacrificial metal ties are used, they are to be drilled out so as not to extend beyond 60mm of concrete surface on the wet side of the wall and 50mm on the outside.

(b) If plastic sheaths are used to permit removal of the metal ties, the sheaths are to be removed and the holes are to be completely removed by using an oversized drill bit to ream out the holes.

(c) the surface of the hole is to be primed by wetting with a cement/SBR latex slurry and the hole filled by caulking with a cementitous mortar consisting of 1 part cement to 2 parts concrete sand by volume, well mixed with sufficient clean water to obtain the required consistency. The grout is to be well rodded into the hole to completely fill same and provide a dense void free plug. The surface is to be towelled to finish flush with the surrounding area.

PSG 5 CONSTRUCTION

PSG 5.1 REINFORCEMENT

PSG 5.1.2 Fixing

Delete from the eighth and ninth lines the following:

"or, if permitted by the Engineer, by welding".

PSG 5.1.3 Cover

Add to the Sub-Clause:

Binding wire used for fixing reinforcement must be tightly bound around the nodes at bar intersection with cut ends bent inwards. A nominal reduction of the minimum specified cover by 3mm will be allowed for binding wire. The reinforcing tie wire used for the cover blocks is to be hot dipped galvanized. Great care is to be taken over the manufacturing of these blocks and the Contractor must ensure that when the blocks are made that the tie wires are not pushed too deep into the blocks. A minimum of 30mm cover must be maintained between the reinforcing tie wire and the end of the block.

The Contractor shall use only high quality cement mortar cover blocks to maintain the specified cover to reinforcement. The concrete cover blocks shall be made with mortar having the same characteristic 28 day strength as that which is specified for the structural concrete elements. The blocks shall not be less than 80mm x 80mm and the same thickness as the required cover.

Cover blocks shall not be less than 7 days old at time of installation and shall have been cured by full immersion in water for a period of not less than 3 days.

For water-retaining structures the minimum cover shall be 60mm on the wet surface; and 50mm on the outside surface.

For chambers minimum cover is to be 40mm

PSG 5.2 FORMWORK

PSG 5.2.1 Classification of Finishes

Add to the Sub-Clause:

Generally all surfaces of minor structures (such as valve chambers) are to be smooth, and only those surfaces which will be covered under permanent backfill may be cast using rough shutters.

The making good of imperfections defined for smooth surface finish formwork must

include filling blowholes with any dimension exceeding 10mm.

Full payment for formwork will only be made when concrete has been finished to the standard specified.

PSG 5.2.1 c.) ...Special

Add to the Sub-Clause:

For **water-works** and other **water-retaining structures** the following classes of finish shall apply :-

CLASS	COMMENT	USE IN WORKS
F1	Formwork to be constructed to prevent liquid leakage. Minimum standard of finish for water retaining structures. (degree of accuracy III)	Surfaces below ground not exposed to view and other surfaces indicated on the drawings.
F2	This is a good quality finish of uniform texture and colour. 'Groutex' or other similar approved sealer to be fitted between formwork panels. (degree of accuracy II)	All visible surfaces not directly in contact with water
F3	This is a high quality, smooth finish of uniform texture and colour. Unless specified to the contrary, steel forms may be used to form surfaces with a Class F3 surface finish. (degree of accuracy I)	All surfaces in contact with water; all surfaces exposed to view and other surfaces indicated on the drawings or as directed by the Project Manager.

PSG 5.2.2 Preparation of Formwork

Add to the Sub-Clause:

The Contractor is required to provide a method statement together with hand sketches for the proposed formwork and concrete pours for the Reservoirs/Chambers.

All formwork must be treated with a release agent which is compatible with the concrete surface finish specified. Details of the proposed release agent shall be submitted to the Engineer for his approval, prior to its use on site. Great care is to be taken not to get any shutter release oil or any other contamination on any of the reinforcing.

All exposed external corners shall have 20mm x 20mm chamfers.

PSG 5.2.5 Removal of Formwork

PSG 5.2.5.2 Permissible Time for Removal of Formwork

Delete the first two lines and substitute the following:

For this purpose and except as allowed in SANS 1200G 5.2.5.3, the formwork shall remain in place, after all the concrete has been placed in the relevant lift, for the appropriate minimum period of time given in Table 2

Amend Table 2 as following:-

In columns 2, 3 and 4 after the word "Portland cement and portland cement 15" add "and Type Cem I, Type Cem II/A-S and Type Cem II/B-S"

PSG 5.3 HOLES, CHASES AND FIXING BLOCKS

Add to the Sub-Clause:

Fixing blocks for the attachment of fixtures may be embedded in concrete provided that the strength or any other desirable feature (such as appearance) is not in the opinion of the Engineer, thereby impaired.

PSG 5.5 CONCRETE

PSG 5.5.1 Quality

PSG 5.5.1.1 General

Add to the Sub-Clause the following: -

Unless specifically stated in the Project Specification Prescribed Mix Concrete will not be used

PSG 5.5.1.2 Consistency

Add to the Sub-Clause the following: -

Slump limits specified in Table 3 shall apply except for slabs where the maximum slump must not exceed 60mm

PSG 5.5.1.5 Durability

Add to the Sub-Clause:

The exposure conditions at the site of the Works are to be considered as being severe.

PSG 5.5.1.6 Prescribed Mix Concrete

Delete the Sub-Clause and substitute the following:

Unless the Design mix is detailed on the drawings or in the Specification, all concrete shall be Strength concrete.

PSG 5.5.1.7 Strength Concrete

Add to the sub-clause:

Unless otherwise agreed to by the Engineer, the concrete mix is to be designed by an approved laboratory. At least four weeks before placing any concrete on the Works, the Contractor shall supply and deliver to the approved laboratory, at his own cost, samples of the aggregates he proposes to use in the concrete mix. While the proportion of cement to the combined quantity of sand and stone will remain constant for each grade of concrete, as set out above, the relative proportions of sand and stone may be adjusted to achieve the required strength. The laboratory will be bound by the requirements of this Specification which are to guide the Contractor in pricing the grade of strength concrete. The Contractor is to allow in his rate for strength concrete an amount to cover the fees and charges levied by the approved laboratory in designing the strength concrete mix.

PSG 5.5.1.8 No-Fines Concrete

Add new Sub-Clause:

No-Fines concrete shall be composed of cement and course aggregate only, the fine aggregate being omitted from the mix.

The stone shall comply with the grading requirements of 19mm single-sized crushed stone to table 7 of SANS 1083.

Only sufficient water shall be added to the mix to produce a smooth grout to completely cover each and every particle of aggregate.

Portions may be varied on site with the approval of the Engineer to obtain a more satisfactory result. The upper surface of the no-fines is to be finished off with a wood float to provide a smooth working surface while adding just sufficient dry mix mortar (1 to 8) to close the upper surface of voids in order to prevent the ingress of foreign matter into the interstices.

No-Fines concrete shall be placed within 20 minutes of having been mixed and shall be rodded and hand tamped into position. The use of vibrators will not be permitted.

No traffic shall be permitted to traverse the surface of the no-fines concrete during the three days after placing and then only over planks or boards placed for that purpose.

PSG 5.5.3 Mixing

PSG 5.5.3.1 Mixing at Construction Site

Add to the Sub-Clause:

i) Site batching shall be by mass using an approved type of weigh-batching plant.

PSG 5.5.3.2 Ready-Mixed Concrete

Delete the first sentence and substitute the following:

Concrete produced at a central concrete production facility other than at the site of the Works shall only be accepted for use in the Works with the prior and express approval of the Engineer. When such approval has been given the Engineer shall then decide whether or not to accept the test results obtained by the facility concerned.

In addition, for water retaining structures:

Ready-mixed concrete must comply fully with the specifications detailed in SANS 878 (latest amendment). The concrete batching plant is to be inspected by the Engineer for compliance with SANS tolerances and his approval is to be obtained in writing before commencement of the concrete works.

The slump of the concrete is to be measured from every truck delivered and is to comply with the relevant parts of the SANS 878 specifications and this specification.

A computer printout of the concrete mix from the batching plant is to be made available when requested. The printout is to give details of the truck registration, the actual mix proportions and the time that the water was added to the mix. The arrival time of each truck and the time that the concrete discharge is completed must also be recorded.

The use of the ready-mixed concrete will be approved subject to concrete being placed in its final position within a maximum time of 2 hours from the time of discharge from the central batching plant into the mixing truck. In addition, all other requirements relating to concrete materials, plant and construction contained in the Standardized and project Specifications shall apply. The ready-mixed concrete will be subject to the same testing requirements as site-batched concrete.

The Contractor shall submit a written request to the Engineer to concrete any section of work at least 24 hours beforehand. No concreting may take place until such time that the request has been counter-signed by the Engineer.

PSG 5.5.5 Placing

PSG 5.5.5.5 Dropping of Concrete (new heading)

Add to the Sub-Clause:

Dropping concrete freely will only be permitted if the Engineer is satisfied that this is

the only practical method of placing.

PSG 5.5.5.9 Pumping Concrete

Add new Sub-clause:

The use of pumped concrete will only be allowed on the Contract subject to the concrete mixes full compliance with this specification and the Engineer's written approval of the proposed procedures for mixing, transport and placement.

PSG 5.5.5.10 <u>Continuous Pours</u> (New Sub-Clause)

Add new Sub-clause:

In the case of continuous walls in **water-retaining structures**, these are to be cast in lifts of such height that each lift can be poured uninterrupted in one continuous operation over the entire perimeter of the wall. No vertical or inclined construction joints of any kind will be permitted in continuous walls unless they have been specifically ordered or authorized by the Engineer. When placing a complete perimeter wall in a single pour, the placing of concrete shall commence at convenient points on the perimeter of the wall and shall proceed both ways simultaneously so that fresh concrete meets fresh concrete. Any rest pauses, such as for meals, shall be avoided as far as possible, and the Contractor may be required by the Engineer to make the operation continuous by working in shifts. A workable arrangement must be made before each concreting operation commences.

PSG 5.5.5.11 Blinding Layer (New Sub-Clause)

Add new Sub-clause:

Beneath all structural grades of concrete, or where shown on drawings or elsewhere if so ordered by the Engineer, the bottom of the excavation is to be covered by a blinding layer (screed) in Grade 15/19 mPa concrete to a minimum depth of 75mm to prevent disturbance of the ground and to serve as an even, clean and accurately positioned working floor for setting steel and placing foundation concrete. This blinding layer shall be laid within a day after excavations have been taken out, trimmed to the required depths and have been inspected and approved by the Engineer.

PSG 5.5.7 Construction Joints

PSG 5.5.7.3 <u>Preparation of Construction Joints (new heading)</u>

Delete Sub-Clauses and substitute with the following:

All horizontal and vertical construction joints shall be cleaned of all dirt and loose particles and shall be prepared to the satisfaction of the Engineer. Formed keys shall be provided if shown on the drawings or if instructed by the Engineer. All intersections of construction joints with concrete surfaces which will be exposed to view shall be made straight and level or plumb and shall be constructed to the details shown on the drawings.

The Contractor is to provide a compressor with suitable oil traps in the air delivery hoses on site for the whole period during which concreting is in progress, and this must be available for cleaning concrete faces prior to placing fresh concrete or pouring joints.

The method adopted for forming joints not covered by 5.5.7.1 and unforeseen joints (see 2.4.3) shall be one of the following as agreed with the Engineer:-

(a) "Blowing off" may generally be carried out on horizontal surfaces but under special circumstances approved by the Engineer it may also be carried out on vertical surfaces. The surface concrete to be prepared shall be between 4 and 8 hours old after

completion of placing and shall be blown off using a mixture of air and water under a pressure of at least 500 kPa or by using a high pressure water jet until all dirt, laitance, etc. is removed and particles of clean coarse aggregate are exposed sufficiently to produce a rough surface. Any loose particles of coarse aggregate shall also be removed. The success of this method of preparation depends on selecting the correct time (dependent on the type of cement, atmospheric conditions etc.) so that the concrete has set to just the necessary degree of hardness. The operation may therefore have to be undertaken outside normal working hours and at night. When the surfaces are at least 12 hours old any remaining loose fine aggregate particles shall be washed off. All surfaces prepared by "blowing-off" shall be kept continuously wet until the next lift of fresh concrete is to be placed against them; the maximum time being 12 hours.

(b) "Scabbling", which refers to removal of all surface laitance plus roughening the concrete surface with (pneumatic) picks in order to expose the coarse aggregate in a uniform pattern, may be carried out on both horizontal and vertical surfaces. The surfaces to be prepared in this manner shall be at least 12 hours old after mixing the concrete. At least 35% of the roughened surface area shall consist of exposed coarse aggregate. All surfaces prepared by "scabbling" shall be kept continuously wet until the next lift of fresh concrete is to be placed against them; the maximum time being 12 hours.

(c) The use of approved wet-to-dry epoxy resin concrete adhesive, strictly in accordance with the manufacturer's instructions, will be permitted in the formation of concrete joints at surfaces where the concrete is older than 7 days.

PSG 5.5.7.4 Placing Fresh Concrete at Construction Joints (new sub-clause)

Add new Sub-clause:

Horizontal and vertical construction joint surfaces shall have been "scabbled" or "blown-off", cleaned and continuously wet as specified in 5.5.7.3 above before fresh concrete is placed over them. Immediately before placing the fresh concrete, the damp surface of the set concrete shall be evenly coated (by brushing or brooming) with a layer of cement mortar between 10mm and 15mm thick. The water/cement ratio and the cement/sand ratio of this mortar shall be the same as that of the fresh concrete to be placed. This mortar shall be produced by leaving the coarse aggregate fraction out of a batch of the fresh concrete. Coating with mortar is to be done in stages immediately before areas of set concrete are covered with fresh concrete, so that no mortar is exposed for longer than one hour after mixing, or less if the mortar has become dry or has started to set before being covered with fresh concrete. Any dried out mortar shall be removed and after cleaning the surface, shall be replaced with fresh mortar.

PSG 5.5.8 Curing and Protection

Add to Sub-clause:

f) For concrete in water retaining structures,

Particular attention must be paid to curing concrete properly and for this reason a separate scheduled rate has been included for curing.

The Contractor must ensure that all materials required for the curing process are on hand before stripping any formwork. He must also ensure that the concrete elements from which the forms are being removed are prevented from drying out at any stage during the stripping process.

Elements must be cured by applying an approved non-toxic reflective type curing compound, which complies with the requirements of ASTM C309-74 "Liquid membrane

forming compounds for curing concrete" Type 2, using suitable spray equipment to provide full even coverage.

Horizontal and sloping floor elements must have the curing compound applied within two hours after finishing and then all exposed surfaces must be completely covered by 250 micron white polythene sheeting and lapping by not less than 150mm at joints.

Vertical and near vertical elements must have the abovementioned treatment within 2 hours of striking formwork. All polythene sheeting must be in good condition with no tears or punctures and must be secured in position to prevent the wind from lifting it free of the concrete surface.

Polythene sheeting is to be retained in position for a minimum period of 7 days for strength Grade 42.5 and 10 days for Grade 32.5.

Concrete that has not been cured in compliance with this specification will not be accepted for purposes of payment.

Measurement for curing shall be per square metre. The rate shall be fully inclusive of all plant, labour and materials to cure the concrete as specified.

PSG 5.5.10 Concrete Surfaces

PSG 5.5.10.2 *Delete and replace with the following*:-

Where a wood-floated or steel-floated or power-floated finish or a screed topping or granolithic finish is required in terms of the project specification, the concrete shall, unless otherwise stated in the project specification, be finished to the tolerances specified below in the following degrees of Accuracy :-

(a) For interior surfaces of walls and floors of water-retaining surfaces – degree of accuracy I shall apply;

(b) For floors within buildings – degree of accuracy I shall apply;.

(c) For all unexposed surfaces – degree of accuracy III shall apply;.

(d) For all other surfaces – degree of accuracy II shall apply;.

(e) For water works and other water retaining structures; the following class of finish shall apply:-

CLASS	COMMENTS	USE IN WORKS
U1	.	Surfaces below ground not exposed to view and other surfaces indicated on the drawings.
U2	As from steel formwork with all joints between formwork panels horizontal or vertical or parallel to supporting members to produce a high quality, smooth finish of uniform texture and colour. Joints shall be tight to prevent loss of grout. Groutex or similar is to be fitted between formwork panels.	Surfaces exposed to pedestrian traffic within waterworks>
U3	Rubbing with carborundum stone after the concrete has hardened shall be allowed but under no circumstances will plastering of the surface be permitted.	All surfaces in contact with water; all surfaces exposed to view and other surfaces indicated on the drawings or as directed by the Project Manager.

PSG 5.5.11 Watertight Concrete

Add to Sub-clause:

Grade W 35/19 concrete shall be used in water retaining-structures. In reservoirs the floor, roof, walls, columns and sump shall be constructed with Grade *W*35/19 concrete. Approval from the Engineer is required if on-site batching and mixing is to be undertaken. In addition to the requirements for strength concrete in terms of clause PSG 5.5.1.7, this concrete shall comply with the following requirements: -

a) it shall consist of cement PFA blended together so that the combined cementitious material comprises between 70– 75% cement and 25 – 30% PFA respectively by weight
b) GGBS will not be allowed as an alternative to PFA
c) The cement content shall be between 380 – 450 kg/m^3
d) The minimum cement water: ratio shall be 2
e) The characteristic cube strength at 28 days shall be 35MPa

PSG 5.5.12 Concrete in Wet Ground

Delete the Sub-Clause and substitute:

Where concrete has to be laid in wet ground (eg. River crossings) steps must be taken to lower the water level to at least 150mm below the bottom level of the concrete, and such level must be maintained for a period of at least two days after the concrete has been poured.

The cost of any necessary drains, sumps and pumping etc. neessary to achieve this shall be included in the tendered rates for the construction work and no separate payment shall be made for such dewatering throughout the construction period.

The Contractor shall be fully responsible for keeping the excavations free from water whilst the construction work is being carried out. The methods by which he proposes to achieve this shall be approved by the Engineer before being implemented.

PSG 5.5.13 Grouting

Add to the Sub-Clause:

Grouting shall be done to the approval of the Engineer using materials of suitable consistency as follows. Unless otherwise directed, the grouting admixture shall be added to 1 part cement and 2 parts concrete sand by volume, well mixed and with sufficient water added to obtain the required consistency. Where recesses to be filled are of appreciable dimensions, the Engineer may direct the Contractor to replace a proportion of sand with fine stone to reduce shrinkage. The Engineer may also require the Contractor to use non-shrink or other additives in grouting mixtures.

PSG 5.5.13.1 Grouting of Pipes/Specials through Wall (New Sub-Clause)

Add new Sub-Clause:

Where entry holes for pipes/specials have been provided in the walls, the Contractor shall be responsible for the grouting in of such pipes/specials regardless of whether or not these have been supplied by himself.

Before commencing the positioning in holes of any pipes/specials the Contractor shall:

- Remove all shuttering and boxing remaining in the holes
- Make any alterations required to the position and shape of the holes and reinforcing steel (lacing bars, etc) in the holes
- Thoroughly clean and scabble the sides of the holes so as to obtain satisfactory bond

surface for the new concrete

After accurately positioning the pipes/specials in the respective holes, the Contractor shall fix the pipes/specials in a suitable manner to prevent movement.

Immediately prior to grouting being carried out by the placing of mortar and concrete around the pipes, the surface of the existing concrete shall be saturated with water. All surplus water shall be removed and the surface covered with a layer, approximately 12mm thick, of mortar consisting of 3 parts concrete sand and 1 part cement.

The concrete ingredients shall be mixed and placed as dry as possible to obtain a dense, waterproof concrete. Where a watertight seal is required, the concrete shall be carefully worked around the puddle flange, if any, and the pipe barrel or body of the special and shall be vibrated in layers so as to obviate any falling away from pipe/special surfaces of the concrete already placed.

The hole shall when set, form a dense, homogeneous and waterproof mass.

A spare vibrator with an independent power source shall be kept as a standby measure to ensure continuity of placing in the event of the breakdown of the duty vibrator.

Smooth formwork that has been suitably strengthened for use with a vibrator shall be provided for facing the concrete around each pipe/special.

PSG 5.5.13.2 Dry-Packed Grout (New Sub-Clause)

Add new Sub-Clause:

When dry-packed grout is specified under baseplates etc., only sufficient water shall be added to make the mixture ball when squeezed in the hand. Before any grouting is done with dry caulking, the surfaces between which the caulking is to be placed shall first be thoroughly cleaned and flushed with water. All surplus visible water shall be wiped or blown away and the dry caulking shall be forcefully rammed or hammered into place using suitable tools. Exposed surfaces shall be finished off neatly with a trowel and extensive exposed areas shall be covered with wet sacking and kept damp for at least 24 hours.
Where additives are required for grouting operations, these shall be brought on to site in the manufacturer's unopened containers and used strictly in accordance with the manufacturer's instructions. The Contractor shall undertake preliminary tests to check the behaviour of proprietary additives under the conditions pertaining to the site.

PSG 5.5.13.3 Epoxy Grout (Epoxy mortar type only) (New Sub-Clause)

Add new Sub-Clause:

The manufacturer's instructions shall be observed when an epoxy grout is used.

PSG 5.5.14 Defects

PSG 5.5.14.3 Add New Sub-Clause:

Localised minor imperfections (e.g. blow holes, small recesses etc.) shall be made good by rubbing in a stiff 1:2 cement mortar immediately after stripping of formwork. Curing compound shall not be applied to these areas. Once the repair work has set, curing compound and curing membrane shall be applied to the area within 24 hours of stripping formwork.

All other remedial work shall be carried out in dry conditions after the concrete is fully cured. Defective material shall be cut out and contact surfaces to which new concrete shall be bonded shall be cleaned by sandblasting. Repairs shall be made with an epoxy

mortar with an appropriate 2 part epoxy primer on concrete or a wet to dry epoxy adhesive, depending on the extent of the defect.

All epoxy resin compounds used in repair work must be approved by the Engineer and applied strictly in accordance with the manufacturer's specification. The Contractor shall match the colour of repair work with existing concrete where repair work is permanently exposed.

PSG 5.5.16 **Manhole Covers and Frames (New Sub-Clause)**

Add new Sub-Clause:

Manhole frames are to be set into the concrete with the upper edge 10mm above the concrete level to prevent the entry of rainwater.

All areas of damaged galvanised surfaces are to be repaired using a cold galvanising systems ('Zinga' or similar approved) as per manufacturer's instruction.

PSG 6 **TOLERANCES**

PSG 6.1.2 **Methods of Measurement of Deviations**

PSG 6.1.2 (a) *Add to theSub-Clause:*

If the deviation can't be measured over a three metre length , the longest practical length shall be used.

PSG 7 **TESTS**

PSG 7.1.2.3 **Frequency of Sampling**

Add to the Sub-Clause:

Samples of concrete as actually placed in the structure shall be taken at the point of discharge from the mixer at random on eight separate occasions during each of the first five days of using that mix on site.

Each sample for initial sampling during the first occasions that a mix is used on site shall comprise six test cubes, three of which must be tested at 7 days and the others at 28 days.

Each sample for subsequent testing shall comprise 4 test cubes, one of which must be tested at 7 days and the other 3 at 28 days. Samples for subsequent testing shall be taken at a rate by volume of not less than one sample per 20m³ of concrete cast or in the event of small volumes, at least one sample on each day that concrete of a particular grade is made.

Notwithstanding this schedule the Contractor shall arrange the exact details of numbers of samples to be taken with the Engineer at commencement of construction.

PSG 7.1.2.4 *delete this sub-clause*

PSG 7.2 **TESTING**

PSG 7.2.3 **Laboratory Testing**

Add to the Sub-Clause:

All test cubes shall be made, cured and tested in accordance with the requirements of

SANS Standard Method 863 and 864.

Test cubes shall be cured in an approved curing tank.

Delivery of cubes for testing shall take place not less than 24 hours in advance of the specified time for testing.

The Contractor shall keep accurate records of the exact position in the structure of the concrete batch represented by the cube test. All costs connected with sampling and testing of concrete, as described in this section of the project specification, shall be included in the relevant strength concrete rates.

PSG 7.4 ACCEPTANCE CRITERIA FOR WATER RETAINING STRUCTURES

Water retaining structures shall be tested for water tightness generally in accordance with BS 8007, Section 9 and shall be subject to the following tests and disinfection as required by the project specification. The structures shall not be considered commissioned until these criteria have been successfully met.

PSG 7.4.1 HYDRAULIC TESTING OF STRUCTURE

The completed structure shall be watertight, and the quality and finish of the work shall be such that no after-treatment of the work such as plastering or cement wash is necessary to ensure compliance with this requirement.

The Works will not be certified complete until the reservoir has been proved by testing to be watertight.

The reservoirs, on completion shall be cleaned of sand, dust, debris etc and tested for water tightness. The reservoirs shall be filled with water at a uniform rate of not greater than 2m in 24hrs until the water reaches the designed maximum level.

Thereafter, the water level should be maintained by the addition of further water for a stabilising period while absorption and autogenous healing take place.

The stabilising period will be 21 days. After the stabilising period, the level of the water must be recorded at 24hr intervals for a test period of 7 days.

During this 7 day test period the total permissible drop in level, after allowing for evaporation, should not exceed 1/500th of the average water depth of the reservoir or 10mm, whichever is the greater.

Notwithstanding the satisfactory completion of the test, any evidence of water to the outside faces of the structure should be assessed.

Any necessary remedial treatment of the concrete, cracks, or joints must be carried out from the water face.

PSG 7.4.2 TESTING OF ROOFS

The roof of a water retaining structure must be watertight. The roof shall be tested on completion, by flooding the roof with water to a minimum depth of 25mm for 24hrs. The roof shall be considered satisfactory if no leaks or damp patches show on the soffit.

PSG 7.4.3 DISINFECTION OF POTABLE WATER RETAINING STRUCTURES

The entire disinfection will be supervised by UMngeni-uThukela Water Personnel. The disinfection criteria are stringent and the Contractor is encouraged to make every effort to ensure that the reservoir is kept clean through the duration of the contract.

While the reservoir is being filled with water, a sodium hypochlorite solution shall be dosed to achieve

a theoretical total chlorine concentration of 25ppm.

Once the reservoir has been filled with water, it shall be left for a 24 hour period. Thereafter total chlorine concentration shall be measured. A concentration of 20ppm total chlorine will be considered acceptable. Should such concentration not be achieved, the Contractor shall carry out, at his own cost, all steps deemed necessary by the Engineer to achieve satisfactory disinfection.

Once satisfactory disinfection is achieved, the reservoir shall be drained and sufficient sodium thiosulphate (typically 1 part/part of total chlorine) shall be dosed into the system to fully neutralise the chlorine before discharging to watercourse.

The reservoir shall then be filled and after 24 hours samples will be taken by uMngeni-uThukela Water for analysis (no charge will be made for the analysis). Should the following limits not be achieved, the Contractor shall carry out, at his own cost, all steps deemed necessary by the Engineer to confirm satisfactory disinfection.

PARAMETERS	COUNT
E Coli	0
Coliform	0
Faecal Streptococci	0

PSG 8 MEASUREMENT AND PAYMENT

PSG 8.1 MEASUREMENT AND RATES

Formwork

PSG 8.1.1.3C *Add to the Sub-Clause:*

Propping heights for beams, slabs and columns shall be measured in accordance with the following:

- Separate items shall be given for formwork propped to heights not exceeding 3,5m and thereafter in stages of 1,5m except in cases of sloping or stepped work exceeding 3,5m high extreme where the height extremities shall be stated.
- Formwork to columns shall be separated into groups for columns not exceeding 3,5m in height above bearing level and thereafter for total heights above bearing level in successive stages of 1,5m.

PSG 8.1.2 Reinforcement

PSG 8.1.2.2 *Delete and replace with the following:*

a) Mild steel and high tensile steel will be measured by mass for the diameters or range of diameters as scheduled.

b) Welded mesh will be scheduled separately for each type and mass per square metre of mesh."

PSG 8.1.2.3 *Delete and replace with the following:*

a) The unit rate for steel bars shall cover the cost of supply, cutting, bending, placing

in position, and fixing of the reinforcing and supporting steel scheduled. The rate shall also include the provision of all spacer devices and binding wire, as well as the cost of tests in terms of SANS 920.

b) The unit rate for welded mesh shall cover the supply, cutting and placing of mesh, as well as the cost of all waste due to laps".

PSG GENERAL

The Contractor shall provide a slump cone with base plate and taping rod on site. Standard slump cone tests will be carried out on a regular basis as part of the testing programme to control the quality of concrete on the site.

Compressive strengths will be determined by crushing 150 mm square cubes.

PSHA: Structural steelwork (Sundry Items)
(Applicable to SABS 1200 HA – 1990)

PSHA 3 MATERIALS

PSHA 3.1 STRUCTURAL STEEL

Delete the Sub-Clause and substitute:

Except where scheduled to the contrary or shown on the drawings, the grade of steel to be used in the manufacture of the following shall be that grade normally supplied by reputable manufacturers approved by the Engineer:

All structural steelwork which shall include ladders, safety cages and platforms, shall be manufactured from S355JR grade steel in conformity with SANS 1431, except where shown to the contrary on the drawings or in the schedule of quantities.

All stainless steel shall be Grade 316L, except where shown to the contrary on the drawings or in the schedule of quantities.

Grade 3Cr12 steel shall be used where scheduled or shown on the drawings and shall be fully pickled and passivated prior to installation.

Where reputable Manufacturer's offer products fabricated from other materials; these may be considered by the Engineer.

PSHA 5 CONSTRUCTION

PSHA 5.1.2 Contractor to Provide Shop Details

In the fifth line delete the words "1 week" and replace with "3 weeks".

PSHA 5.2.6 Handrails

Add to the Sub-Clause:

Unless indicated to the contrary in the Project Specifications, on the Drawings, or in the Schedule of Quantities; hand-railing shall be of tubular construction in grade 304 stainless steel of an approved proprietary make.

Hand and knee rails shall be not less than 32mm OD (wall thickness not less than 1,6mm) and the height of the centre of the top rail shall be 1 000mm above walk-way level, with knee rails located approximately midway between.

Stanchions shall be not less than 44mm OD (wall thickness not less than 1,6mm) and shall have ball type or spun and flared connectors to suit horizontal or angled hand-railing as required. The base plates shall not be less than 8mm thick.

In general, all bends in the hand and knee railing shall be 140mm radius. Handrails shall be either side or top mounted and shall be fastened with stainless steel nuts, bolts and washers.

Spacing between stanchions shall be determined by site conditions but in no case shall it exceed 1 800mm c/c. At bends, stanchions shall be provided on either side at a distance of 300mm from mid-bend.

Finished hand-railing shall be true to line and level and connections shall be securely fixed by means of 2 No. stainless steel pins, finished flush on each side of the joints (to the approval of the Engineer).

All ends shall have closures joining the hand and knee railing.

PSHA 5.2.7 Ladders/Stairs (amended heading)

In this Sub-Clause substitute the word “ladders” with “ladders/ steel-stairs”:

PSHA 5.2.10 Protective Treatment

Delete the last sentence and replace with the following:

All mild steel shall be hot-dip galvanized except where shown to the contrary on the drawings or in the schedule of quantities. Hot-dip galvanizing shall conform to ISO 1461 and SANS 121 for heavy duty coatings or equivalent and shall be applied to a heavy film thickness of 85 +- 10 micron. Screwed and socketed tubing shall be galvanized in compliance with BS 1387.

PSHA 5.2.11 Pipe Clamps and Brackets and/or Supports (New Sub-Clause)

Clamps and brackets around pipes and supports under pipes and valves are to be constructed to the details shown on the drawings and are to be provided with all necessary bolts for fixing to concrete.

Where pipes and valves are supported inside concrete chambers on fabricated steel pipe supports, a layer of 6mm thick GP rubber sheet (Shore hardness 65) shall be attached to the top surface of the steel support by contact adhesive prior to receiving the pipe or valve to be supported. The rubber is to extend 20mm beyond the edges of the plate.

PSHA 5.3.6 Grouting

Add to the Sub-Clause:

The Contractor shall be responsible for all grouting work under this Contract.

PSHA 6 TOLERANCES

PSHA 6.1.3 Accuracy of Erection

Add to the Sub-Clause:

The accuracy of erection shall be the degree of accuracy II as tabulated but amended as follows:

In items d)1) and d)2) of the table the Degree of Accuracy given as "± 5" shall be read as "± 3".

PSHA 7 TESTING

PSHA 7.1 TEST CERTIFICATES

Delete the part sentence "in terms of the project specification" from the wording of the Sub-Clause and add the words "when so requested by the former" at the end of the sentence.

PSHA 8 MEASUREMENT AND PAYMENT

PSHA 8.3 SCHEDULED ITEMS

Add the following introduction to the subsequent Sub-Clauses:

The tendered rates shall cover the cost of preparing shop details (where applicable), the supply of all materials, fabrication, process control, loading, transporting to site, off-loading, erection (unless separately included), setting into concrete or brickwork and grouting in. They shall also include for the supply of all nuts, bolts, holding down bolts, washers, rivets, cutting to waste, all temporary bracing, templates and shuttering necessary for installing, transporting and erecting.

Where the scheduled items for steelwork include corrosion protection, then the price stated shall also include for such protection as specified in SANS 1200HC as amended by PSHC. Similarly the materials and corrosion protection for nuts, bolts, washers etc shall match the steelwork ordered.

Where the requirements of the above introduction conflict with the requirements of Sub-Clauses 8.3.1 to 8.3.6 inclusive the requirements of this introduction shall take precedence.

PSHC: Corrosion Protection of Structural Steelwork
(Applicable to SABS 1200 HC – 1988)

PSHC 5 CONSTRUCTION (EXECUTION OF WORK)

PSHC 5.3 DRESSING AND REPAIRS DURING FABRICATION

Add to the Sub-Clause :

Edges shall be ground to a smooth radius of at least 1 mm unless otherwise indicated

PSHC 5.4 PREPARATION FOR COATING

PSHC 5.4.1 General

Add to the Sub-Clause: -

The work of surface preparation prior to painting shall be carried out at the manufacturer's premises.

The work of surface preparation prior to galvanising shall be carried out at the galvaniser's premises.

PSHC 5.4.3.1 Abrasive Blast Cleaning

(a) General

Add to the Sub-Clause: -

The standard of blast cleaning required in terms of Swedish Standard SIS-05-59-00 is Sa 2 1/2.

Where paint is to be applied, the surface profile after blasting shall be in accordance with the paint manufacturer's requirements for the particular paint system being used.

(b) Dry Abrasive Blast Cleaning

Add to the Sub-Clause: -

The blast cleaning media shall not be recycled.

PSHC 5.4.3.2 Cleaning by Hand or with Power Tools

Add to the Sub-Clause:

Cleaning by hand or power tools, where permitted or ordered by the Engineer, shall be to standard St 3 of SIS-05-59-00 for power tool cleaning, and to standard St 2 of SIS-05-59-00 for hand tool cleaning,

PSHC 5.7 Coating System for New Steelwork

Add to the Sub-Clause:

All coating systems to be applied under this Contract shall be carried out strictly in accordance with the manufacturer's instructions which written instructions shall be obtained by the Contractor and a copy handed to the Engineer's Representative prior to commencing painting operations.

Unless otherwise indicated on the drawings or by the Engineer, the paint system to be used shall be as indicated below. Should the Contractor wish to be products supplied by other manufacturers, these must be first approved by the Engineer.

(i) Severely corrosive conditions (eg. Exterior steelwork surfaces in coastal region) – utilize Painting System No. 1

(ii) Mild to moderate corrosive conditions (eg. Interior steelwork and exterior steelwork in most inland areas) - utilize Painting System No. 2

(iii) Over-coating galvanized surfaces - utilize Painting System No. 3

PSHC 5.7.1 Painting System No. 1

AECI Dulux	**DFT (µm)**	**Plascon**	**DFT (µm)**

Zinc galv 6(2)	75	Zinc rich primer M1 233	70
Zinc galv 1	touch up	Chemcote High Build CHC 101 – light grey	70
Chlorinated Rubber – Kemrist	165	Chemcote enamel CHC 3000 series	170

PSHC 5.7.2 Painting System No.2

AECI Dulux	**DFT (µm)**	**Plascon**	**DFT (µm)**
Zinc galv 6(2)	60	Degrease with Aquasolv GR	-
Zinc galv 1	touch up	Zinc phosphate Primer UC 182	55
Chlorinated Rubber – Kemrist	120	Alkyd undercoat UC 189	35
		Enamel	120

PSHC 5.7.3 Painting System No.3

AECI Dulux	**DFT (µm)**	**Plascon**	**DFT (µm)**
Prepare surface Galvkleen	-	Prepare surface cleaner GIC	-
Corrocote 2(2)	10	Galvogrip metal primer	30
Chlorinated Rubber – Kemrist	80	Universal undercoat UCI	30
		Super gloss Enamel Code G	85

PSHC 5.8 APPLICATION OF PAINTING COATINGS

Add to the Sub-Clause:

No application of paint shall be carried out before the paint manufacturer has approved the firm of applicators and the plant to be used, except where instructed to the contrary by the Engineer.

Where applicable, the range of temperature, outside the range of +5º to 35ºC, within which paint may be applied, shall be that range which the Contractor shall obtain in writing from the manufacturer of the paint.

The embedded lengths of irremovable fasteners which penetrate deeper than 75mm from the concrete face, may be left as base metal. The remaining portion shall comply with the paint system specified for the adjacent steelwork.

Surfaces which will become inaccessible for coating after fabrication or erection shall be given the full paint treatment specified plus one further top coat prior to the surfaces becoming inaccessible.

PSHC 5.9 APPLICATION OF METAL COATINGS (HOT-DIP GALVANIZING, METAL SPRAYING).

Add to the Sub-Clause:

The Grade of H.D.G. (hot dipped galvanizing) required shall be carried out in accordance with ISO 1461 and SANS 121 and shall be applied to a film thickness as indicated in Table 2 below from SANS 121. Where heavy duty hot-dipped galvanizing is specified on the drawings the minimum coating thickness shall be 85 ± 10 micron.

Table 2 — Coating Minimum Thicknesses on Samples that are not Centrifuged

Article and its Thickness	Local Coating Thickness (min.) µm	Mean Coating Thickness (min.) µm
Steel ≥ 6mm	70	85
Steel ≥ 3mm to < 6mm	55	70
Steel ≥ 1,5mm to < 3mm	45	55
Steel < 1,5mm	35	45
Castings ≥ 6mm	70	80
Castings < 6mm	60	70

PSHC 7 TESTING

PSHC 7.1 TESTING BY THE CONTRACTOR

PSHC 7.1d)

Tests are not required to be carried out after the application of each intermediate coat.

PSHC 7.3 TESTS, INSTRUMENTS, METHODS AND CRITERIA.

PSHC 7.3.8 Dry Film Thickness

The frequency of DFT test readings required is to be in accordance with SABS Method 141.

PSL: Medium - Pressure Pipe Lines
(Applicable to SABS 1200 L – 1983)

All steel pipes supplied under this Contract shall comply with uMngeni-uThukela Water Specification "Steel Pipes, Coatings and Linings" given in Section C5: Annexures and Drawings.

PSL 1 WELDING SPECIFICATION FOR SITE WELDING PIPELINES

All welding shall be carried out in accordance with A.P.I. 1104 except as amended hereunder.

PSL 1.1 WELDING PROCEDURES

The Contractor, prior to commencement of welding, must produce a qualified welding procedure in accordance with the latest edition of A.P.I. 1104, for the intended sizes, processes, positions and consumables used on this project.

PSL 1.2 WELDER QUALIFICATION

Prior to commencement of welding, a current qualification for each Welder must be produced in accordance with the welding procedure. If constant repairs are apparent during pipe laying from one particular Welder, the Engineer may request the Welder be re-tested, or removed from the project.

PSL 1.3 WELDED JOINTS

PSL 1.3.1 ALIGNING

The alignment of abutting ends will be such that the offset will not exceed 1,5mm. Line up clamps will be used for joint "Fit-ups". The use of "Bridges and Wedges" or any method that may induce unnecessary stresses is forbidden.

PSL 1.3.2 WEATHER CONDITIONS

Welding will not be performed under conditions that would affect the quality of the welded joint (ie high moisture and windy conditions). Windshields may be used where practical.

PSL 1.3.3 CLEARANCE

The minimum clearance around the pipe during welding must be 400mm. When welding in the trench "fox-holes" will provide adequate access for Welders.

PSL 1.4 VISUAL INSPECTION

100% of each joint will be examined and the following criteria met :-

PSL 1.4.1 WELD BEAD

All welds shall be substantially uniform in appearance with the outer weld bead not exceeding 3mm and the inner bead 1mm in height.

PSL 1.4.2 UNDERCUT

Undercutting shall not exceed the following: -

PSL 1.4.2.1 The depth shall not exceed 12,5% or 1mm, whichever is less.

PSL 1.4.2.2 The length of undercut which does not exceed 1.4.2.1 shall not exceed 50mm in any 300mm.

PSL 1.4.3 FREEDOM FROM DEFECT

The weld, heat affected zone and surrounding parent metal shall be free from cracks, porosity and trapped slag.

PSL 1.4.4 WELD SPLATTER

All weld splatter must be removed prior to corrosion protection application.

PSL 1.5 NON-DESTRUCTIVE TESTING

Radiographic testing will be performed on all butt welds, (100%) and dye penetrant testing on all fillet welds (100%) :-

PSL 1.5.1 Repairs of welds shall be permitted in accordance with repair procedure. Repairs must be re-examined using the relevant non-destructive testing method.

PSL 1.5.2 All costs associated with the repair of defective welds will be borne by the Contractor.

PSL 1.5.3 Technicians performing examinations will be suitably qualified and hold a Department of Health approval certificate where necessary, to the satisfaction of the Engineer.

PSL 1.6 QUALITY CONTROL

The records of which welds were made by individual Welder and non-destructive testing must be submitted to the Engineer.

PSL 1.7 END PREPARATION OF FIELD WELDS

A sketch indicating the required end preparation of field welds is appended to UMngeni-uThukela Water 's Specifications as Appendix N 4.

PSL 2 CORROSION PROTECTION

PSL 2.1 COATINGS

All bends and specials supplied under this contract shall be epoxy coated to uMngeni-uThukela Water's Specification "Solvent-borne and Solvent-free Linings and Coatings for Steel Pipes and Specials", (Annexure 5, Specification LC). The coating on all plain-ended pipes where "VJ" couplings are to be used shall be returned 150mm into the internal pipe bore.

The following amendments shall apply :-

PSL 2.1.1 Delete Clause and replace with: Prior to grit blasting the pipe shall be degreased with approved solvents to render a water break-free surface.

PSL 2.1.2 Delete Clause and replace with: for solvent-borne epoxies:

Coatings: 350 microns + 50 microns – 0 microns

PSL 2.1.3 New Clause: mating faces of flanges shall be coated with epoxy to 80µm. The flange profiling shall be clearly visible and no runs or drips will be permitted.

PSL 2.2 MAKING GOOD OF FIELD WELDED JOINTS, REPAIRS AND PUDDLE PIPES

Once welding is complete and all weld splatter and burnt coatings have been removed, all welded pipe joints shall be wrapped in the following manner. This specification is based on "Denso" products. Alternative products may be accepted at the discretion of the Engineer.

PSL 2.2.1 SURFACE PREPARATION

The bare metal shall be cleaned and wire brushed to St.2 standard and, if necessary, degreased with white spirit. The adjacent coating shall be cleaned to a minimum of 300mm either side of the joint.

PSL 2.2.2 PRIMER

The pipe barrel at the joint shall be degreased with white spirit and primed with "Denso Primer D" (or equal approved) extending 200mm onto sound coating. The primer shall cure for 30 minutes prior to the application of a tape system.

PSL 2.2.3 PROFILING TAPE

Apply 1,0mm x 75mm wide "Ultraflex sealing tape (yellow)" or equal approved to the full circumference of the weld bead and steel interfaces. Care shall be taken to ensure a smooth profile and to avoid air bubbles being trapped beneath the tape. The tape shall not be stretched.

PSL 2.2.4 TAPE SYSTEM

Tape joint shall be wrapped with "Denso Ultraflex 1250/300 (Blue)" (or equal approved) (55% overlap) extending 150mm onto sound coating. Even tension shall be applied throughout the wrapping procedure and care shall be taken to prevent air bubbles from being trapped beneath the tape.

PSL 2.2.5 REPAIRS

Damaged pipe coating shall be repaired in the same manner with the repair extending at least 150mm either side beyond the edge of the damaged coating. "Spot" tape repairs will not be acceptable. Damage caused by the Contractor shall be repaired at the Contractor's expense. Damage caused prior to the Contractor accepting responsibility for the pipes shall be repaired under this contract.

PSL 2.2.6 PUDDLE PIPES

All puddle pipes shall be primed and wrapped in accordance with the above procedure. The wrapping shall extend from (but shall not include) the puddle flange to 150mm beyond the concrete surface.

PSL 2.3 LININGS

All pressure steel pipe supplied under this contract shall be cement mortar lined in accordance with AWWA C602 (Steel Pipes, Fittings, Coatings and Linings, Appendix 3).

Non-pressure pipe (e.g. Inlet pipe and connecting pipe work/flow pipe work) shall be epoxy coated and lined to PSL 3.1.

The following cement mortar lining thicknesses shall apply: -

PIPE OD (mm)	LINING THICKNESS (mm)	TOLERANCE (mm)
> 273 < 762	12	+ 4-4

Prior to transportation, pipes shall cure for a minimum of 7 days. During the entire cure period, pipes shall be kept moist. End caps shall be fitted if deemed necessary by the Engineer. Curing compounds will not be permitted.

Cement mortar shall be cut back 20mm from pipe ends to be welded and shall be shaped so as to form a 15º dovetail joint once jointed. Cement mortar shall be finished flush with flanged ends or terminal plain ends.

PSL 2.4 HOT- DIP GALVANIZING

Hot-dip galvanizing shall be done in accordance with the requirements of SANS ISO – 1461, as amended.

On site fabrication processes such as welding, drilling, threading, etc are to be avoided.

All hot-dip galvanized items shall be passivated immediately after hot dipping.

PSL 2.5 STAINLESS STEEL FABRICATIONS

PSL 2.5.1 GRADE AND WELDING TECHNIQUES

The grade of stainless steel for fabrication shall be 316L and Duplex stainless steel Grade LDX2101 Plate used in the fabrication shall be supplied at Nº 1 finish in accordance with BS 1449, Part 4.

Welding procedures shall be only those recommended by the Stainless Steel manufacturer or by the South African Institute of Welding. Only Welders coded to ASME IX, 1995 shall be employed.

Welds shall be smooth and free from blowholes, undercuts, sharp projections and similar visual defects.

Fabrication of stainless steel components shall be carried out in clean workplaces where there is no contamination of mild steel. Grinding and polishing equipment shall be dedicated and shall not be contaminated with iron or mild steel.

Stainless steel shall be suitably handled to avoid scratching the surface.

PSL 2.5.2 PICKLING AND PASSIVATION

Cut edges, welds and heat-affected surfaces shall be pickled and passivated to remove all discolouration. Proprietary pickling and passivating pastes (as supplied by Duva Chemicals (Pty) Limited, or other approved supplier) shall be used in accordance with the manufacturer's recommendations. Care shall be taken not to exceed the maximum contact time recommended. No heat discolouration shall remain after completion of pickling and passivating.

After passivation, surfaces shall be very thoroughly washed with clean potable water to remove all traces of acid. The surface shall be allowed to dry, then polished where necessary, using polishing compounds recommended by the Stainless Steel manufacturer or the South African Stainless Steel Development Association.

PSL 3 SPECIALS

Specials are to be fabricated complete with specified coating and to be plain ended (unless stated otherwise).

The rate shall include for the provision of a circumferential steel band (Grade S355JR minimum) 80 * 6,0mm wide and jointing to PSL 2 (Note: 3 welds required/special).

PSL 4 BOLTED CONNECTIONS

PSL 4.1 BOLTED CONNECTIONS SHALL COMPLY WITH THE FOLLOWING

All pipes larger than 150mm diameter, connected to equipment or fittings, or where specifically indicated, shall be flanged to SANS 1123-1977 as amended.

All plate flanges for welding shall be Type 3 and blank plate flanges shall be Type 8. Blank plate flanges greater than 500NB, not covered by the above specification, shall be designed by the manufacturer in this instance, the Contractor shall provide the Engineer with the design calculations together with plate thickness and flange drilling within 29 days of award of the contract.

PSL 4.2 Matched flanges shall correspond in construction and dimensions to flanges on equipment. Matched flanges shall be provided with the correct bolts, nuts and packing rings. All peeping shall be clean before connections are made.

PSL 4.3 Bolts, nuts and washers used on insulated flanges shall be as the steel flanges to UMngeni-uThukela Water 's standard drawing.

Bolts and nuts connecting mild steel flanges to stainless steel flanges, or stainless steel flanges to stainless steel flanges shall be graded 316L stainless steel.

Remaining bolts and nuts shall be galvanised to SANS 121. Galvanised and stainless steel bolts and nuts shall comply with the relevant requirements of SANS 135-1985 and SANS 136-1985.

PSL 4.4 The length of each bolt shall be such that, after the bolt has been tightened, the end of the bolt is flush with the outside of the nut, or projects above the nut by not more than two full threads.

PSL 4.5 Satisfactory temporary end-covers shall be provided by the Contractor for protection of flanges, prepared ends of open-ended pipes and fittings and screwed ends, to prevent damage to internal lining during transportation and during handling on site.

PSL 4.6 All bolt threads shall be liberally coated with "Copper-slip" prior to assembly. Upon completion bolt threads and nuts should be coated with "Denso Mastic".

PSL 5 CORROSION PROTECTION OF FLANGED AND FLEXIBLE JOINTS

PSL 5.1 All buried flanges and flexible joints shall, in addition to being epoxy coated, be protected as described below. This specification is based on a "Denso" system. Alternative products will be subject to the approval of the Engineer.

PSL 5.2 SURFACE PREPARATION

The entire joint and at least 500mm of pipe either side of the joint shall be cleaned of mud and other deleterious matter.

PSL 5.3 PRIMING

The cleaned joint and pipe shall be primed with "Denso Priming Solution", or if moisture is present, "Denso S105 Paste". The priming shall extend to at least 400mm beyond either side of the joint.

PSL 5.4 APPLICATION OF MASTIC BLANKETS

Narrow strips cut from "Denso Mastic Blankets" shall be applied to the joint to achieve a smooth profile with a 50mm splayed fillet being formed at the joint/pipe interface. Care shall be taken, particularly at bolts, to avoid the formation of air pocket. Complete "Denso mastic Blankets" shall then be applied (mastic side down) to the joint until the joint is completely enveloped. The blanket shall be overlapped at least 50mm and the blanket shall extend at least 150mm along the barrel of the pipe on each side of the joint. The ends of the blanket shall be bound to the barrel of the pipe on each end with 100mm wide "Denso Tape". "Denso Tape" overlaps shall be 50mm and shall extend 100mm onto the blanket and 150mm onto the pipe barrel.

PSL 5.5 APPLICATION OF PROTECTIVE SHEETING

The entire joint shall be wrapped with 350-micron polyethylene sheeting which shall end 400mm beyond the joint. The protective sheeting shall be secured to the pipe barrel and along the seam with 48mm wide "Denso Adhesive Tape".

PSL 5.6 CATHODIC PROTECTION

Cross bonding of couplings shall be carried out by an approved specialist in accordance with the Engineer's requirements. A provisional sum has been allowed in the Schedule of Quantities.

PSL 6 HYDRAULIC PIPE TEST

PSL 6.1 WATER FOR CONSTRUCTION AND TESTING

Water used for successful hydraulic test will be provided free of charge.

PSL 6.2 TESTING PROCEDURE

The pipeline shall be tested between temporary blank flanges provided by the Contractor.

The pipe shall not be filled until all associated structural concrete has cured for 28 days and attained design strength.

The pipe shall be filled at a rate that permits the escape of air and does not induce transient pressure surges.

Permissible leakage for steel pipe = 0 litre/m. and for uPVC pipe = 0 litre/m.

The Contractor is to ensure that all pipe work is kept clean for the duration of the contract.

PSL 6.3 REMEDIAL MEASURES

In the event that the pipe section fails the test, the Contractor shall carry out all remedial measures necessary to obtain a successful test of each individual section and the entire pipeline at his own expense.

PSL 7 COMMISSIONING

The pipeline will be considered commissioned and practically complete once all associated structures are sufficiently complete to carry out their structural function and the hydraulic test is successfully completed.

PSL 8 MECHANICAL WORKS

PSL 8.1 GENERAL

All mechanical equipment shall be in accordance with uMngeni-uThukela Water's Standard Specification for Valves. (Appendix C)

Equipment shall have a rated working pressure as indicated on the drawings. Flanges shall be to SANS 1123.

PSL 8.2 GATE VALVES

Gate valves shall be RSV waterworks pattern gate valves.

All valves shall be coated and lined to PSL 2.1.

Refer to Section C5: Drawings and Appendices.

PSLB: Bedding (Pipe)
(Applicable to SABS 1200 LB – 1983)

PSLB 1 SELECTED GRANULAR MATERIAL (SUB-CLAUSE 3.1)

The material to be used for the cradle surrounding the pipe shall fall within the following requirements:

GRADING ANALYSIS RANGE

SIEVE SIZE (mm)	PERCENTAGE PASSING
9,500	100
6,700	90 to 100
4,750	80 to 90
2,360	65 to 80
1,180	50 to 65
0,600	35 to 50
0,425	25 to 35
0,300	15 to 25
0,150	5 to 15
0,075	0 to 5

The material must be free of organic matter and have a Compatibility Factor of not more than 0.4. The material should classify as silty fine sand having a stiffness ration of not less than 5 mPa. Furthermore, the origin of the material should be river transported since it is required that the larger grains (4.0 to 7.0mm in size), be rounded and not sharp or angular. The Contractor will be required to supply samples of the sand to be used for the cradle to the Engineer. Only after the Contractor has received written approval from the Engineer, may he proceed with placing the sand as selected granular material. The Contractor will carry out his own quality control testing of the sand to ensure that it meets specification. At least one grading analysis should be carried out for every 100m of bedding placed. The results of these tests must be given to the Engineer within 24 hours of completion of the test. If material is found not to be within specification, the Contractor will remove and replace with approved sand at his own cost.

PSLB 1.1 SELECTED FILL MATERIAL (Sub-Clause 3.2)

Selected fill material shall have a PI not exceeding 14 and shall be free of vegetation, lumps and angular stone. Maximum particle size shall be 25 mm with at least 60% passing 6.75 mm sieve. The material shall be granular and non-flaky and shall contain no organic matter. It shall be a pH greater than 5.5. It shall not cake or form lumps on drying out.

PSLB 1.2 MEASUREMENT OF BEDDING MATERIAL

In calculating the volume of bedding cradle and fill blanket the volume of the material displaced by the pipe has been deducted. Contractors are to price accordingly as no claim shall be entertained in this regard.

PSLE: Stormwater Drainage
(Applicable to SABS 1200 LE – 1982)

PSLE 3 MATERIAL

PSLE 3.1(a) Precast Concrete Pipes

Delete the Sub-Clause and substitute

Concrete pipes shall be of reinforced concrete and shall comply with SABS 677 and be of the class as indicated on the drawings or scheduled in the Bill of Quantities.

PSLE 3.1(d) Skewed Ends

Add to the Sub-Clause:

Wherever required skew ends may be cut on site.

PSLE 3.1(f) Pipes for Subsoil Drains (new Sub-Clause)

Add new Sub-Clause

Pipes for subsoil drains shall have the specified internal diameter, which shall not be less than 100mm, and shall be slotted uPVC or HDPE pipes with a wall thickness in accordance with Class 4 pressure pipes to SABS 966 or SABS ISO 4427.

The size of the perforations in perforated pipes shall in all cases be 8mm ± 1.5mm diameter and the number of perforations per metre shall not be less than 26 for 100mm pipes and 52 for 150mm pipes. Perforations shall be spaced in two rows for 100mm pipes and four rows for 150mm pipes.

Slotted uPVC or HDPE pipes shall have a slot width of 8mm with a tolerance of 1.5mm in width. The arrangement of slots shall be to the Engineers approval but the total slot area shall not be less than specified for the perforations.

PSLE 3.4.1 Bricks

Add to the Sub-Clause

Cement bricks to comply with the relevant requirements of SABS 1215 bricks shall be considered as being acceptable.

PSLE 3.6 Concrete (New Sub-Clause)

Concrete shall comply with the relevant requirement of SABS 1200 G or SABS 1200 GA whichever is included in the project specifications.

PSLE 3.7 Permeable Material for Groundwater Drains

Add the following new Sub-Clause

Permeable filter materials for groundwater drains shall consist of crushed stone of suitable grading.

Permeable materials shall conform to the following requirements:

Crushed stones shall be clean, hard single sized stone and shall be free from shale, clay and other deleterious substances.

The aggregate crushing value of the stone shall not exceed 30 when tested in accordance with TMH1 Test Method B1.

PSLE 5 CONSTRUCTION

PSLE 5.1.4 Culvert construction after Earthfill

Add to the Sub-Clause

Wherever possible pipes and rectangular culverts shall be laid under trench conditions.

The compacted fill shall be constructed to a height of 300mm above the culvert before excavating for the culvert.

The trench width shall not exceed the outside diameter of pipe plus 600mm. A working width of 600mm each side shall be allowed for rectangular culverts.

PSLE 5.2.2 Pipe Culverts

Add to the Sub-Clause

The bedding for stormwater pipes shall be to the requirements for Class C bedding of SABS 1200 LB, unless otherwise specified or shown on the drawings.

The ogee joints shall be fitted with 200mm x 6mm rubber sealing collars conforming to the latest SABS 974 specification and with a shore hardness of approximately 40 degrees, or alternatively, the ogee joints shall be primed and double wrapped in accordance with the manufacturer's recommendations with 200mm wide wrapping tape type CDP or similar approved.

PSLE 5.2.3 Concrete Casing of Pipelines

In second line of Sub-Clause substitute "Grade 15/19" with "mix 15"

PSLE 5.2.6 Construction of Groundwater Drains

Add the following Sub-Clause

On completion of excavation the trench shall be lined with geotextile as specified or shown on the drawings.

A layer of permeable material of the class and thickness as shown on the drawings shall be placed on bottom of the trench and lightly temped and finished to the required gradient.

Pipes of the type and size required shall then be firmly bedded on the permeable material true to level and grades coupled where required and the trench backfilled in layers not exceeding 100mm with further permeable material to such height above the pipes as shown on the drawing or directed by the Engineer. The permeable material shall be lightly compacted and finished to the required level. The trench must be specially protected against the ingress of water before completing the impermeable layer.

When placing successive layers, the lower layer must not be walked on or disturbed more than can be avoided. Care shall be taken to prevent the contamination of permeable material during construction of the groundwater drains and all permeable material contaminated by soil or silt shall be removed and replaced by Contractor at his own expense.

Where plain butt joint pipes are used they shall be laid firmly together to prevent infiltration of backfill material. Perforated and slotted pipes shall be joined by couplers. Perforated pipes shall be laid with the perforations at bottom, as instructed.

The higher end of groundwater pipe drains shall be sealed off with a cap or loose concrete cap of Class 20/19 concrete, as shown on the drawings, and at the lower end the pipe drain shall be built into a concrete headwall providing a positive outlet or connected to Stormwater pipes or culverts.

PSLE 5.8 Open Drain (New Sub-Clause)

Add new Sub-Clause

Open drains are to be constructed to the details shown on the drawings, or as directed by the Engineer, to the correct line, level and cross-sections. The material excavated from open drains is to be stockpiled for future cover.

Measurement of open drain excavation shall be calculated from natural ground level or, in the case of drains within a road reserve from the reduced level in the road excavation, and payment will be made on a rate per m^3 basis irrespective of depth. The rate is to include for all work required to trim the drain(s) to the correct line and level.

PSLE 5.9 Stone Pitching (New Sub-Clause)

Where ordered by the Engineer, open drains, Stormwater outlets, etc., shall be pitched with stone. Stone for pitching shall be of good, sound, durable rock of good shape and face, with a minimum size of 100 x 100 x 75mm deep. Before pitching is commenced, all slopes and surfaces to receive pitching shall be carefully trimmed and dressed to the correct lines and grades. The pitching stones are to be laid with joints broken as much as possible and are to hammered solid into position to present a regular and uniform surface. All joints are to be grouted to their full depth in 4:1 cement mortar.

PSLE 5.10 Cutting of Pipes (New Sub-Clause)

As far as is possible culvert lengths shall be such that pipe units need not be cut. Should any straight of skew cuts be necessary, such cutting will not be measured and paid for separately in terms of Sub-Clause 8.2.4 since all additional work required in cutting the pipes as well as the wasted pipe ends shall be regarded as being included in the payment for the supply, lay, joint, bed and test of the relevant pipe culverts, as per Sub-Clause 8.2.1.

PSLE 8 MEASUREMENT AND PAYMENT

PSLE 8.2.1 Supply and Lay Concrete Pipe Culvert

Delete the title of the Sub-Clause and substitute:

Supply, Lay, Joint, Bed and Test Pipelines

Add to the Sub-Clause:

The bedding shall be Class C, unless otherwise specified or shown on the drawings.

Add to the Sub-Clause

The rates shall cover the cost of providing the pipes as well as the cost of laying, bedding, jointing and making connections into manholes, including dealing with Stormwater flow and testing the pipeline.

PSLE 8.2.4 Extra over Items 8.2.1 and 8.2.2 for Cutting End Units for Culverts on Site

Delete this Sub-Clause as no extra payment will be made for cutting end units for culverts.

PSLE 8.2.14 Minor Drainage Structures (New Sub-Clause)

Catchpits, Manholes, Drop Inlets and Headwalls constructed will be measured and paid for as complete units.

Item: Supply, construct and install drainage unit of the type, size category and depth stated in the Bill of Quantities…… Unit: No

The unit of measurement shall be the number of the particular type, size and category of drainage units supplied, constructed and installed in accordance with the drawings.

The tendered rate shall include for all materials, plant labour, supervision and incidentals for the construction of the drainage unit complete and in accordance with the drawings.

The tendered rate shall further include for all necessary excavation in all materials, backfilling and disposal of surplus materials, formwork, concrete, benching, concrete finish, reinforcement, precast elements, steel channels and grids, step irons and all other items not specifically measured elsewhere, necessary for completion of the unit in accordance with the drawings.

The tendered rate shall include for all costs involved in complying with the requirements of the relevant specifications in respect of the individual types of work involved in completion of the units.

The tendered rates shall exclude for excavation in intermediate and hard material, payment for which shall be made as an extra over in the Schedule of Quantities.

PSLE 8.2.15 Stone Pitching (New Sub-Clause)

Payment for stone pitching (PSLE 5.9) will be made at a rate per unit finished area and the rate is to include for all trimming and dressing of the excavation, laying of the stones and grouting of the joints…… Unit: m²

PSLE 8.2.16 Demolishing of Minor Drainage Structures (New Sub-Clause) – Provisional

The demolishing of Manholes, Catchpits, Headwalls and any other minor drainage unit (PSLE 5.11) will be measured and paid for as complete units demolished and all rubble removed to approved spoil sites and the excavation backfilled and compacted to 90% MoD AASHTO and ground surface made good. The rate for demolishing minor drainage structures shall include the cost of dealing with Stormwater flow during the procedure and the testing and re-instatement of normal flow upon completion.

The reinstatement of road surfaces or paving shall be paid separately.

Item: demolish drainage unit of the type, size category and depth stated in the Bill of Quantities, include dealing with Stormwater flows (Provisional)……Unit: No (Prov)

PSZA: Miscellaneous Items
(Applicable to UUW PS)

PSZA MISCELLANEOUS ITEMS

PSZA 1 Brickwork
Brickwork wall shall be built with engineering bricks class NFX.

PSZA 2 Cement Mortar
The mortar mix to be used for brickwork shall consist of 1-part cement to six parts sand.

C3.3 UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATIONS

In addition to the SABS Standard Specifications, the following UMngeni-uThukela Water Particular Specifications shall apply to this contract. They are not bound in with this Volume but are issued separately in Volume 3 as "Annexure to C3.3: UMngeni-uThukela Water Particular Specifications".

- Guidance Document for the Calculation of Local Content
- UMngeni-uThukela Water Insurance Summary and Claims Procedure
- UMngeni-uThukela Water Particular Specification for 164mm to 2230mm Diameter Steel Pipes, Specials, Coatings and Linings
- UMngeni-uThukela Water Particular Specification for Wedge Gate and Resilient Seal Valves
- UMngeni-uThukela Water Particular Specification for Valve
- UMngeni-uThukela Water Particular Specification for OHASA of 1993 Health and Safety
- UMngeni-uThukela Water Particular Mechanical Specifications.
- UMngeni-uThukela Water Particular Electrical Specifications.
- UMngeni-uThukela Water Particular Instrumentation Specifications
- Book of Drawings for Tender Information
- Environmental Reports
- UMngeni-uThukela Water Quality Control Procedures

C3.4 AMENDMENTS TO THE UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATIONS

In certain clauses the standard, standardized and particular specifications allow a choice to be specified in the project specifications between alternative materials and / or methods of construction and / or for additional requirements to be specified to suit a particular contract. Details of such alternative or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains additional specifications required for this particular contract.

C3.4.1 UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATION FOR 164mm to 2230mm DIAMETER STEEL PIPE, SPECIALS, COATINGS AND LININGS (copy is bound into this document)

1.1 SCOPE

Insert: Where references are made to SABS, read SANS.

2.3 FABRICATION OF SPECIALS

Insert: When a belled or plain ended pipe is cut, one piece of that pipe will become a plain ended pipe. To enable two plain ended pipes of diameter less than DN 600 to be joined by fillet welding, steel sleeves shall be supplied. The sleeves shall have a width of 100mm, an internal diameter of 3mm greater than the outside diameter of the pipe, and a plate thickness and grade of steel identical to that of the pipes.

4.3 PIPE COATING SYSTEM 2: FUSION-BONDED MEDIUM DENSITY POLYETHYLENE COATING

4.3.1.2 Repairs

In the third line after "per 9m" insert "or 12m length of pipe and 4 repairs per 18m"

5 PIPE LININGS

5.2 Pipe Lining System 1: Cement Mortar Lining

Add to the end of this clause: "Pipes shall not be despatched until at least 10 days have elapsed since the lining was applied".

C3.4.2 UMNGENI-UTHUKELA WATER PARTICULAR SPECIFICATION FOR WEDGE GATE AND RESILIANT SEAL VALVES

Clause 3.1 The medium is potable water.

Clause 3.4 All valves shall be double flanged.

The flange drilling shall be as shown on the drawings or as specified in Clause PSL 3.8.3.

The pressure rating shall be as shown on the drawings and scheduled in the Bill of Quantities.

C3.4.3 AMENDMENTS TO THE PARTICULAR SPECIFICATION FOR VALVES

Clause 2.1 *Delete this clause*

Clause 2.2 The medium is potable water.

The nominal bore and pressure class shall be as shown on the drawings and scheduled in the Bill of Quantities.

The body shall be wafer type

The disc material shall be 316 stainless steel

The liner material shall be EPDM

O-Ring back-up on shaft is not permitted

Either corrosion protection option 1 or Option 2 may be used

Clause 2.3 *Delete this clause*

Clause 2.4 Extension Spindles are not required.

Clause 3.3 *Delete this clause* - it is superseded by the UMngeni-uThukela Water Particular Specification for Wedge Gate and Resilient Seal Valves.

Clause 3.4.5 Insert the following paragraph before the last paragraph:

"Whilst the Employer's Agent will design the pipework installation, the Contractor must check and ensure that, if the disc extends beyond the valve body in the partly open or fully open position, it is not adversely affected by adjacent pipework or fittings i.e. that there is no contact with the adjoining pipe or fitting or, in particular, with cement mortar lining.

Where required flange drilling shall be as specified in Clause PSL 3.8.3."

C3.4.4 AMENDMENTS TO PARTICULAR SPECIFICATION FOR AIR RELEASE AND VACUUM BREAK VALVES

Clause 2 The medium is potable water.

The nominal bores are as shown on the drawings and/or scheduled in the Bill of Quantities.

The pressure rating shall be as shown on the drawings and scheduled in the Bill of Quantities.

The cylindrical bodies shall be stainless steel and the end fusion bonded epoxy coated mild steel.

The ends shall be flanged with drilling as shown on the Drawings and specified in Clause PSL 3.8.3.

No valves need to operate at positive internal pipe pressures less than 0.5 bar. The design minimum positive internal pipe pressure is 1,5 bar.

C3.4.5 AMENDMENTS TO PARTICULAR SPECIFICATION FOR PGL: DRILLING AND FIXING OF DOWELS AND ANCHOR BOLTS

Add to Clause PGL-2:

The 25mm diameter dowel bars that are to be grouted into rock for the purpose of fixing concrete encasement of the steel pipe to the rock shall be grouted in with cement grout.

Add to Clause PGL-3.2

The 25mm diameter dowel bars that are to be grouted into rock for the purpose of fixing concrete encasement of the steel pipe to the rock shall be drilled 1,5m deep into rock as shown on the drawings.

C3.5 PROJECT SPECIFICATIONS

STATUS

The Project Specifications (PS) forms an integral part of the contract and supplements the Standard Specifications and UMngeni-uThukela Water Particular Specifications. They contain a general description of the works, the site and the requirements to be met.

In the event of any discrepancy between a part or parts of the Standardized or Particular Specifications and the Project Specifications, the Project Specifications shall take precedence. In the event of a discrepancy between the Specifications and the drawings and / or the Bill of Quantities, the drawings take precedence, thereafter the Bill of Quantities. In all events, the discrepancy shall be brought to the attention of the Employer's Agent before the execution of the work under the relevant item.

3.5.1 QUALITY ASSURANCE (REFER TO UMNGENI-UTHUKELA WATER QUALITY ASSURANCE PROCEDURE)

The successful Tenderer shall furnish the Employer a detailed Quality Control Plan (QCP) and Procedure for all materials, such as valves, pumps, motors, pipes, specials and fittings for approval prior to any fabrication, coating, lining and delivery.

The Employer shall inspect all of the above at the fabricator or corrosion applicator and release same for delivery with a 48 hour written notice.

PS 1 PROJECT DESCRIPTION

This project entails the construction and commissioning of the new Howick West Reservoir no.3 inlet control valve chamber at the Reservoir complex located within the municipality of uMgeni in the Howick West area of the town of Howick, KwaZulu-Natal.

PS 2 OVERVIEW AND DETAILS OF CONTRACT

PS 2.1 Overview

The objective of this tender is to construct and commission the inlet control valve chamber to reservoir no.3

PS 2.2 Scope

The main components of the contract comprise:

- Site Establishment.
- Site clearance and removal/preservation of topsoil.
- Preparation of spoil site for spoil material.
- Removal of unsuitable material from site.
- Modify existing DN 500 pipe to incorporate a Y- junction for the new DN 500 inlet pipe
- Trenching and laying of DN 500 into Chamber No.3A and DN 600 inlet pipe into existing reservoir wall.
- Excavation for concrete chamber No.3A.
- Proving, locating and crossing relocating various existing services i.e. Telkom, Eskom, Water, Sewers and cables.
- Laying, jointing, bedding, backfilling, pressure testing and disinfecting of approximately 18m for DN 300, 15m DN 500 and 17m DN 600
    - Repositioning of an existing DN 300 conctrol valve
    - Installation of new DN 500 control valve
    - 2 x DN 100 air valve
    - 2 x DN 100 RSV
    - DN 300 and DN 500 isolating valve
- Construction of a new reinforced concrete control valve chamber No.3A for inlet pipework for reservoir no. 3.
- Demolish existing chamber No.3 roof slab and casting of new roof slab with precast planks.
- Core through existing reservoir wall for installation of DN 600 inlet pipe.
- Trenching and laying of 110mm diameter uPVC scour pipe and fittings.
- V-drains, loffelstein retaining wall, gravel roads and brickwork.
- Provision of 4 copies of the Operating and Maintenance manuals for all valves.
- Environmental rehabilitation.

- Extension of Cathodic protection system to new pipework.
- Earthing and lightning Protection of the chambers.
- Compliance with the Health & Safety and Environmental requirements of this contract including the rehabilitation of the reservoir site, spoils sites and all areas affected by construction activities.
- Commissioning of the reservoir.

Tenderers are required to allow in their tendered price for the supply of all necessary materials, the supply and use of tools, the provision, operation and maintenance of all contractor's plant and equipment, the supply and supervision of all labour and workmanship and everything and every service necessary for the construction, completion, commissioning and maintenance of the works in the manner required by the contract and to the entire satisfaction of the Engineer.
The successful contractor is expected to provide two (2) sets of final documentation that must include as a minimum marked up "As built" drawings and operating and maintenance manuals for all mechanical, electrical and instrumentation equipment required.

PS 3 DESCRIPTION OF SITE AND ACCESS

The site for the proposed reservoir is located in the Howick West, KwaZulu-Natal. Access to the site is via R103 Howick Midmar off ramp fom N3 at GPS co-ordinate **29 31'5.80"S** and **30 13'13.90"E**. The area comprises of 3 reservoirs and a pump station. The new chamber will be located adjacent to the existing inlet chamber into Reservoir no.3. The reservoir complex is within an established residential area with dwellings on the east and north boundary. The entire site is enclosed by perimeter wire fencing with controlled access via a double gate at the entrance. A locality plan of the site is included in Part C4.1.

PS 4 NATURE OF GROUND AND SUBSOIL CONDITIONS

Geotechnical report (**See Annexure 5.4**)

PS 5 DRAWINGS

PS 5.1 Drawings Prepared by Employer

The drawings listed in the table below were prepared and issued by the Employer for tendering purposes. They are issued separately to this document and must be regarded as provisional and preliminary for Tenderers to generally assess the scope of work. The characters in the "Rev. No." column below indicate the revision status of these drawings.

At commencement of the contract, the Employer's Agent shall deliver to the Contractor copies of the drawings for construction purposes and any instructions required for the commencement of the works. Further drawings detailing reinforcement and bending schedules for the concrete chambers will be issued after Contract Commencement. From time to time thereafter during the progress of the works, the Employer's Agent will issue further drawings as may be necessary for adequate construction, completion and defects correction of the works. The work shall be carried out in accordance with the latest available revision of the drawings.

DWG No.	REV No.	DESCRIPTION
001	A	Site Layout Plan

002	A	Pipework Layout Plan
003	A	Existing Control Valve Chamber No.3, Modifications to Pipework and Roof Slab, Plan, Sections and Details
004	A	Existing Control Valve Chamber No.3, Schedule af Pipe Fittings
005	A	Inlet Control Valve Chamber No.3A, Plan And Sections and Details
006	A	Inlet Control Valve Chamber No.3A, Section, Details and Perspective View
007	A	Inlet Control Valve Chamber No.3A, Pipework, Plan And Sections and Details
008	A	Inlet Control Valve Chamber No.3A, Pipework Schedule and Details
009	A	Safety Hoop, Ladder and Brickwork
010	A	Loffelstein Retaining Block Concrete Base and V - Drain
011	A	Inlet Control Valve Chamber No.3A, Ladder Details
012	A	Inlet Control Valve Chamber No.3, Pipe Support Details
013	A	Existing Control Valve Chamber No.3, Pipe Support Details
014	A	Gravel Road Plan and Long Section
015	A	Gravel Road Cross Sections
016	A	Existing Control Valve Chamber No.3 Reinforcement Details Plan, Section and Bending Schedule
017	A	Inlet Control Valve Chamber No.3A, Reinforcement Details Plan, Section and Bending Schedule
018	A	Chamber No.3a Instrument Power Supply
019	A	Chamber No.3A, Plc Rack, Digital Output and Digital Input Modules
I01/CIV/005		Contract Sign Board Details
I01/CVI/16882		Typical Insulating Flange Detail at Flanges And Meters
6649		Typical Ventilator Details For Chambers

All drawings and specifications and copies thereof remain the property of the Employer, and the Contractor shall return all drawings and copies thereof to the Employer at the completion of the Contract.

PS 5.2 RECORD DRAWINGS (AS BUILT)

On completion of the works all construction changes shall be recorded on the drawings. At “Record Drawing” stage drawings must take on the next revision number and in the revisions box on the title block the words “Record Drawing” typed in: Example: if the drawing was revision 2 the drawing should now be revision 3 and the revision “Record Drawing”.
Once the drawings have been checked by the engineers/ technicians the final drawings should be printed on 0.08 thickness inkjet film and the drawings then signed by the relevant accountable engineer. The ”Record Drawings” shall be issued to the Project Manager prior to the issuing of the certificate of completion. The Project Manager is responsible to hand Record drawings to “Records Management” The electronic Cad files should be handed over to “Record Management” in Autocad Format at the latest released version in both *.DWF format and *.DWG format on a CD. The Cad drawings must be saved according to the Umgeni drawing number eg. NC/G01/Civ/UI0808A/001

PS 5.3 TEST CERTIFICATES/GUARANTEES/OPERATING AND MAINTENANCE (O&M) MANUALS

All test certificates, guarantees and maintenance procedure manuals must be handed to UMngeni-uThukela Water. Four sets of the manuals shall be made available to the Employer prior to the issuing of the certificate of completion. 5% of the contract value shall be withheld until all the required documentation is handed over to the Project Leader.

All drawings and specifications and copies thereof remain the property of the Employer, and the Contractor shall return all drawings and copies thereof to the Employer at the completion of the contract.

PS 6 CONSTRUCTION AND MANAGEMENT REQUIREMENTS

The following parts of SANS 1921 Construction and management requirements for works contracts and associated specification data are applicable:
SANS 1921-1 General engineering and construction works
SANS 1921-2 Accommodation of Traffic on Public Roads

The associated specification data are as follows:

Note to compiler: Change text highlighted below in yellow as necessary. Delete this note.

Clause	Specification data associated with SANS 1921- 1
	Essential Data
4.1.7	The requirements for drawings, information and calculations for which the Contractor is to be responsible is detailed in the project specifications.
4.2.1	The responsibility strategy assigned to the Contractor for the works is A.
4.3	The planning, programme and method statements are to comply with the following: 1) The programme shall be prepared in bar (Gantt) chart form, preferably using a project management software tool such as *Microsoft Project* and shall be issued to the Employer's Agent in both hard copy and electronic format. The programme shall be structured to cover all items of work conceivable including all work to be done by Sub-Contractors and shall clearly indicate the critical path 2) The programme must clearly show the intermediate milestone dates to be achieved taking the indicative construction sequences into account. 3) In addition to any other constraints the construction sequence and timing shall take into account of the operational activities of the reservoir complex 4) Regular meetings must be held with the Employer's Agent. 5) Method statements shall be prepared in accordance with the requirements of the project specifications.
4.3.3	The period of notice shall be a minimum of two working days
	Variations
All relevant	In all clauses where it appears, replace the word "Employer" with "Employer's Agent"
4.1.10	Where reference is made to "SANS 2001", substitute with "SABS 1200"
	Additional Clauses
4.6 (e)	Managing and disposing of water will include for by-pass arrangements, of temporary earthworks, cofferdams, pumping equipment, well-pointing, de-watering equipment etc. for dealing with all possible flows whether or not the existing flow path is being interfered with during installation of pipework.

Clause	Specification data associated with SANS 1921- 1
4.7.4	No blasting will be permitted within 10m of any structure, pipeline or service unless the Contractor can satisfy the Employer's Agent that his proposed blasting methods and controls are such that no damage will be caused to the adjoining structure, pipeline or service. The Contractor will be required to provide equipment for and take vibro-recordings at no additional cost to the Employer.
4.8.1	The Contractor shall be responsible for protection from damage to any structures or services that might be affected by the excavations or works. The Contractor shall, before submitting his tender, carefully study the tender drawings and inspect on site the routes of the proposed pipelines and structures to be constructed in close proximity to existing structures and services and make due allowance in his rates for protection of structures and services by use of special construction methods such as close shoring, sheet piling.

PS 7 CONSTRUCTION PROGRAMME *(Read with SANS 1921-1:2004 Clause 4.3)*

PS 7.1 Preliminary Programme

The preliminary programme submitted as part of the Tender Returnable Documents shall be in the form of a simplified bar chart with sufficient details to show clearly how the works will be performed within the time for completion as stated in the Contract Data.

Tenderers may submit tenders for an alternative Time for Completion in addition to a tender based on the specified Time for Completion. Each such alternative tender shall include a preliminary programme similar to the programme above for the execution of the works, and shall motivate his proposal clearly by stating all the financial implications of the alternative completion time.

The Contractor shall be deemed to have allowed fully in his tendered rates and prices as well as in his programme for all possible delays due to normal adverse weather conditions and special non-working days as specified in the Special Conditions of Contract, in the Project Specifications and in the Contract Data.

PS 7.2 Programme in Terms of Clause 5.6 of the General Conditions of Contract

It is essential that the construction programme, which shall conform in all respects to Clause 5.6 of the General Conditions of Contract, be furnished within the time stated in the Contract Data. The preliminary programme to be submitted with the tender shall be used as basis for this programme. The Contractor's attention is also drawn to Clause 5.7.3 of the General Conditions of Contract 2015.

The Contractor shall indicate on the programme all critical path activities. In this regard, the Contractor's attention is drawn to Clause 5.12 of the General Conditions of Contract, where consideration will only be given to claims for extension of time associated with critical path activities.

The Contractor's attention is drawn to PS 6 Clause 4.3

PS 8 SITE FACILITIES AVAILABLE

PS 8.1 Contractor's Site Establishment (*Read with SANS 1921 - 1: 2004 Clause 4.14)*

The Contractor will be permitted to locate his offices, storage facilities, workshops, latrines, etc. in position within the boundary of the site as approved by the Engineer. Temporary buildings and fencing are to be neat and presentable and the surrounding areas must at all times be kept in a neat, clean and orderly condition. The Contractor must not cut down or damage any trees nor make any excavations without the written permission of the Engineer in consultation with the Environmental Advisor and will be required to restore the site to the approval of the Engineer and consultation with the Environmental Advisor.

No sleeping accommodation for the Contractors employees will be permitted on the site.

All buildings and latrines shall be in accordance with the Local Authority and State Health Regulations and shall be kept in a clean, sanitary condition to the satisfaction of the Engineer.

PS 8.2 Source of water supply

Water is available on site and will be provided free of charge

PS 8.3 Source of power supply

Power is available on site. A 220-volt single-phase supply point will be made available to the Contractor at a location convenient to uMngeni-uThukela Water. Electricity consumed for the project will be supplied by uMngeni-uThukela Water free of charge to the Contractor.

PS 9 SITE FACILITIES REQUIRED

PS 9.1 Employer's Agent's Office

Refer to the amendments to the Standardized Specifications PSAB 3.2 to PSAB 5.2

PS 10 OCCUPATIONAL HEALTH AND SAFETY ACT

(Read with SANS 1921 - 1: 2004 Clause 4.18 and the Particular Specification for Construction Health and Safety)

PS 10.1 General Statement

It is a requirement of this Contract that the Contractor shall provide a safe and healthy working environment and to direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. To this end, the Contractor shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) (OHASA), and the Construction Regulations 2014 issued under Section 43 of the OHASA by the Minister of Labour.

For the purpose of this Contract, the Contractor is required to confirm his status as mandatary of the Employer for the execution of the Contract by entering into an agreement with the Employer in terms of the OHASA by executing the Agreement under C1.5 included in Section C1: Agreements and Contract Data.

PS 10.2 Health and Safety Specifications and Plans to be submitted at Tender Stage

(a) Employer's Health and Safety Specification
The Employer's Health and Safety Specification will be included in the tender documents as part of the Project Specifications.

(b) Contractor's Health and Safety Plan

The Occupational Health and Safety Plan should be submitted at tender stage so as enable the Employer to determine whether the Contractor is capable of fulfilling the requirements of Construction Regulation 5(1)(h).

The successful Tenderer shall, on receipt of notification that he has been awarded the contract, submit without delay his own documented Health and Safety Plan for the execution of the work under the Contract. His Health and Safety Plan must at least cover the following:

(i) a proper risk assessment of the works, risk items, work methods and procedures in terms of Construction Regulations 7 to 30 inclusive;
(ii) pro-active identification of potential hazards and unsafe working conditions;
(iii) provision of a safe working environment and equipment;
(iv) statements of methods to ensure the health and safety of Sub-Contractors, employees and visitors to the site, including safety training in hazards and risk areas;
(v) monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations;
(vi) details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works;
(vii) details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2014; and
(viii) all other information and documentation that is required by the Employer, the Employer's Agent, or the agent who acts as a representative for the Employer, in order to enable the Employer to apply for a construction work permit in terms of Construction Regulation 3(1) (if required by law).

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or his agent appointed as contemplated under the relevant provisions of the Construction Regulations 2014, and the Contractor's Health and Safety Plan may be required to be amended if necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan, and before the requirements of Construction Regulation 3, or Construction Regulation 4, as applicable, have been complied with.

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, or any failure on the part of the Contractor to submit the required information or documentation in support of the application for a construction work permit (in terms of Construction Regulation 3), or failure to give notification of construction work (in terms of Construction Regulation 4), as applicable, shall not be used as a reason to claim for extension of time or standing time and related costs.

PS 10.3 Cost of Compliance with the OHASA and Construction Regulations 2014

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) (OHASA), the Construction Regulations 2014, and the Employer's Health and Safety Specification as applicable to this Contract.

Should the Contractor fail to comply with any of the provisions of the OHASA, Construction Regulations 2014, or Employer's Health and Safety Specification, he shall be liable for penalties as provided for in any of the aforementioned documents.

Items that may qualify for remuneration will be specified in the Health and Safety Specifications, or in the Project Specifications.

PS 11 ENVIRONMENTAL MANAGEMENT

A provisional sum has been included in the Bill of Quantities for the environmental rehabilitation to be carried out by a 'selected sub-contractor.

Refer to SANS 1921-1:2004 Clause 4.19 and PS 6 Clause 4.19.3

PS 12 SELECTED SUB-CONTRACTORS

Selected Sub-Contractors (refer to GCC 2015 Clause 4.4) shall be chosen and appointed as follows:
The Employer will prepare a detailed scope of work and/or specification for work to be done or goods to be supplied by a Selected Sub-Contractor.
The Employer and the Contractor will compile a list of firms or persons acceptable to both and who will be invited by the Contractor to submit tenders for the requisite work to be carried out or goods to be supplied by Selected Sub-Contractors. When the tenders are received they will be evaluated and the Employer will then indicate which tender he requires the Contractor to accept and he will advise the Contractor accordingly. The Contractor shall then accept that Tenderer and appoint him/her as a Selected Sub-Contractor.
The Contractor shall incorporate in the sub-contract, provisions that:
In respect of the work carried out or the goods that are the subject of the sub-contract, the Selected Sub-Contractor undertakes to the Contractor mutatis mutandis the obligations and liabilities as are imposed upon the Contractor to the Employer in terms of the Contract, and holds the Contractor harmless from and indemnifies him against the same and in respect of all claims, demands, lawsuits, damages, costs, charges and expenses whatsoever arising out of or in connection therewith, or arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities, and
The Selected Sub-Contractor shall also hold the Contractor harmless from and indemnify him against:

- Shortcomings in the sub-contract work if and where the work was designed by the Selected Sub-Contractor;
- Defects in the goods if and where the goods were manufactured and / or supplied by the Selected Sub-Contractor;
- Any negligence by the Selected Sub-Contractor, his / her Agents, workmen and servants;
- Any misuse by the Selected Sub-Contractor of any Constructional Plant, Temporary Works or materials provided by the Contractor for the purposes of the Contract; and
- Any claims as aforesaid.

PS 13 LAISONS WITH STATUTORY BODIES

The Contractor is to comply with all the requirements of Local Authorities and Government Departments concerned with this contract in respect of sanitation regulations and any other statue applicable to the contract.

PS 14 LOCATION OF EXISTING PIPEWORK

The exact location of the existing pipework must be proved by hand excavation prior to the commencement if any bulk excavation.

PS 15 VEHICLE FOR ENGINEER

The Contractor is to provide one vehicle meeting the following specification for the sole use of the Engineer. Full comprehensive cover for both the vehicles.

TECHNICAL SPECIFICATION

A raised body, 2.5 litre diesel single cab pick-up with no more than 30 000km on the odometer.

KILOMETRES PER MONTH

The Contractor is to pay for the fuel and maintenance of the vehicle based on a usage of 2500km per month. The vehicles are to be maintained to the satisfaction of the Engineer.

PS 16 LANDSCAPING

The Project Specification and UMngeni - UThukela Water's Environmental Management Plan and the rehabilitation plan in **Annexures to C5.5** in Part C5.

PS 17 QUALITY

PS 17.1 QUALITY CONTROL PLAN (QCP)

The Contractor will be required to submit a Quality Control Plan and Procedures for approval by UMngeni-uThukela Water 's Quality Assurance Department.

The Employer or his agent will carry out inspections (i.e. welding and final release certificate inspection) from time to time on all items fabricated off-site.

To avoid delays the Contractor shall give the Employer prompt notice of such inspections. Such notice shall not be less than 48 hours.

Approval by the Employer at any stage of fabrication is merely an authorisation for the Contractor to proceed with the next stage of fabrication/installation and does not in any way relieve the Contractor of his contractual responsibilities.

The Contractor will be required to work in accordance with the uMngeni-uThukela Water Quality Control Procedure where the following "Hold Points" will apply: -

PS 17.1.1 Topsoil removed
PS 17.1.2 Trench bottom
PS 17.1.3 Bedding placed and compacted
PS 17.1.4 Pipe laid and jointed
PS 17.1.5 Selected bedding compacted (Particularly in haunch area)
PS 17.1.6 Backfill placed and compacted
PS 17.1.7 Provide raw material certification (e.g. Corrosion protection for hot-dip galvanized and/or stainless steel)
PS 17.1.8 Methods and procedures for all repairs and welds

PS 17.2 QUALITY MANAGEMENT PLAN MINIMUM REQUIREMENTS

Please see the detailed uMngeni-uThukela Water Quality Control Procedure under Annexures.

PS 18 VALVES

All valves are to have the following diameters and pressure rating:
Flow control valve: DN500, PN10 rated
Isolating valve: DN500, PN10 rated
Air valve: DN100, PN10 rated

PS 19 ELECTRICAL SPECIFICATION

See Annexure 5.3

PS 20 SURVEY

PS 20.1 SURVEY BENCHMARKS

Main survey benchmarks will be indicated to the Contractor by the Engineer as a main reference for all setting out work and all additional control points required by the Engineer for the correct setting out of the works shall be placed in position by the Contractor using these benchmarks as reference. The Engineer will supply the elevation and co-ordinates for these benchmarks. Benchmarks will be to MSL.

PS 20.2 STAFF AND METHOD OF WORKING

All measuring, setting out and levelling shall be performed by competent staff conversant with this type of work. Field books and calculations shall be kept available and submitted for checking and approval when required by the Engineer. All setting out information, reference peg data, sketches and levels shall be recorded in a neat and presentable form for submission to the Engineer.

PS 20.3 DISPLACEMENT OF BENCHMARKS

Should the Contractor cause displacement of any survey benchmark indicated by the Engineer or should the Engineer suspect that displacement of a benchmark has resulted due to an action of the Contractor, the said benchmark shall be checked for line and level by the Engineer and, if necessary, be re-positioned correctly. The costs for this work shall be borne by the Contractor.

PS 21 GUIDELINES FOR THE RECRUITMENT OF LOCAL LABOUR FOR THE IMPLEMENTATION OF WATER INFRASTRUCTURE PROJECTS

See Annexure C5.8

PS 22 CORROSION PROTECTION

PS 22.1 Mild Steel Fabrications

Heavy hot-dipped galvanised. All mild steel components not painted to be sand blasted to SA 2 ½ (DIN55928) and heavy hot-dipped galvanised to SANS ISO 1461 standards.

On-site fabrication processes such as welding, drilling, threading, etc, are to be avoided.
All heavy hot-dipped galvanized items shall be passivated immediately after hot-dipping.

PS 22.2 Stainless Steel Fabrications

PS 22.2.1 Grade and Welding Techniques

The grade of stainless steel for sludge scraper system shall Duplex stainless steel, grade LDX 2101. Plate used in the fabrication shall be supplied as No.1 finish accordance with BS 1449, Part 4.

Welding procedures shall be only those recommended by the Stainless Steel Manufacturer or by the South African Institute of Welding. Only Welders coded to ASME IX, 1995 shall be employed.

Welds shall be smooth and free from blowholes, undercuts, sharp projections and similar visual defects.

Fabrication of stainless steel components shall be carried out in clean workplaces where there is no contamination of mild steel. Grinding and polishing equipment shall be dedicated and shall not be contaminated with iron or mild steel.

Stainless steel shall be suitably handled to avoid scratching the surface.

PS 22.2.2 Pickling and Passivation

All stainless steel shall be fettled and cleaned, after cleaning stainless steel shall be pickled and passivated. Cut edges, welds and heat-affected surfaces shall be pickled and passivated to remove all discolouration. Proprietary pickling and passivating pastes (as supplied by Duva Chemicals (Pty) Limited, or other approved supplier) shall be used in accordance with the manufacturer's recommendations. Care shall be taken not to exceed the maximum contact time recommended. No heat discolouration shall remain after completion of pickling and passivating.

After passivation, surfaces shall be very thoroughly washed with clean potable water to remove all traces of acid. The surface shall be allowed to dry, then polished where necessary, using polishing compounds recommended by the Stainless Steel Manufacturer or the South African Stainless Steel Development Association.

PS 23 FEATURES REQUIRING SPECIAL ATTENTION

PS 23.1 PROTECTION OF THE ENVIRONMENT

Refer to the Particular Specification for Environmental Management Plan (Volume 3 of this document).

All surplus material and rubbish arising from construction during and on completion of the contract must be removed from site. Any dumping or disposal of waste must be at a recognised licensed landfill site.

PS 23.2 EXISTING SERVICE

PS 23.2.1 Care, Damage and Protection

The Contractor shall so carry out all operations as not to encroach on, or interfere with, trespass on, or damage adjoining lands, buildings, properties, road structures, pipelines, place and things, in the vicinity of the Waterworks and so as not to interfere in any way at any time with the smooth and continuous operation of the existing facilities.

PS 23.2.2 Location of Existing Services

Services are indicated on the drawing. The Contractor is to physically locate all existing services wherever possible to prevent damage to them, before commencing any excavation or other work on site.

Where the existing services will be affected by the Contractor's construction activities, their exact position and depths must be defined by exploratory excavation carried out by the Contractor prior to proceeding with construction activities. The Engineer's prior approval must be obtained for the proposed method of locating services.

When services have been successfully located, their positions and the method statement that the Contractor proposes to implement for their removal, protection or isolation and tie-in of new services to replace those existing services removed must be submitted to the Engineer for approval. Such approval must be obtained from the Engineer in writing before the precautionary measures or re-aligning of existing services are implemented prior to construction work that may endanger the services.

Notwithstanding approval of proposed protection measures given by the Engineer for any services, the Contractor shall bear full responsibility for damage and consequential time or cost implications to the

Contractor, the Employer or any other party arising from the Contractor's negligence or failure to adequately protect services.

In case of uncertainty with services in use, the Engineer must be notified of any possible problems, disruptions etc that may arise. Where services may be disrupted, sufficient notice must be given to the Local Authority and the residents, by the Contractor of the intention to commence with the excavation etc and of the duration of disruption that may arise. However, the Contractor shall at all times protect services to the satisfaction of the Engineer, and shall be responsible for all repairs and replacement of fittings etc to reinstate the service.

PS 23.2.3 RESTRICTIONS ON LOADING

The use of wheeled vehicles for the transportation of materials over the floor slab in the clarifier will be restricted to the equivalent loading from a 0.5m^3 capacity dumper of gross mass 2100kg imposing a maximum single wheel load of 700kg or a maximum axle load of 1400kg.

Access for any vehicle imposing heavier loads will not be allowed without the express written permission of the Engineer.

PS 23.2.4 DESIGNATED STORAGE AREA

The Contractor will be permitted to locate his storage facilities, workshops, latrines, etc in the designated area shown on the Site Layout Plan Drawing No.001.

PS 24 SAFEGUARDING OF EXCAVATIONS

The sides of the excavations shall be supported by suitable timber or other sheeting with adequate struts and braces, all being assembled properly and having sufficient strength and stiffness to prevent movement is the materials supported.

PS 25 FORMWORK

The Contractor is required to provide a method statement together with hand sketches for the proposed formwork and concrete pours for the chambers.

PS 26 DESIGNATED STORAGE AREAS

The Contractor will be permitted to locate his storage facilities, site office, latrines, etc in the designated area as shown on the site layout drawing.

PS 27 RETURNS

The Contractor shall submit daily returns of all construction plant and labour to the Engineer in accordance with Clause 23 of the General Conditions of Contract.

PS 28 ORDER OF PRECEDENCE OF DOCUMENTS

The order of precedence of the documents (highest to lowest) is as follows:

- Project Specification
- Drawings
- Schedule of Quantities
- Standardised Specification

PS 29 CONTRACT ESCALATIONS

Tenders are to note that their tender amount shall not subject to Contract Price Adjustment

PS 30 LIGHTNING PROTECTION

The entire installation shall be earthed and protected from lightning. Earthing and lightning shall be carried out by an SANS accredited contractor and shall comply SANS 9002.

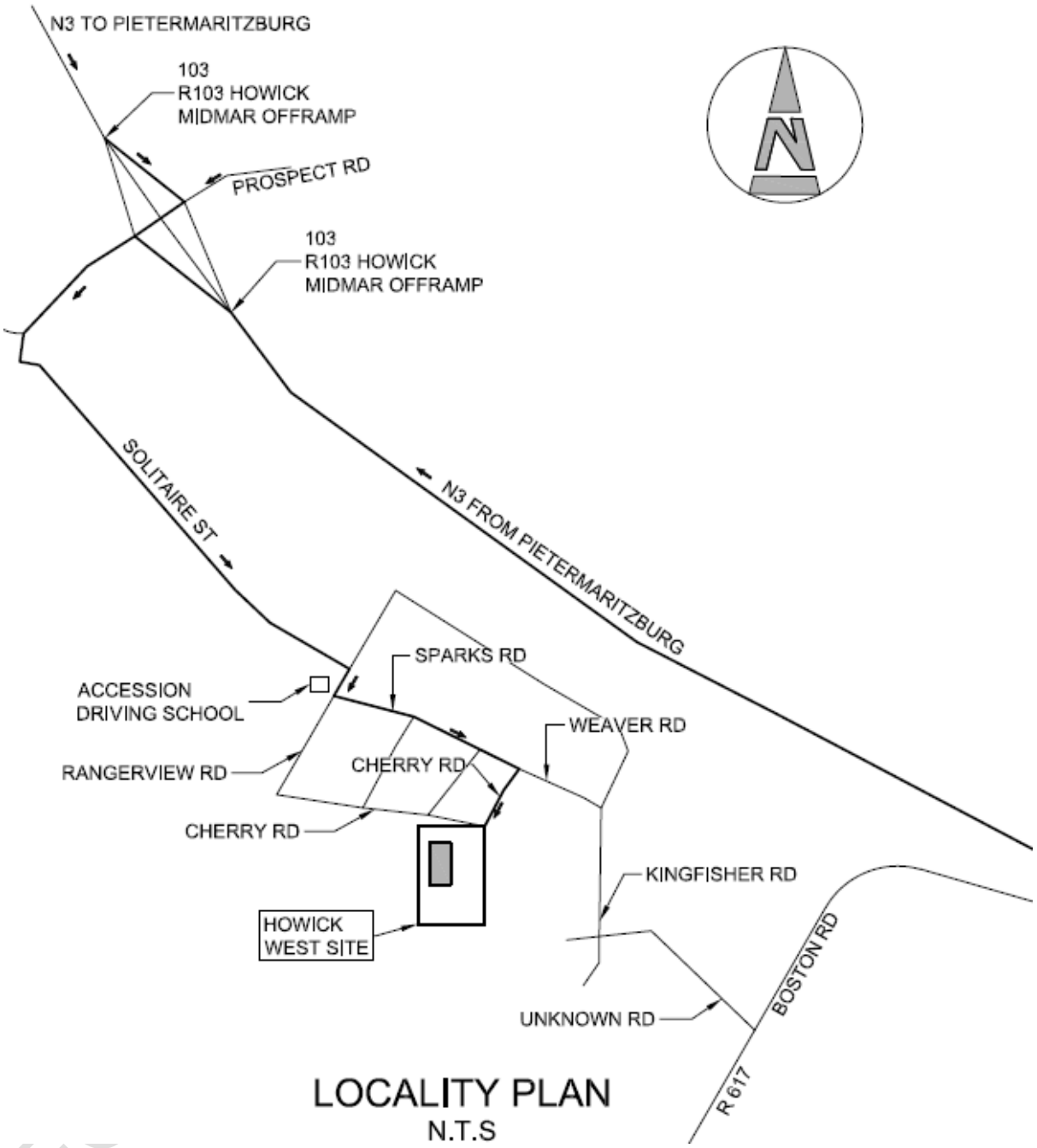
PS 31 COST OF COMPLIANCE WITH THE OHSA CONSTRUCTION REGULATIONS

The rates and price tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract. Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specifications.

Items that may qualify for remuneration will be specified in the Safety Specifications included or in the Project Specifications

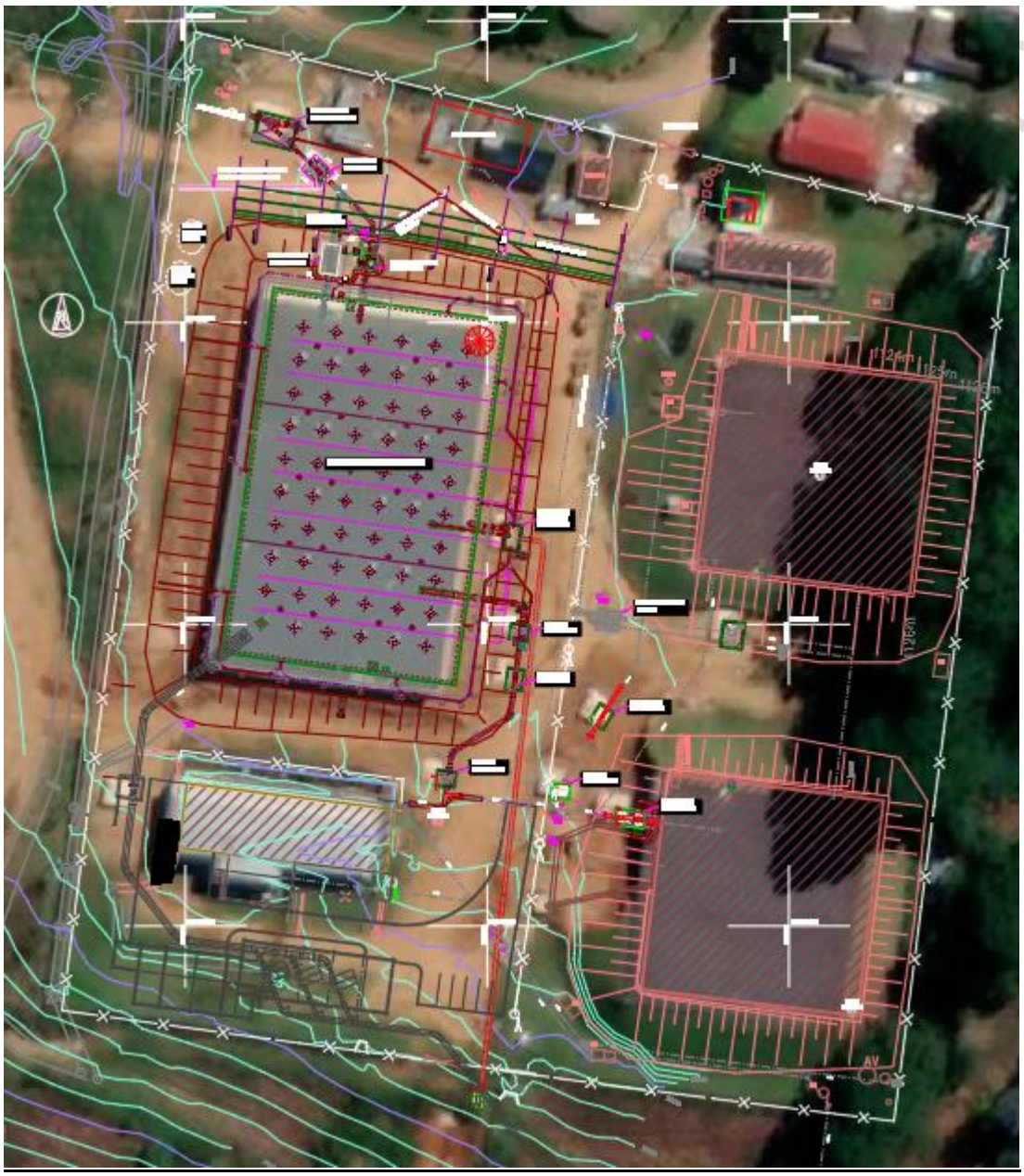
C4.1 LOCALITY PLAN

Note to compiler: Replace the following with a relevant plan



C4.2 DESCRIPTION AND ACCESS TO THE SITE

The site for the proposed works is located at 2 Cherry Road, Howick West, KwaZulu-Natal. Access to the site is via R103 Howick Midmar off ramp from N3 at GPS co-ordinate **29 31'5.80"S** and **30 13'13.90"E**. The area comprises of 3 reservoirs and a pump station. The new chamber will be located adjacent to the existing inlet chamber into Reservoir no.3. The reservoir complex is within an established residential area with dwellings on the east and north boundary. The entire site is enclosed by perimeter wire fencing with controlled access via a double gate at the entrance. A locality plan of the site is included in Part C4.1. The image below is reproduced from drawing number 001 in Annexure C5.2.



C4.3 ATMOSPHERIC / CLIMATIC

In terms of GCC 2015, Clause 5.12.2.2, extension of time will be considered for abnormal climatic conditions in accordance with the following:

The number of days per month on which work is expected not to be possible as a result of **normal rainfall**, and for which the Contractor shall make provision in his tendered rates, prices and programme, are listed in the table below. Only the number of days lost as a result of abnormal rainfall, exceeding the number of days listed in table, will qualify for consideration of extension of time.

TABLE: EXPECTED NUMBER OF WORKING DAYS LOST PER MONTH DUE TO NORMAL RAINFALL

Rainfall – DWA station No. U2E902P01 Midmar Water Works Rainfall Station

MONTH	Expected number of working days lost as result of normal rainfall	Average monthly Rainfall (mm)
JANUARY	*138*	*4*
FEBRUARY	*119*	*4*
MARCH	*106*	*4*
APRIL	*67*	*2*
MAY	*27*	*1*
JUNE	*5*	*0*
JULY	*31*	*1*
AUGUST	*13*	*0*
SEPTEMBER	*36*	*1*
OCTOBER	*76*	*2*
NOVEMBER	*105*	*3*
DECEMBER	*139*	*5*
TOTAL	***862***	***27***

*(The average monthly rainfall figures quoted are for the period 2014 to 2023 from the Midmar Waterworks rainfall station No U2E902P01 monitored by uMngeni-uThukela Water on daily basis; they are included for information only, and shall not be taken into consideration for calculation of extension of time. The numnber of days lost are based on the number of days in each month that rainfall exceeded 10mm. * The number of working days lost for December and January allows for the builders' holidays from 16 December to the first working day in January of the next year)*

During the execution of the Works, the Employer's Agent's Representative will certify a day lost due to abnormal climatic conditions only:

- if no work was possible on the relevant working day on any item which is on the critical path according to the latest approved construction programme; or
- if less than 30% of the work force and plant on site could work during that specific working day.

Extension of time as a result of abnormal climatic conditions shall be calculated monthly being equal to the number of working days certified by the Employer's Agent's Representative as lost due to rainfall to abnormal climatic conditions, less the number of days allowed for as stated in the table above, which could result in a negative figure for certain months. The total extension of time as a result of abnormal climatic conditions for which the Contractor may apply, shall be the cumulative algebraic sum of the monthly extensions. Should the sum thus obtained be negative, the extension of time shall be taken as nil.

C4.4 NATURE OF THE GROUND AND SUBSOIL CONDITIONS

*Note to compiler: Describe briefly the ground conditions and state whether or not a geotechnical investigation was done. If so, by whom, and where it may be found. Provide a brief summary of the significant factual information from the report (**do not interpret the findings**). Delete this note.*

Geotechnical report (See **Annexure C5.4**)

C4.5 ENVIRONMENTAL

Environmental Assessment

Environmental Management Plan (EMP)

Environmental Management Plan (EMP) see **Annexure C5.5**

PART C5: ANNEXURES

ANNEXURE to C5.1	**UMngeni-uThukela Water Insurance Summary and Claims Procedure**
ANNEXURE to C5.2	**Drawings**
ANNEXURE to C5.3	**Electrical Specifications**
ANNEXURE to C5.4	**Geotechnical Report**
ANNEXURE to C5.5	**Environmental Management Plan (EMP)**
ANNEXURE to C5.6	**Occupational Health and Safety Specifications**
ANNEXURE to C5.7	**UMngeni-uThukela Water Particular Specifications**
ANNEXURE to C5.8	**Guidelines for the recruitment of local labour for the implementation of water infrastructure projects**