CITY OF CAPE TOWN
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Making progress possible. Together.

MEMORANDUM OF AGREEMENT

FOR THE

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1- BASIN 6 AND 9

MADE AND ENTERED INTO BETWEEN

CITY OF CAPE TOWN METROPOLITAN MUNICIPALITY

And

RUWACON (PTY) LTD

(REGISTRATION NO: [redacted])

Contract No. 97Q/2021/22

PREAMBLE

WHEREAS Tender 97Q/2021/22 was awarded **Ruwacon (Pty) Ltd**, in line with resolution **SCMB 11/05/22** dated **04 May 2022** for the **Construction of Upgrade to Witzands Aquifer Recharge Infrastructure: Phase 1 Basin 6 and 9**, for the contract period commencing on the date of commencement for a period of 60 months (including 12 months defects liability period) until **15 January 2027**, in the amount of R 102 843 478.27 (excluding VAT) and R 118 270 000.00 (including VAT).

AND WHEREAS it is recorded that this Contract will be governed by the **General Conditions of Contract for Construction Works, Third Edition, 2015** prepared by the South African Institution of Civil Engineering (SAICE) ("**GCC**"), read with the Contract Specific Data ("**CSD**") annexed hereto marked "**PART C1.2: CONTRACT DATA**".

NOW THEREFORE THE PARTIES AGREE AS FOLLOWS:

1. PARTIES

The Parties to this Contract are:

1.1. **The City of Cape Town**, a metropolitan municipality, established in terms of the Local Government: Municipal Structures Act. 117 of 1998 read with the Province of the Western Cape: Provincial Gazette 5588 dated 22 September 2000, as amended ("**the Employer**"), herein represented by the **City Manager or his nominee** duly authorised hereto;

1.2. **Ruwacon (Pty) Ltd**, a private company registered in terms of the laws of the Republic of South Africa with registration no [redacted] with its principal place of business situated at [redacted] (the "**Contractor**"), herein represented by its duly authorised representative, [redacted] in his capacity as **Quantity Surveyor**;

hereinafter jointly referred to as "Parties" and in singular, a "Party".

2. INTERPRETATION

2.1. In the event of any conflict between the provisions of this Contract, the GCC and any Part attached hereto, or any other document incorporated by reference to this Contract, save to the extent expressly stated to the contrary, such conflict will be resolved by giving precedence to such different parts of this Contract in the following order of precedence:

2.1.1 first, the terms and conditions of the CSD;

2.1.2 second, the terms and conditions of the GCC;

2.1.3 third, Parts and Annexures to this Contract; and

2.1.4 fourth, any other documents incorporated by reference.

2.2 The provisions of this Contract supersede and replace the provisions of any previous agreement entered into between the Parties relating to the same subject matter.

3 APPOINTMENT AND DURATION

3.1 The Employer hereby appoints the Contractor to perform the Scope of Work for the Employer from Date of Commencement.

3.2 Unless terminated earlier in accordance with the provisions as set out in the GCC or any other provision in terms of this Contract, this Contract shall commence on the **date of commencement for a period of 60 months (including 12 months defects liability)** and shall terminate on **15 January 2027.**

4 MUTUAL GOOD FAITH / CO-OPERATION

4.1 The Parties represent and undertake to do all such things, perform all such acts and take all steps to procure the doing of all such things and the performance of all such acts, as may be necessary or incidental to give effect to the execution of this Contract.

4.2 The Parties shall at all times during the continuance of this Contract observe the principles of good faith towards one another in the performance of their obligations in terms of this Contract.

5 OBLIGATIONS OF THE EMPLOYER

5.1 The Employer, through the Employers Agent, undertakes to perform its obligations in accordance with the Contract, including but not limited to the Scope of Work (**PART C3: SCOPE OF WORK**), subject to the satisfactory fulfilment of the obligations by the Contractor as set out in this Contract.

5.2 The Employer, through the Employers Agent, shall monitor and evaluate the Contractor's performance in respect of the Scope of Work.

6 OBLIGATIONS OF THE CONTRACTOR

6.1 The Contractor hereby agrees and undertakes to perform the Services to the Employer as set out in Scope of Work (**PART C3: SCOPE OF WORK**).

6.2 The Contractor will perform the Works as expeditiously as possible and furthermore agrees and undertakes to perform the services in accordance with the Scope of Work..

6.3 The Contractor will ensure that the Works will be in accordance with the contract specifications.

6.4 The Contractor shall, ensure that its employees, agents, representatives, sub-contractors and suppliers comply with this Contract and all applicable Laws in the execution of the Works.

6.5 The Contractor will not conduct any activity of whatsoever nature which may be detrimental to the Employer's reputation and goodwill.

7 PRICING DATA

7.1 The Contract Price for the Works shall be as set out in the Pricing Data annexed marked "**PART C2: PRICING DATA**".

7.2 The Contractor shall not be entitled to any other consideration for the rendering of the Works other than as provided for in this Contract.

COMPULSORY ENTERPRISE QUESTIONNAIRE

CITY OF CAPE TOWN

WATER AND SANITATION DEPARTMENT

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

SCHEDULE 1: COMPULSORY ENTERPRISE QUESTIONNAIRE

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

Section 1: Name of enterprise: . . [redacted]

Section 2: VAT registration number, if any: . . [redacted]

Section 2a: National Treasury Central Supplier Database registration number : [redacted]

Section 2b: SARS Tax Compliance Status PIN : [redacted]

Section 3: cidb registration number, if any: . . . [redacted]

Section 4: Particulars of sole proprietors and partners in partnerships

Not Applicable.

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

Section 5: Particulars of companies and close corporations

Company registration number . . [redacted]

Close corporation number . . . [redacted]

Tax reference number . . . . [redacted]

[redacted]

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

i) authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Services that my / our tax matters are in order;

ii) confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004 or Database of Restricted Suppliers;

iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;

iv) confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and

iv) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed [redacted] Date 15/11/2021

Name [redacted] Position QS

Enterprise name Ruwacon (Pty) Ltd

PART C1 : AGREEMENTS AND CONTRACT DATA

Part C1.1: Offer and Acceptance

CITY OF CAPE TOWN

WATER AND SANITATION DEPARTMENT

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

C1.1 Form of Offer and Acceptance

Offer

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

CONTRACT NO 97Q/2021/22: Construction of Upgrade to Witzands Aquifer Recharge Infrastructure and Associated Bulk Services for the City of Cape Town: Phase 1: - Upgrading of Basins 6 & 9

The tenderer, identified in the offer signature block, 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:

Rand One Hundred and Eighteen Million Two Hundred and Seventy Thousand Rand and zero zero cents. (in words);

R 118,270,000.00 (in figures)

This offer may be accepted by the employer by signing the acceptance part of this form of offer and acceptance and returning one copy of this document to the 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.

Signature(s) [redacted]

Name(s) .....

Capacity QUANTITY SURVEYOR .....

for the tenderer

(Name of organization/tenderer) RUWACON (PTY) LTD

(Address of organization/tenderer) [redacted]

Name and signature of witness [redacted]

Date 15/11/2021

[redacted]

Acceptance

By signing this part of this form of offer and acceptance, the employer identified below accepts the tenderer's offer. In consideration thereof, the employer shall pay the contractor the amount due in accordance with the conditions of contract identified in the contract data. Acceptance of the tenderer's offer shall form an agreement between the employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract are contained in:

Part C1: Agreements and contract data (which includes this agreement)
Part C2: Pricing data
Part C3: Scope of work
Part C4: Site information

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

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the returnable schedules as well as any changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance, are contained in the schedule of deviations attached to and forming part of this form of offer and acceptance. No amendments to or deviations from said documents are valid unless contained in this schedule.

The tenderer shall within two weeks 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 securities, bonds, guarantees, proof of insurance and any other documents to be provided in terms of the conditions of contract identified in the contract data. 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 parties have signed the table below and confirms receipt from the employer of one fully completed original copy of this agreement, including the schedule of deviations (if any). The tenderer (now contractor**)** shall within five working days of the agreement coming into effect notify the employer in writing of any reason why he cannot accept the contents of this agreement as a complete and accurate memorandum thereof, failing which the agreement presented to the contractor shall constitute the binding contract between the parties.

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	
[redacted]	[redacted]	
[redacted]		
[redacted]		
[redacted]		
[redacted]		
[redacted]		
[redacted] Witness		

Schedule of Deviations

Notes:

1. The extent of deviations from the tender documents issued by the employer before the tender closing date is limited to those permitted in terms of the conditions of tender.
2. 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.
3. 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.
4. 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. **Clarification letters issued and responses received**

Details **Confirmation of low rates and risk accepted**

By the duly authorised representatives signing this agreement, 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 returnable schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance.

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

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

[redacted]

1 March 2022

[redacted]

Dear Sir

TENDER NO: 97Q/2021/22

DESCRIPTION: CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

The Bid Evaluation Committee (BEC) are in the process of evaluating your tender offer for the above mentioned project. In terms of Clause C.2.17 of the Tender Data we request that you provide further information or clarification on the following points with respect the matters below:

Low and Blank or Nil Rates

Kindly note that you have not provided a price for all the items listed in the schedule of rates for the above-mentioned tender.

In terms of Clause C.2.10.5 of the tender data, the items in the below tables will be regarded as having a nil rate.

In order for the Bid Evaluation Committee to make an informed decision, please produce evidence and advance arguments in support of the items not priced for by completing the tables below:

In terms of clause C.3.11.4 of the tender document, the items listed in the below tables have been identified as a risk to the successful completion of the contract. Thus, we request you to provide supporting evidence and advance arguments in support of the nil rates tendered

ITEMS DETERMINED TO HAVE NIL RATES:				
Item No.	**Item Description**	**Unit**	**R**	**Clarification Response**
BILL NO. 1: UPGRADE OF BASIN 6				
A1.1.2	Facilities for Engineer: Office buildings, car ports, ablution and latrine facilities, communications equipment, IT equipment, site instruction book, protective clothing and safety	SUM	R0.00	

	equipment, project nameboards (2 No), survey equipment, etc.			
A1.1.3	Facilities for the Contractor: Facilities for the Contractor, including offices, storage sheds, workshops, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, dealing with water, survey, access and accommodation of traffic, plant, etc.	SUM	R0.00	
A1.1.5	Removal of Contractor's site establishment infrastructure and reinstatement of site on completion of construction phase.	SUM	R0.00	
A1.2.3	Operate and maintain facilities on site for duration of construction phase except where otherwise stated: Facilities for the Contractor	SUM	R0.00	
A1.2.4	Supervision for duration of construction	SUM	R0.00	
A1.2.5	Company and Head Office overhead costs for duration of Contract	SUM	R0.00	
A1.4.3	Additional survey for the provision of as-built information	SUM	R0.00	
A1.6.1	Accommodation of traffic	SUM	R0.00	
A1.6.2	Cost of survey in terms of the Land Survey Act	SUM	R0.00	
A1.7.1	Health And Safety Measures	SUM	R0.00	
A1.7.2	Health And Safety Plan	SUM	R0.00	
A1.7.3	Health And Safety File	SUM	R0.00	
A1.7.5	b) Contractor's overheads, charges and profit on employment of Occupational Health and Safety Officer	%	R0.00	
A1.9.1	Cost Of Environmental Management Plan	SUM	R0.00	
A1.9.2	Complying With The Environmental Management Plan (EMP)	SUM	R0.00	
D3.14.1	HIGH TENSILE STEEL BARS: EXTRA OVER ITEM D3.13.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
D3.14.2	ii) Y12 mm	t	R0.00	
D3.14.3	iii) Y16 mm	t	R0.00	
D3.14.4	iv) Y20 mm	t	R0.00	
D3.16.1	EXTRA OVER ITEM A 5.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
D3.16.2	ii) R10 mm	t	R0.00	
D3.16.3	iii) R12 mm	t	R0.00	
D3.16.4	iv) R16 mm	t	R0.00	

D3.16.5	iv) R20 mm	t	R0.00	
E3.9.2	HIGH TENSILE STEEL BARS: EXTRA OVER ITEM A 5.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
E3.9.3	ii) Y12 mm	t	R0.00	
E3.9.4	iii) Y16 mm	t	R0.00	
E3.9.5	iv) Y20 mm	t	R0.00	
E3.10.2	EXTRA OVER ITEM A 5.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
E3.10.3	ii) R10 mm	t	R0.00	
E3.10.4	iii) R12 mm	t	R0.00	
E3.10.5	iv) R16 mm	t	R0.00	
E3.10.6	iv) R20 mm	t	R0.00	
F3.6.2	HIGH TENSILE STEEL BAR: EXTRA OVER ITEM 3.6.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
F3.6.3	ii) Y12 mm	t	R0.00	
F3.6.4	iii) Y16 mm	t	R0.00	
F3.6.5	iii) Y20 mm	t	R0.00	
G1.2.2	Bulk Excavation Excavate in all materials and use for embankment or backfill or dispose, as ordered b) Extra-over for: 2) hard rock excavation	m^3	R0.00	
G1.2.3	3) boulder excavation, Class A	m^3	R0.00	
G1.2.4	4) boulder excavation, Class B	m^3	R0.00	
G1.4.2	Hand excavation in all materials and use for embankment or backfill or dispose, as ordered: d) Extra-over for hand excavation in: 1) intermediate excavation	m^3	R0.00	
G1.4.3	2) hard rock excavation	m^3	R0.00	
G1.4.4	3) boulder excavation, Class A	m^3	R0.00	
G1.9.2	Excavate for restricted foundations, footings and pipe trenches in all materials and spoil at Atlantis Sand Mine b) Extra-over for: 2) hard rock excavation	m^3	R0.00	

G1.9.3	3) boulder excavation, Class A	m^3	R0.00	
G1.9.4	4) boulder excavation, Class B	m^3	R0.00	
G1.11.2	Excavate by hand in soft material to expose service d) Extra-over PS D 8.3.8.1(c) for excavation in 1) intermediate excavation	m^3	R0.00	
G2.5.1	HIGH TENSILE STEEL BARS EXTRA OVER ITEM G3.4.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
G2.5.2	ii) Y12 mm	t	R0.00	
G2.5.3	ii) Y16 mm	t	R0.00	
G2.5.4	iii) Y20 mm	t	R0.00	
G2.7.1	MILD STEEL BARS EXTRA OVER ITEM G 3.6.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
G2.7.2	ii) R10 mm	t	R0.00	
G2.7.3	iii) R12 mm	t	R0.00	
G2.7.4	iv) R16 mm	t	R0.00	
G2.7.5	iv) R20 mm	t	R0.00	
I3.11.1	HIGH TENSILE STEEL BARS EXTRA OVER ITEM I3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
I3.11.2	ii) Y12 mm	t	R0.00	
I3.11.3	iii) Y16 mm	t	R0.00	
I3.11.4	iv) Y20 mm	t	R0.00	
I3.13.1	MILD STEEL BARS EXTRA OVER ITEM I3.12.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
I3.13.2	ii) R10 mm	t	R0.00	
I3.13.3	iii) R12 mm	t	R0.00	
I3.13.4	iv) R16 mm	t	R0.00	
I3.13.5	v) R20 mm	t	R0.00	
L4.13.1	HIGH TENSILE STEEL BARS EXTRA OVER ITEM I3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
L4.13.2	ii) Y12 mm	t	R0.00	
L4.13.3	iii) Y16 mm	t	R0.00	
L4.13.4	iv) Y20 mm	t	R0.00	

L4.15.1	MILD STEEL BARS EXTRA OVER ITEM I3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
L4.15.2	ii) R10 mm	t	R0.00	
L4.15.3	iii) R12 mm	t	R0.00	
L4.15.4	iv) R16 mm	t	R0.00	
L4.15.5	v) R20 mm	t	R0.00	
L4.33.1	HIGH TENSILE STEEL BARS EXTRA OVER ITEM I3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
L4.33.2	ii) Y12 mm	t	R0.00	
L4.33.3	iii) Y16 mm	t	R0.00	
L4.33.4	iv) Y20 mm	t	R0.00	
L4.35.1	MILD STEEL BARS EXTRA OVER ITEM I3.12.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
L4.35.2	ii) R10 mm	t	R0.00	
L4.35.3	iii) R12 mm	t	R0.00	
L4.35.4	iv) R16 mm	t	R0.00	
L4.35.5	v) R20 mm	t	R0.00	
BILL NO. 2: UPGRADE OF BASIN 9				
A1.1.2	FIXED-CHARGE AND VALUE-RELATED ITEMS Facilities for Engineer Office buildings, car ports, ablution and latrine facilities, communications equipment, IT equipment, site instruction book, protective clothing and safety equipment, project nameboards (2 No), survey equipment, etc.	SUM	R0.00	
A1.1.3	Facilities for the Contractor Facilities for the Contractor, including offices, storage sheds, workshops, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, dealing with water, survey, access and accommodation of traffic, plant, etc.	SUM	R0.00	
A1.1.5	Removal of Contractor's site establishment infrastructure and reinstatement of site on completion of construction phase.	SUM	R0.00	
A1.2.3	TIME-RELATED ITEMS Facilities for the Contractor	SUM	R0.00	
A1.2.4	Supervision for duration of construction	SUM	R0.00	
A1.2.5	Company and Head Office overhead costs for duration of Contract	SUM	R0.00	
A1.3.1	Setting out of the Works and the preservation and replacement of beacons and reference pegs.	SUM	R0.00	

	Fixed-charged obligations for Item A1.3			
A1.3.2	Setting out of the Works and the preservation and replacement of beacons and reference pegs Time-related obligations for Item A1.3	SUM	R0.00	
A1.4.3	SUMS STATED PROVISIONALLY BY ENGINEER Additional survey for the provision of as-built information	SUM	R0.00	
A1.6.1	TEMPORARY WORKS Accommodation of traffic	SUM	R0.00	
A1.6.2	Cost of survey in terms of the Land Survey Act	SUM	R0.00	
A1.7.1	OCCUPATIONAL HEALTH AND SAFETY Health And Safety Measures	SUM	R0.00	
A1.7.2	Health And Safety Plan	SUM	R0.00	
A1.7.3	Health And Safety File	SUM	R0.00	
A1.7.5	OCCUPATIONAL HEALTH AND SAFETY OFFICER b) Contractor's overheads, charges and profit on employment of Occupational Health and Safety Officer	%	R0.00	
A1.9.1	ENVIRONMENTAL MANAGEMENT PLAN Cost Of Environmental Management Plan	SUM	R0.00	
A1.9.2	Complying With The Environmental Management Plan (EMP)	SUM	R0.00	
A1.9.4	ENVIRONMENTAL CONTROL OFFICER (ECO) b) Contractor's overheads, charges and profit on employment of ECO	SUM	R0.00	
D3.11.1	HIGH TENSILE STEEL BARS EXTRA OVER ITEM D3.13.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
D3.11.2	ii) Y12 mm	t	R0.00	
D3.11.3	iii) Y16 mm	t	R0.00	
D3.11.4	iv) Y20 mm	t	R0.00	
D3.13.1	MILD STEEL BARS EXTRA OVER ITEM A 5.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
D3.13.2	ii) R10 mm	t	R0.00	
D3.13.3	iii) R12 mm	t	R0.00	
D3.13.4	iv) R16 mm	t	R0.00	
D3.13.5	iv) R20 mm	t	R0.00	
E3.6.2	HIGH TENSILE STEEL BARS	t	R0.00	

	EXTRA OVER ITEM A 5.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm			
E1.6.3	ii) Y12 mm	t	R0.00	
E1.6.4	iii) Y16 mm	t	R0.00	
E1.6.5	iv) Y20 mm	t	R0.00	
E1.7.2	MILD STEEL BARS EXTRA OVER ITEM A 5.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
E1.7.3	ii) R10 mm	t	R0.00	
E1.7.4	iii) R12 mm	t	R0.00	
E1.7.5	iv) R16 mm	t	R0.00	
E1.7.6	iv) R20 mm	t	R0.00	
G2.5.1	HIGH TENSILE STEEL BARS EXTRA OVER ITEM G3.4.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
G2.5.2	ii) Y12 mm	t	R0.00	
G2.5.3	iii) Y16 mm	t	R0.00	
G2.5.4	iv) Y20 mm	t	R0.00	
G2.7.1	MILD STEEL BARS EXTRA OVER ITEM G 3.6.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	
G2.7.2	ii) R10 mm	t	R0.00	
G2.7.3	iii) R12 mm	t	R0.00	
G2.7.4	iv) R16 mm	t	R0.00	
G2.7.5	iv) R20 mm	t	R0.00	
I3.11.1	HIGH TENSILE STEEL BARS EXTRA OVER ITEM I3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) Y10 mm	t	R0.00	
I3.11.2	ii) Y12 mm	t	R0.00	
I3.11.3	iii) Y16 mm	t	R0.00	
I3.11.4	iv) Y20 mm	t	R0.00	
I3.13.1	MILD STEEL BARS EXTRA OVER ITEM I3.12.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER: i) R8 mm	t	R0.00	

I3.13.2	ii) R10 mm	t	R0.00	
I3.13.3	iii) R12 mm	t	R0.00	
I3.13.4	iv) R16 mm	t	R0.00	
I3.13.5	iv) R20 mm	t	R0.00	

Please note that this is not an opportunity to change the tendered rates, but only for your company to confirm and provide evidence that the work can be conducted within the tendered rates.

Alternatively, if you wish to withdraw your tender, kindly indicate so.

Kindly provide the required information by no later than 16h00 on Friday, 4 March 2022. Kindly submit your response to [redacted]

Yours faithfully,

[redacted]

RUWACON

[redacted]

4 March 2022

[redacted]

TENDER NO: 97Q/2021/22

DESCRIPTION: CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

Dear Madam / Sir

This letter is in response to the request for clarity/information received on 1 March 2022 regarding our tender submission for the above.

Attached below is our Clarification Response in table format for the items with Low/Blank/Nil Rates.

With regards to the "Extra Over" items for all high tensile and mild steel bars of different diameters (excluded from the table below): The rate column has been left blank, amount priced as "Incl". The rate for steel bars is the same across all diameters and any extra over costs for changes in diameter sizes is considered in the basic price per ton for all steel bars.

We remain available to your office for further consultation and please don't hesitate to contact us accordingly.

Kind Regards,

[redacted]

Item No.	Item Description	Unit	Clarification Response
BILL NO. 1: UPGRADE OF BASIN 6			
A1.1.2	Facilities for Engineer: Office buildings, car ports, ablution and latrine facilities, communications equipment, IT equipment, site instruction book, protective clothing and safety equipment, project nameboards (2 No), survey equipment, etc.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 1.
A1.1.3	Facilities for the Contractor: Facilities for the Contractor, including offices, storage sheds, workshops, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, dealing with water, survey, access and accommodation of traffic, plant, etc.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 1.
A1.1.5	Removal of Contractor's site establishment infrastructure and reinstatement of site on completion of construction phase.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 1.
A1.2.3	Operate and maintain facilities on site for duration of construction phase except where otherwise stated: Facilities for the Contractor	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 1.
A1.2.4	Supervision for duration of construction	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 1.
A1.2.5	Company and Head Office overhead costs for duration of Contract	SUM	Rate left blank, amount priced as "Included". The costs associated with this item is included in the all priced items of the BoQ.
A1.4.3	Additional survey for the provision of as-built information	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 1.
A1.6.1	Accommodation of traffic	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 1.
A1.6.2	Cost of survey in terms of the Land Survey Act	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 1.
A1.7.1	Health And Safety Measures	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 1.
A1.7.2	Health And Safety Plan	SUM	Rate left blank, amount priced as "Included". The pricing for this

			item has been included in item A1.7.4 of Bill No 1.
A1.7.3	Health And Safety File	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 1.
A1.7.5	b) Contractor's overheads, charges and profit on employment of Occupational Health and Safety Officer	%	Rate left blank, amount priced as "Included". The overheads, charges and profit of this item has already been included in A1.7.4 of Bill No 1.
A1.9.1	Cost Of Environmental Management Plan	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 1.
A1.9.2	Complying With The Environmental Management Plan (EMP)	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 1.
G1.2.2	Bulk Excavation: Excavate in all materials and use for embankment or backfill or dispose, as ordered b) Extra-over for: 2) hard rock excavation	m^3	Incorrectly left blank, must be R450.07 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.2.3	3) boulder excavation, Class A	m^3	Incorrectly left blank, must be R162.00 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.2.4	4) boulder excavation, Class B	m^3	Incorrectly left blank, must be R162.00 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.4.2	Hand excavation in all materials and use for embankment or backfill or dispose, as ordered: d) Extra-over for hand excavation in: 1) intermediate excavation	m^3	Incorrectly left blank, must be R702.00 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.4.3	2) hard rock excavation	m^3	Incorrectly left blank, must be R270.00 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.4.4	3) boulder excavation, Class A	m^3	Incorrectly left blank, must be R270.00 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.9.2	Excavate for restricted foundations, footings and pipe trenches in all materials and spoil at Atlantis Sand Mine b) Extra-over for: 2) hard rock excavation	m^3	Incorrectly left blank, must be R450.07 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.9.3	3) boulder excavation, Class A	m^3	Incorrectly left blank, must be R162.00 as per the same rate only item in Bill No 2. This does not change the final amount.

G1.9.4	4) boulder excavation, Class B	m^3	Incorrectly left blank, must be R162.00 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.11.2	Excavate by hand in soft material to expose service d) Extra-over PS D 8.3.8.1(c) for excavation in 1) intermediate excavation	m^3	Incorrectly left blank, must be R21.11 as per the same rate only item in Bill No 2. This does not change the final amount.
	BILL NO. 2: UPGRADE OF BASIN 9		
A1.1.2	FIXED-CHARGE AND VALUE- RELATED ITEMS Facilities for Engineer Office buildings, car ports, ablution and latrine facilities, communications equipment, IT equipment, site instruction book, protective clothing and safety equipment, project nameboards (2 No), survey equipment, etc.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
A1.1.3	Facilities for the Contractor Facilities for the Contractor, including offices, storage sheds, workshops, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, dealing with water, survey, access and accommodation of traffic, plant, etc.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
A1.1.5	Removal of Contractor's site establishment infrastructure and reinstatement of site on completion of construction phase.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
A1.2.3	TIME-RELATED ITEMS Facilities for the Contractor	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 2.
A1.2.4	Supervision for duration of construction	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 2.
A1.2.5	Company and Head Office overhead costs for duration of Contract	SUM	Rate left blank, amount priced as "Included". The costs associated with this item is included in the all priced items of the BoQ.
A1.3.1	Setting out of the Works and the preservation and replacement of beacons and reference pegs.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
	Fixed-charged obligations for Item A1.3		
A1.3.2	Setting out of the Works and the preservation and replacement of beacons and reference pegs Time-related obligations for Item A1.3	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 2.
A1.4.3	SUMS STATED PROVISIONALLY BY ENGINEER: Additional survey for the provision of as- built information	SUM	Rate left blank, amount priced as "Included". The pricing for this

G1.9.4	4) boulder excavation, Class B	m³	Incorrectly left blank, must be R162.00 as per the same rate only item in Bill No 2. This does not change the final amount.
G1.11.2	Excavate by hand in soft material to expose service d) Extra-over PS D 8.3.8.1(c) for excavation in 1) intermediate excavation	m³	Incorrectly left blank, must be R21.11 as per the same rate only item in Bill No 2. This does not change the final amount.
	BILL NO. 2: UPGRADE OF BASIN 9		
A1.1.2	FIXED-CHARGE AND VALUE- RELATED ITEMS Facilities for Engineer Office buildings, car ports, ablution and latrine facilities, communications equipment, IT equipment, site instruction book, protective clothing and safety equipment, project nameboards (2 No), survey equipment, etc.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
A1.1.3	Facilities for the Contractor Facilities for the Contractor, including offices, storage sheds, workshops, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, dealing with water, survey, access and accommodation of traffic, plant, etc.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
A1.1.5	Removal of Contractor's site establishment infrastructure and reinstatement of site on completion of construction phase.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
A1.2.3	TIME-RELATED ITEMS Facilities for the Contractor	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 2.
A1.2.4	Supervision for duration of construction	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 2.
A1.2.5	Company and Head Office overhead costs for duration of Contract	SUM	Rate left blank, amount priced as "Included". The costs associated with this item is included in the all priced items of the BoQ.
A1.3.1	Setting out of the Works and the preservation and replacement of beacons and reference pegs.	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
	Fixed-charged obligations for Item A1.3		
A1.3.2	Setting out of the Works and the preservation and replacement of beacons and reference pegs Time-related obligations for Item A1.3	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 2.
A1.4.3	SUMS STATED PROVISIONALLY BY ENGINEER: Additional survey for the provision of as- built information	SUM	Rate left blank, amount priced as "Included". The pricing for this

			item has been included in item A1.1.1 of Bill No 2.
A1.6.1	TEMPORARY WORKS Accommodation of traffic	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.2.1 of Bill No 2.
A1.6.2	Cost of survey in terms of the Land Survey Act	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.1.1 of Bill No 2.
A1.7.1	OCCUPATIONAL HEALTH AND SAFETY Health And Safety Measures	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 2.
A1.7.2	Health And Safety Plan	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 2.
A1.7.3	Health And Safety File	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 2.
A1.7.5	OCCUPATIONAL HEALTH AND SAFETY OFFICER b) Contractor's overheads, charges and profit on employment of Occupational Health and Safety Officer	%	Rate left blank, amount priced as "Included". The overheads, charges and profit of this item has already been included in A1.7.4 of Bill No 2.
A1.9.1	ENVIRONMENTAL MANAGEMENT PLAN Cost Of Environmental Management Plan	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 2.
A1.9.2	Complying With The Environmental Management Plan (EMP)	SUM	Rate left blank, amount priced as "Included". The pricing for this item has been included in item A1.7.4 of Bill No 2.
A1.9.4	ENVIRONMENTAL CONTROL OFFICER (ECO) b) Contractor's overheads, charges and profit on employment of ECO	SUM	On the excel filed received on the flash disk with the tender document: Bill No 1, Item A1.9.4 "Contractor's overheads, charges and profit on employment of ECO", there was a unit of R480,000.00. We used this as the rate for item A1.9.3. The costs for the ECO, overheads, charges and profit are included in Bill No 1, items A1.9.3 and A1.9.4

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

[redacted]

9 March 2022

[redacted]

Dear Sir

TENDER NO: 97Q/2021/22

DESCRIPTION: CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

The Bid Evaluation Committee (BEC) are in the process of evaluating your tender offer for the above mentioned project. In terms of Clause C.2.17 of the Tender Data we request that you provide further information or clarification on the following points with respect the matters below:

Additional Rates Clarification

Kindly note that you have you proposed the additional rates to listed rate rate only items associated with boulder, hard rock, foundation and hand excavation as listed in the table below. The previous clarification letter was not an opportunity to add additional rates. Further noting that rate only items will not be able to be rebalanced within the tendered rates your clarification is sought.

Thus in order for the Bid Evaluation Committee to make an informed decision with regards to the responsiveness of the tender please clarify the following.

In terms of clause C.3.11.4 of the tender document, the items listed in the below tables have been identified as a financial risk to the successful completion of the contract. Thus, we request you to clarify that you will be able to perform the contractual requirements for the original tendered rate or risk non-responsiveness.

RATE ONLY ITEMS DETERMINED TO BE ADDITIONAL				
Item No.	**Item Description**	**Original Rate**	**New Rate**	**Clarification Response**
BILL NO. 1: UPGRADE OF BASIN 6				
G1.2.2	Bulk Excavation: Excavate in all materials and use for embankment or backfill or dispose, as ordered b) Extra-over for: 2) hard rock excavation	R0.00	R450.07	

G1.2.3	3) boulder excavation, Class A	R0.00	R162.00	
G1.2.4	4) boulder excavation, Class B	R0.00	R162.00	
G1.4.2	Hand excavation in all materials and use for embankment or backfill or dispose, as ordered: d) Extra-over for hand excavation in: 1) intermediate excavation	R0.00	R702.00	
G1.4.3	2) hard rock excavation	R0.00	R270.00	
G1.4.4	3) boulder excavation, Class A	R0.00	R270.00	
G1.9.2	Excavate for restricted foundations, footings and pipe trenches in all materials and spoil at Atlantis Sand Mine b) Extra-over for: 2) hard rock excavation	R0.00	R450.07	
G1.9.3	3) boulder excavation, Class A	R0.00	R162.00	
G1.9.4	4) boulder excavation, Class B	R0.00	R162.00	
G1.11.2	Excavate by hand in soft material to expose service d) Extra-over PS D 8.3.8.1(c) for excavation in 1) intermediate excavation	R0.00	R21.11	

In terms of Clause C.2.10.5 of the tender data, the items in the above tables will be regarded as having a nil rate.

Please note that this is not an opportunity to change the tendered rates, but only for your company to confirm and provide evidence that the work can be conducted within the tendered rates.

Alternatively, if you wish to withdraw your tender, kindly indicate so.

Kindly provide the required information by no later than 16h00 on Friday, 11th March 2022. Kindly submit your response to [redacted]

[redacted]

RUWACON

Tel: 051 403 0400
Fax: 051 403 0450
info@ruwacon.co.za
www.ruwacon.co.za

PO Box 13596
Northridge Mall
9302

6 Mimosa Street
Bloemfontein

11 March 2022

[redacted]

TENDER NO: 97Q/2021/22

DESCRIPTION: CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

Dear Madam / Sir

This letter is in response to the request for clarification received dated and received on 9 March 2022 regarding our tender submission for the above.

Thank you for your clarification enquiry, we take note of your concern of the financial risk, we hereby confirm that we accept the calculated risk as below.

We inspected the site and works at tender stage and the likelihood of any intermediate, hard rock or boulders being present on this project is very low, which is also an indication of why these items were measured as "Rate Only" items in the Bills of Quantities by the Consulting Engineer.

According to the Bill of Quantities items G1.1.1, G1.3.1, G1.8.1 and G1.11.1 totals a quantity of 378 m3 for excavations, with the majority of this being bulk excavations. A worst-case scenario financial risk involved on these items **should there be hard rock present** in the above-mentioned items will be: R450.07 x 378m3 = R170,126.46.

In our Preliminaries and General pricing, we have allowed a sum towards any unforeseen costs that may arise which has not been covered by our rates. We therefore accept the risk attached to the above and confirm that it will not have any effect on the successful completion of the project. The rates for the items in question can therefore be left at zero (R0.00).

We remain available to your office for further consultation and please don't hesitate to contact us accordingly.



C1.2: Contract Data

Part 1: Contract Data provided by the Employer

GENERAL CONDITIONS OF CONTRACT

The following standardised General Conditions of Contract:

General Conditions of Contract for Construction Works, Third Edition, 2015

prepared by the South African Institution of Civil Engineering (SAICE) shall apply to and form the General Conditions of Contract for this contract. Copies of these conditions of contract are obtainable from the South African Institution of Civil Engineering (SAICE), Private Bag X200, Halfway House 1685, Tel: (011) 805 5947, Fax: (011) 805 5971, e-mail: civilinfo@saice.org.za.

Copies of the General Conditions of Contract are available for inspection and scrutiny at the offices of the Employer.

The Pro-formas bound with the General Conditions of Contract 2015, on pages 96 to 113 shall not apply to this Contract and shall be replaced with the documents bound into this Contract Document.

The General Conditions of Contract make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the general conditions of contract.

The General Conditions of Contract shall be read in conjunction with the variations, amendments and additions set out in the Contract Specific Data below. Each item of data given below is cross-referenced to the clause in the General Conditions of Contract to which it mainly applies.

The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:

a) the Form of Offer and Acceptance,
b) the Contract Specific Data within the Contract Data,
c) the General Conditions of Contract for Construction Works, Third Edition, 2015,
d) the Drawings,
e) the Scope of Work,
f) the Pricing Data, and
g) the conditions of tender, the tender data and tender schedules

If an ambiguity or discrepancy is found in the documents, the Employer's Agent shall issue any necessary clarification or instruction.

CONTRACT SPECIFIC DATA

The following contract specific data, referring to the General Conditions of Contract for Construction Works, Third Edition, 2015, are applicable to this Contract:

Clause 1.1.1.2:

Add the following after "Bill of Quantities":

, also referred to as Bills of Quantities,

Clause 1.1.1.13:

The Defects Liability Period is **12** months.

Clause 1.1.1.14:

The time for achieving Practical Completion is **48 (forty eight) months from date of commencement should both Basins 6 and 9 be awarded, or 30 (thirty) months from date of commencement should only Basin 6 be awarded**, inclusive of the 14 day period referred to in Clause 5.3.2 below, and inclusive of non-working days referred to in Clause 5.8.1 below, but exclusive of special non-working days (Clause 5.8.1).

Clause 1.1.1.15:

The **Employer** is the CITY OF CAPE TOWN, represented by the DIRECTOR: WATER & SANTATION DEPARTMENT, WATER & WASTE DIRECTORATE and/or such other person or persons duly authorised thereto by the Employer in writing.

The name of the Employer is: CITY OF CAPE TOWN
WATER & WASTE DIRECTORATE
WATER AND SANITATION DEPARTMENT

and is referred to in the Contract documents by the terms “Employer”, “City of Cape Town” or “Council” as the context provides.

Clause 1.1.1.16:

The **Employer’s Agent**, referred to in the Contract documents, is the firm of [redacted] acting through a director, an associate or an official authorised thereto in writing.

The name of the Employer’s Agent is: [redacted] or their successors duly appointed by the Employer

Clause 1.1.1.26:

The Pricing Strategy is a Re-measurement Contract.

Add the following Clauses after Clause 1.1.1.34:

1.1.1.35 “**Drawings**” means all drawings, calculations and technical information forming part of the Contract Documents and any modifications thereof or additions thereto from time to time approved in writing by the Employer’s Agent or delivered to the Contractor by the Employer’s Agent.

1.1.1.36 “**Letter of Notification**” means the letters of formal notification, signed by the Employer, of the decision of the Supply Chain Management Bid Adjudication Committee sent to all tenderers. The notification of the decision does not form part of the Employer’s Acceptance of the successful tenderer’s Offer and no rights shall accrue.

1.1.1.37 **"Intellectual Property"** means any and all intellectual property rights of any nature anywhere in the world whether registered, registerable or otherwise, including patents, trademarks, registered designs and domain names, applications for any of the foregoing, trade or business names, copyright and rights in the nature of copyright, design rights, rights in databases, know-how, trade secrets and any other intellectual property rights which subsist in computer software, computer programs, websites, documents, information, techniques, business methods, drawings, logos, instruction manuals, lists and procedures and particulars of customers, marketing methods and procedures and advertising literature, including the "look and feel" of any websites

Clause 1.2.1.2:

The address of the Employer is:

Physical address: CITY OF CAPE TOWN
[redacted]

Postal address: [redacted]

E-mail address: [redacted]

Clause 1.2.1.2:

The Employer’s Agent is: Zutari PTY ltd

Physical address: [redacted]

Tel: [redacted]

E-mail address: [redacted]

Clause 1.3:

Delete Clause 1.3.5 in its entirety and replace with the following:

1.3.5 Intellectual Property

1.3.5.1 The Contractor acknowledges that it shall not acquire any right, title or interest in or to the Intellectual Property of the Employer.

1.3.5.2 The Contractor hereby assigns to the Employer, all Intellectual Property created, developed or otherwise brought into existence by it for the purposes of the contract, unless the Parties expressly agree otherwise in writing.

1.3.5.3 The Contractor shall be deemed to have given the Employer a non-terminable, transferable, non-exclusive, royalty-free licence to copy, use and communicate the Contractor's documents, including making and using modifications of such documents for further work required to the Works.

1.3.5.4 The Contractor shall, and warrants that it shall:

1.3.5.4.1 not be entitled to use the Employer's Intellectual Property for any purpose other than as contemplated in this contract;

1.3.5.4.2 not modify, add to, change or alter the Employer's Intellectual Property, or any information or data related thereto, nor may the Contractor produce any product as a result of, including and/or arising from any such information, data and Intellectual Property, and in the event that it does produce any such product, the product shall be, and be deemed in law to be, owned by the Employer;

1.3.5.4.3 not apply for or obtain registration of any domain name, trademark or design which is similar to any Intellectual Property of the Employer;

1.3.5.4.4 comply with all reasonable directions or instructions given to it by the Employer in relation to the form and manner of use of the Employer Intellectual Property, including without limitation, any brand guidelines which the Employer may provide to the contractor from time to time;

1.3.5.4.5 procure that its employees, directors, members and contractors comply strictly with the provisions of clauses 1.3.5.4.1 to 1.3.5.4.3 above;

unless the Employer expressly agrees thereto in writing after obtaining due internal authority.

1.3.5.5 The Contractor represents and warrants to the Employer that, in providing goods, services or both, as the case may be, for the duration of the contract, it will not infringe or make unauthorised use of the Intellectual Property rights of any third party and hereby indemnifies the Employer from any claims, liability, loss, damages, costs, and expenses arising from the infringement or unauthorised use by the contractor of any third party's Intellectual Property rights.

1.3.5.6 In the event that the contract is cancelled, terminated, ended or is declared void, any and all of the Employer's Intellectual Property, and any and all information and data related thereto, shall be immediately handed over to the Employer by the contractor and no copies thereof shall be retained by the contractor unless the Employer expressly and in writing, after obtaining due internal authority, agrees otherwise.

Add the following Clause after Clause 1.3.6:

1.3.7 The parties agree that this contract shall also be subject to the Employer's Supply Chain Management Policy ('SCM Policy') that was applicable on the date the bid was advertised**, save that if the Employer adopts a new SCM Policy which contemplates that any clause therein would apply to the contract emanating from this tender, such clause shall also be applicable to that contract**. Please refer to this document contained on the CCT's website.

1.3.8 Abuse of the supply chain management system is not permitted and may result in cancellation of the contract, restriction of the supplier, and/or the exercise by the Employer of any other rights and remedies available to it as described in the SCM Policy.

Clause 3.1

Delete clause

Clause 3.2.2
Add the following at the end of the clause:

If, in exercising any discretion, the result of such decision would be to utilise the contingency allowance, increase the contract value or granting of time for practical completion, the Employer's Agent must obtain approval from the Employer that such funding or time is available and granted by the Employer to be awarded prior to finalising such a decision.

Clause 3.2.3:

The Employer's Agent shall obtain the specific approval of the Employer before executing any of his functions or duties according to the following Clauses of the General Conditions of Contract or Contract Data:

a) Clause 3.3.1 Nomination of Employer's Agent's Representative
b) Clause 3.3.4 Employer's Agent's authority to delegate
c) Clause 5.8.1 Non-working times
d) Clause 5.11.2 Suspension of the Works
e) Clause 5.12.4 Acceleration instead of extension of time
f) Clause 6 All actions in terms of the clause subject to 3.2.2 of Contract Data.
h) Clause 6.10.10 Advance payment, for items not listed in the Advance Payment Schedule.
i) Clause 10.1.5 All actions in terms of the clause subject to 3.2.2 of Contract Data.
j) Other requirements.

Clause 3.3.2.2.3:
Delete the words "oral or" from the clause

Clause 3.3.2.2.4:
Delete the words "oral or" from the clause

Clause 4.1:

Add the following Clause after Clause 4.1.2:

4.1.3 Where the Contract is based on an alternative tender offer submitted by the Tenderer/Contractor, he shall, notwithstanding acceptance of the offer by the Employer, be liable for any deficiency in the alternatives proposed, for any costs in ensuring that the alternatives meet the Employer's standards and requirements, and for any loss or damage arising out of such error or deficiency.

Clause 5.3.1:

The documentation required before commencement with Works execution is:

a) Approved Health and Safety Plan (Refer to applicable clause in the Health and Safety Specification in Part C3.5 in the Scope Work)
b) Initial programme (Refer to Clause 5.6)
c) Security (Refer to Clause 6.2)
d) Evidence of Insurance (Refer to Clause 8.6)
e) Occupational Health and Safety Agreement (Part C1.5 in Agreements and Contract Data)
f) Letter of good standing from the Compensation Commissioner, or a licensed compensation insurer (Refer to Clause 4.3)
g) Protection of the Environment Declaration (Part C1.6 in Agreements and Contract Data)
h) Proof of Registration / Letter of Good Standing with the Bargaining Council for the Civil Engineering Industry (BCCEI)
i) Other requirements

Add the following to Clause 5.3.1:

Such instruction shall, where applicable, also be subject to the issuing, by the Provincial Director of the Department of Labour, of a construction work permit to perform the intended construction work in terms of Clause 5.3.4 below.

Clause 5.3.2:

The time to submit the documentation required before commencement with Works execution is within **14** days.

Clause 5.3.3:

Add the following to Clause 5.3.3:

Notwithstanding the above, where a construction work permit from the Provincial Director of the Department of Labour is required, commencement of the Works shall not be deemed to take place until such construction work permit has been issued by the Provincial Director.

Clause 5.3.4:

Add the following Clause after Clause 5.3.3:

5.3.4 Application for Construction Work Permit

Where the Employer is required to apply to the Provincial Director of the Department of Labour for a construction work permit to perform the intended construction work, the employer shall do so as soon as possible after its Bid Adjudication Committee has awarded the contract, and the period that the Department of labour requires to issue the permit will run concurrently with the appeal period.

Should the issuing of a construction work permit delay the Employer's Agent's instruction to commence executing the Works and this in turn causes a delay to Practical Completion by more than 60days, then the Contractor shall be entitled to make a claim in accordance with Clause 10.1. Should, however, the issuing of a construction work permit be delayed by the submission of a unacceptable draft Health and Safety Plan, in the opinion of either the Employer's Health and Safety Agent, or the Provincial Director of the Department of Labour, no claim for an extension of time will be entertained.

Clause 5.4.2:

Access to and possession of the Site shall not be exclusive to the Contractor insofar as the provisions of Clause 4.8 apply, and where ongoing use by the general public is required.

Add the following Clause after Clause 5.4.3:

5.4.4 The Contractor shall bear all costs and charges for special and temporary rights of way required by it in connection with access to the Site.

Clause 5.6.2.3:

Insert the following after "…approvals,":

… permits,

Clause 5.8.1:

The non-working days are Sundays.

The special non-working days are:

a) All gazetted public holidays.
b) Year-end break(s) not exceeding 15 working days in duration.

Clause 5.12.2.2:

Add the following to Clause 5.12.2.2:

No extension of time will be granted in respect of any delays attributed to normal climatic conditions. Normal climatic conditions shall be deemed to include normal rainfall and associated wet conditions and materials, strong winds and extremes of temperature. However, in the event that delays to critical activities exceed the number of working days listed below for each month, then abnormal climatic conditions shall be deemed to exist, and an extension of time may be claimed in accordance with the provisions of Clause 5.12.

The number of days quoted below shall be regarded as a fair estimate of the delays to be anticipated and allowed for under normal climatic conditions where inclement weather prevents or disrupts critical work.

January	2 days
February	2 days
March	2 days
April	2 days
May	2 days
June	4 days
July	4 days
August	4 days

September	4 days
October	2 days
November	2 days
December	2 days

Claims for delays for abnormal climatic conditions shall be accompanied by substantiating facts and evidence, which shall be submitted timeously as each day or half-day delay is experienced.

It shall be further noted that where the critical path is not affected, no extension of time for abnormal climatic conditions or for any other reason will be entertained.

Clause 5.13.1:

The penalty for failing to complete the Works is **R5 000** per day.

Insert the following after "actual date of Practical Completion":

… or, in the case of termination by the Employer in terms of Clause 9.2.1, the actual date of termination,

Clause 5.16.3:

The latent defects period is **10** years.

Clause 6.2.1:

The security to be provided by the Contractor shall be a performance guarantee of **7%** of the Contract Sum. The performance guarantee shall contain the precise wording of the document included in Part C1.3 of the Contract Data: **Form of Performance Guarantee**, and it shall be issued by a financial institution approved by the Employer at the date when the guarantee is issued. The list of approved financial institutions current at the date of tender is attached to the **Form of Performance Guarantee**.

Clause 6.2.2:

Delete Clause 6.2.2 in its entirety.

Clause 6.2.3:

Delete Clause 6.2.3 in its entirety and replace with the following:

The Contractor shall ensure that the performance guarantee remains valid and enforceable until the Certificate of Completion of the Works is issued.

Clause 6.5.1.2.3:

The percentage allowance to cover overhead charges is **10%**

Clause 6.8.2:

Add the following to Clause 6.8.2:

The Contract Price shall be subject to contract price adjustment in accordance with Clause 6.8 of the General Conditions of Contract.

If special materials are specified in Part 2 of the Contract Data then the provisions of Clause 6.8.3 of the General Conditions of Contract shall apply to such special materials.

Where applicable, in terms of the foregoing, the value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule with the following values for "Concrete works" and/or "Roads and earthworks":

The value of "x" is 0,10.

The values of the coefficients for "Concrete works" are:

a = 0,25 b = 0,15 c = 0,55 d = 0,05

The values of the coefficients for "Roads and earthworks" are:

a = 0,21 b = 0,27 c = 0,42 d = 0,10

The base month is one month prior to the month in which the tender closed

Furthermore, the Contract Price Adjustment Schedule shall be amended as follows:

"L" is the "Labour Index" and shall be the Consumer Price Index (CPI) for "All items (CPI Headline)", as published in the Statistical News Release, P0141: Table A – Consumer Price Index: Main Indices of Statistics South Africa.

"P" is the "Plant Index" and shall be the Construction Materials Price Index for "Plant and Equipment" as published in the Statistical News Release P0151.1, Table 4 – Mining and construction plant and equipment price index of Statistics South Africa..

"M" is the "Materials Index" and shall be the Construction Materials Price Index for selected materials, Materials for "Civil Engineering material – roads, general **(excluding bitumen)**," as published in the Statistical News Release P0151.1, Table 6 – Civil engineering material price indices of Statistics South Africa

"F" is the "Fuel Index" and shall be the Producer Price Index (PPI) for "Coal and Petroleum Products - Diesel", as published in the Statistical News Release P0142.1: Table 1 –PPI for final manufactured goods of Statistics South Africa.

The amount "Ac" shall be sub-divided into Ac_1 and Ac_2, as appropriate, and each of these shall be multiplied by its Contract Price Adjustment Factor (CPAF), with the resultant amounts added together to produce the adjustment as envisaged in the CPA Schedule:

where

Ac_1 is the proportion of Ac applicable to "Concrete works", and
Ac_2 is the proportion of Ac applicable to "Roads and earthworks"

and where

$Ac_1 = T_1 – S_1 – D_1 – E_1 – G_1 – Ap_1$, and
$Ac_2 = T_2 – S_2 – D_2 – E_2 – G_2 – Ap_2$

in which formulae the values associated with the symbols T_1 and T_2…. Ap_1 and Ap_2 shall be applicable to the proportions of T ….. Ap in "Concrete works" and "Roads and earthworks", respectively.

Furthermore, the value of the General Items shall be proportional to the value of work done and materials on Site in T_1 and T_2 respectively.

Clause 6.8.3: Variation in the cost of special materials

Price adjustment for variations in the cost of special materials is provided for in the Special Materials Schedule at the end of this Part 1: Contract Data provided by the Employer.

Clause 4.2 of the Contract Price Adjustment Schedule

Delete the words "by the Contractor" that appear after "…. entered in the Contract Data"

Clause 6.8.4:

Add the following to Clause 6.8.4:

Notwithstanding the above, in the event that a public holiday is proclaimed after 28 days before the closing date for tenders, no costs other than those that can be claimed under Clause 5.12.3 shall be added to the contract price.

Add the following after Clause 6.8.4:

6.8.5. If price adjustment for variations in the cost of plant and materials imported from outside of South Africa is provided for in the contract data, such adjustment shall be based on the information contained on the schedule titled "**Price Basis for Imported Resources"**and as below. For the purposes of this clause the Rand value of imported Plant and Materials inserted on the schedule titled "**Price Basis for Imported Resources"** (column (F)) shall be the value in foreign currency (column (A)) converted to South African Rand (column (C)) by using the closing spot selling rate quoted by **Employer's** main banker, NEDBANK, on the Base Date (seven calendar days before tender closing date) rounded to the second decimal place (column(B)), to which shall be added any Customs Surcharge and Customs Duty applicable at that date (columns (D) and (E)).

6.8.5.1 Adjustment for variations in rates of exchange:

(a) The value in foreign currency inserted in column (A) shall be subject to clause (h) below when recalculating the Rand value.

(b) The rate of exchange inserted in column (B) shall be the closing spot selling rate quoted by **Employer's** main banker, NEDBANK, on the Base Date, rounded to the second decimal place, subject to sub-paragraph (c) below.

(c) If the rate of exchange inserted by the Tenderer differs from the NEDBANK rate referred to above, then the NEDBANK rate shall apply and the Rand value in columns (C) and (F) shall be recalculated accordingly, without altering the price in the Schedules of Quantities for the relevant items.

(d) If a tender from a supplier or sub-contractor provides for variations in rates of exchange, the Contractor may **only** claim for variations in rates of exchange if he binds the supplier or sub-contractor to the same provision to take out forward cover as described in sub-paragraph (e) below.

(e) The Contractor (or supplier or sub-contractor) shall within five working days from the date of placing a firm order on an overseas supplier, cover or recover forward by way of a contract with a bank which is an authorised foreign exchange dealer, the foreign exchange component of the cost of any imported Plant and Materials inserted by the Tenderer on the schedule titled "**Price Basis for Imported Resources"**.

(f) When the Contractor (or supplier or sub-contractor) so obtains forward cover, the Contractor shall immediately notify the Employer of the rate obtained and furnish the Employer with a copy of the foreign exchange contract note.

(g) Based on the evidence provided in sub-paragraph (f) above, the value in Rand inserted in column (C) on the schedule titled "**Price Basis for Imported Resources"**shall be recalculated using the forward cover rate obtained, and any increase or decrease in the Rand value defined in this clause shall be adjusted accordingly, subject to sub-paragraph (h) below. Failure to provide such evidence shall result in no such recalculation shall be considered by the Employer.

(h) The adjustments shall be calculated upon the value in foreign currency in the Contractor's (or supplier's or sub-contractor's) **forward cover contract**, provided that, should this value exceed the value in foreign currency inserted in column (A) of the schedule titled "**Price Basis for Imported Resources"**, then the value in column (A) shall be used.

6.8.5.2 Adjustment for variations in customs surcharge and customs duty

(a) Any increase or decrease in the Rand value between the amounts of Customs Surcharge and Customs Duty inserted on the schedule titled "**Price Basis for Imported Resources"**and those amounts actually paid to the Customs and Excise Authorities, which are due to changes in the percentage rates applicable or to the foreign exchange rate used by the authorities, shall be adjusted accordingly.

(b) The Tenderer shall state the Customs Duty Tariff Reference applicable to each item and the Contractor shall advise the Employer's Agent of any changes which occur.

6.8.5.3 Adjustment for variation in labour and material Costs

If the prices for imported Plant and Materials are not fixed, the Contractor shall in his Tender specify the formula for calculating Contract Price Adjustments normally used in the country of manufacture and the indices and relative proportions of labour and material on which his Tender prices are based. Evidence of the indices applicable shall be provided with each claim. The indices applicable 42 days before contractual dispatch date from the factory will be used for the purposes of Contract Price Adjustment.

Failure to specify a formula in the Tender shall mean that the prices are fixed or shall be deemed to be fixed.

Clause 6.10.1.5:

Delete Clause 6.10.1.5 in its entirety and replace with the following:

6.10.1.5 The value of Plant and materials:

6.10.1.5.1 up to a percentage limit of **80%** for the Plant and materials referred to in Clause 6.9.1.1 brought on to the Site but not yet built into the Permanent Works;

Provided that the Contractor has produced documentary evidence of ownership of such Plant and/or materials and has delivered to the Employer an indemnity, approved in writing by the Employer, against

any claim to or in respect of such Plant and/or materials by reason of the Contractor's sequestration or liquidation, or of any defect in the Contractor's title to the Plant and/or materials;

6.10.1.5.2 which have been manufactured and are stored at places other than the Site, in respect of which the Employer has indicated, on the Advance Payment Schedule, that advance payment will be permitted;

6.10.1.5.3 for which a deposit with order is required from the Contractor by a manufacturer/supplier, only in respect of which the Employer has indicated, on the Advance Payment Schedule, that advance payment will be permitted;

The terms and conditions for advance payment are set out in Clause 6.10.10 and in the Advance Payment Schedule at the end of this Part 1: Contract Data provided by the Employer.

Clause 6.10.1.7:

Add the following after the words "Clause 5.13":

or any other fines or penalties that become due under the Contract.

Clause 6.10.3:

Add the following to Clause 6.10.3:

Notwithstanding the provision of a performance guarantee in terms of Clause 6.2.1, interim payments to the Contractor shall be subject to a retention by the Employer of an amount of **5%** of the said amounts due to the Contractor, with no limit. A guarantee in lieu of retention is not permitted.

Clause 6.10.4:

Add the following to the last sentence of Clause 6.10.4:

…, dated as at the date of delivery of the Contractor's statement to the Employer's Agent.

Add the following to Clause 6.10.4:

Notwithstanding the above, the Employer's Agent shall be empowered to withhold the delivery of the payment certificate until the Contractor has complied with his obligations to report in terms of Clause 4.10.2 and as described in the Scope of Work.

The Contractor may submit a fully motivated application regarding more frequent payment to the Employer's Agent to be submitted to the Employer for consideration. Requests for more frequent payments will be considered at the sole discretion of the Employer and is not a right in terms of this contract.

Clause 6.10.10:

Add the following Clause after Clause 6.10.9:

6.10.10 Advance payment

Subject to Clauses 6.10.1.5.2 and 6.10.1.5.3, and the Advance Payment Schedule, the Employer shall make an advance payment for Plant and materials stored at places other than the Site, or in respect of which a deposit with order is required, only once the Contractor has submitted an advance payment guarantee in accordance with this Clause, the authenticity of which has been verified by the City's Treasury Department..

Unless and until the Employer receives this guarantee, the following paragraphs shall not apply.

The Employer's Agent shall issue an Interim Payment Certificate for, or including, advance payment after receiving a statement under Clause 6.10.1 and after the Employer has received a guarantee in an amount equal to the advance payment requested. This guarantee shall be issued by a financial institution approved by the Employer, as listed in the Annexure in Part C1.3 of the Contract Data, and shall be in the form of and shall contain the precise wording of the document included in Part C1.4: **Form of Advance Payment Guarantee** and shall come into force, be administered and expire in terms thereof**.**

The Employer shall return the guarantee to the Contractor within 14 days after the expiry date.

The provision of the Advanced Payment Guarantee shall be at the Contractor's cost.

The term "deposit" or "deposit with order" used in the context of this Clause and elsewhere by reference to this Clause, means a sum payable by the Contractor to a manufacturer/supplier prior to the manufacture

of an item of Plant or material, required at the time of placing an order, the balance of the value of the item being payable later.

Clause 8.6.1.1.2:

The value of Plant and materials supplied by the Employer to be included in the insurance sum is **R 0.00 (Nil)**.

Clause 8.6.1.1.3:

The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is **R0.00 (Nil).**

Clause 8.6.1.3:

The limit of indemnity for liability insurance is R20 000 000.00 for any single claim – the number of claims to be unlimited during the construction and defects liability periods.

Clause 8.6.1.5:

In addition to the insurances required in terms of General Conditions of Contract Clauses 8.6.1.1 to 8.6.1.4 the following insurance is also required:

a) Insurance of Construction Equipment (including tools, offices and other temporary structures and contents) and other things (except those intended for incorporation into the Works) brought onto the site for a sum sufficient to provide for their replacement.

b) Insurance in terms of the provisions of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993.

c) Motor Vehicle Liability Insurance comprising (as a minimum) “Balance of Third Party” Risks including Passenger Liability Indemnity.

d) Where the contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the Site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event of the Employer having an insurable interest in such works during manufacture or fabrication then such interest shall be noted by endorsement to the Contractor’s Policies of Insurance.

Clause 8.6.5:

Delete the following from Clause 8.6.5:

“and the terms thereof shall be subject to the approval of the Employer’s Agent, which approval shall not be unreasonably withheld.”

Clause 8.6.6:

Replace clause 8.6.6 with the following:

The Contractor shall provide evidence in the form stated in the contract data to the Employer’s Agent that the required insurances are effected and that all premiums thereunder have been paid.

Clause 9.1:

In Clause 9.1.6 replace “and 9.1.3” with:

, 9.1.3 and 9.1.7

Add the following Clause after Clause 9.1.6:

9.1.7 Death of Sole Proprietor/Member

Upon the death of the Contractor who was a Sole Proprietor, or a sole member of a Close Corporation, the Contract will terminate forthwith. The Employer shall pay to the Contractor’s estate any money which it considers due under the Contract in terms of Clause 9.1.5, in full and final settlement thereof.

9.1.8 Material Irregularity during procurement process

The Employer may terminate the contract if a material irregularity vitiates the procurement process leading to the conclusion of the contract, rendering the procurement process and the conclusion of the resulting

contract unfair, inequitable, non-transparent, uncompetitive or not cost-effective, provided the Employer follows the processes as described in its SCM Policy.

9.1.9 Reputational risk or harm to the Employer\

The Employer, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate the contract if the implementation of the contract may result in reputational risk or harm to the City as a result of (inter alia):

9.1.9.1 reports of poor governance and/or unethical behaviour;
9.1.9.2 association with known family of notorious individuals;
9.1.9.3 poor performance issues, known to the Employer;
9.1.9.4 negative social media reports; or
9.1.9.5 adverse assurance (e.g. due diligence) report outcomes.

Add the following Clause after Clause 9.2.3:

9.2.4 Employer's Elections in case of Insolvency

In addition to anything else contained in this contract, the Employer may make either of the following elections to ensure its rights are protected and any negative impact on service delivery is mitigated:

9.2.4.1 accept a contractor's proposal (via the trustee / liquidator) to render delivery utilising the appropriate contractual mechanisms; or

9.2.4.2 terminate the contract, as the liquidator proposed contractor is deemed unacceptable to the employer, at any time by giving written notice to the contractor (via the trustee / liquidator).

Clause 10.5.3:

The number of ad-hoc Adjudication Board Members to be appointed is 1(one).

ADDITIONAL CONDITIONS OF CONTRACT

Add the following Clause after Clause 10:

Clause 11 Details to be confidential

The Contractor shall treat the details of the Works comprised in this Contract as private and confidential (save in so far as may be necessary for the purposes hereof) and shall not publish or disclose the same or any particulars thereof in any trade or technical paper elsewhere without the prior written consent of the Employer's Agent.

Clause 12 Partial completion

The Employer shall take beneficial occupation of Basin 6 on achievement of practical completion thereof.

Clause 13 Protection of Personal Information

13.1 The Contractor acknowledges that, for the purposes of the service level agreement, they may come into contact with or have access to personal information and other information that may be classified or deemed as private or confidential and for which CCT is responsible in terms of POPIA. Such personal information may also be deemed or considered as private and confidential as it relates to POPIA.

13.2 The Contractor agrees that they will at all times comply with POPIA and CCT's Privacy Notice, and that it shall only collect, use and process personal information it comes into contact with pursuant to this agreement in a lawful manner, and only to the extent required to execute the services, or to provide the goods and to perform their obligations in terms of the service level agreement.

13.3 The Contractor agrees that it shall put in place, and at all times maintain, appropriate physical, technological and contractual security measures to ensure the protection and confidentiality of the personal information that it, or its employees, its contractors or other authorised individuals comes into contact in relation to the service level agreement.

13.4 The Contractor agrees that it shall notify CCT immediately where there are reasonable grounds to believe that the personal information of a data subject has been accessed or acquired by any

unauthorised person.

13.5 Unless so required by law, the Contractor agrees that it shall treat the personal information as confidential and further not disclose any personal information as defined in POPIA to any third party without the prior written consent of CCT.

13.6 The Contractor hereby indemnifies and holds the CCT harmless against all claims, losses, damages and costs of whatsoever nature suffered by CCT arising from or in relation to the Contractor's (and/or its employees', agents' and sub-contractors') non-compliance with applicable data protection laws and/or other legislation.

13.7 The Contractor agrees that CCT may conduct regular data protection audits on the Contractor and undertakes to give its full co-operation in this regard.

Clause 14 Periodic Review and Performance Monitoring

14.1 This Agreement is valid for the contract period noted. This Agreement shall be reviewed once every three years; however, in lieu of a review during any period specified, the current Agreement will remain in effect. The purchaser reserves the right to reduce or increase the scope of works according to the dictates of the budget, to terminate this contract, and/or to review and terminate this contract as is contemplated in Section 116(1)(b)(iii) of the Local Government: Municipal Finance Management Act 56 of 2003, without adjustment to the agreed rates, sums or fees and without payment of any penalty or surcharge in this regard. The supplier shall however be entitled to pro-rata payment for all services carried out in terms of any adjustment to the Scope of Work or, in the case of termination, payment for good delivered.

14.2 As required by section 116(2)(b) of the *Local Government: Municipal Financial Management Act 56 of 2003,* the City shall monitor the performance of the contractor/supplier on at least a monthly basis, and the supplier agrees to provide the City with its full cooperation in this regard

SPECIAL MATERIALS SCHEDULE

Each material dealt with as a special material in terms of Clause 4.1 of the Contract Price Adjustment Schedule of the General Conditions of Contract is stated in the list below. The provisions of Clause 6.8.3 of the General Conditions of Contract shall apply to such special materials. The base prices for the special materials (current at the time of tender) shall be as stated in the schedule below, or where required, shall be furnished by the tenderer/contractor. Only those materials listed by the Employer below shall be considered as special materials.

Special Material	Unit	Base Price
Steel reinforcing bars	t	The ArcelorMittal prices, as published in their official price lists, current at the time of tender closing, will be used as the base prices for determining the adjustment in steel prices.

ADVANCE PAYMENT SCHEDULE

This Advance Payment Schedule is to be read in conjunction with Clauses 6.10.1.5.2, 6.10.1.5.3 and 6.10.10 in the Contract Specific Data. The purpose of this schedule is to itemise specific Plant and materials not yet brought on to the Site for building into the Permanent Works and for which the Employer is prepared to make advance payments to the Contractor, subject to the conditions below.

The items of Plant and materials which have been identified by the Employer as being suitable for advance payment in terms of the Contract are listed in the table below. Should an item or items be added to the list at tender stage by a tenderer, such item(s) will not be binding on the Employer.

Plant and materials which have been manufactured and are stored at places other than the Site:	**Plant and materials yet to be manufactured and for which a deposit with order is required from the Contractor by a manufacturer/supplier, and which may be stored at places other than the Site after manufacture:**
None	

Conditions:

1) The Contractor can only rely on advance payment being permitted by the Employer in respect of the Plant and materials listed in the table above. The Employer may, however, permit advance payment for other Plant and materials in exceptional circumstances and at its sole discretion, during the course of the Contract, and upon reasonable request from the Contractor.
2) Advance payment for the purposes of deposits will only be provided up to a limit of 20% of the value of any one item being claimed.
3) The Contractor shall provide the Employer with documentary evidence of the terms and conditions for which a deposit with order is required by a manufacturer/supplier, together with the advance payment guarantee.
4) The Contractor will also be permitted to obtain advance payment for the balance of the value of the Plant and materials in respect of which he has paid a deposit, for an item which after manufacture is stored at a place other than the Site. The Contractor shall, in respect of such payment, provide an advance payment guarantee, either for such balance or, if the advance payment guarantee in respect of the deposit is to be returned by the Employer upon request, for the whole value of the item.

CITY OF CAPE TOWN

WATER AND SANITATION DEPARTMENT

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

C1.2 Contract Data

Data provided by the Contractor

The name of the Contractor is Ruwacon (Pty) Ltd

The address of the Contractor is

Physical : Address [redacted]

Postal : Address [redacted]

Telephone : [redacted] Fax: 086 609 3154

email : [redacted]

CONTRACTOR'S ANNUAL HOLIDAY PERIODS DURING CONSTRUCTION PERIOD

Year 1 contractor's annual holiday period	Start date 15/12/2021		End date 10/01/2022
Year 2 contractor's annual holiday period	Start date 15/12/2022		End date 10/01/2023
Year 3 contractor's annual holiday period	Start date 15/12/2023		End date 10/01/2024
Year 4 contractor's annual holiday period	Start date 13/12/2024		End date 7/01/2025

C1.3: Form of Performance Guarantee

PERFORMANCE GUARANTEE

For use with the Conditions of Contract as described in C1.2: Contract Data Part 1: Contract Data provided by the Employer

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

"Physical address: .....

"Employer" means: The City of Cape Town, Water and Sanitation.

"Contractor" means: .....

"Employer's Agent" means: Zutari (Pty) Ltd.....

"Works" means: **Contract No. 97Q/2021/22 CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9**

"Site" means: The site as defined in the Contract Data.

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

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

Amount in words: .....

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

Amount in words: .....

"Expiry Date" means: The date of issue by the Employer's Agent of the Certificate of Completion of the Works.

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates, Final Payment Certificate and the Certificate of Completion of the Works as defined in the Contract.

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

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

3. The Guarantor hereby acknowledges that:

3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;

3.2 its obligation under this Performance Guarantee is restricted to the payment of money.

4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:

4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;

4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.

5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:

5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or

5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and

5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

7. Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

8. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

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

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

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

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

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

Signed at .....

Date .....

Guarantor's signatory (1) .....

Capacity .....

Guarantor's signatory (2) .....

Capacity .....

Witness signatory (1) .....

Witness signatory (2) .....

ANNEXURE

LIST OF APPROVED FINANCIAL INSTITUTIONS

The following financial institutions are currently (as at 18 October 2016) approved for issue of contract guarantees to the City:

National Banks:
ABSA Bank Ltd.
FirstRand Bank Ltd.
Investec Bank Ltd.
Nedbank Ltd.
Standard Bank of SA Ltd.

International Banks (with branches in SA):
Barclays Bank plc.
Citibank n.a.
Credit Agricole Corporate and Investment Bank
HSBC Bank plc.
JP Morgan Chase Bank
Societe Generale
Standard Chartered Bank

Insurance companies:
Bryte Insurance Co. (Previously Zurich Insurance Co.)
Coface sa.
Compass Insurance Co.
Constantia Insurance Co.
Credit Guarantee Insurance Corporation of Africa
Guardrisk Insurance Co.
Hollard Insurance Company Ltd.
Infiniti Insurance Limited
Lombard Insurance
New National Assurance Co.
PSG Konsult Ltd (Previously ABSA Insurance)
Regent Insurance Co.
Renasa Insurance Company Ltd.
Santam Limited

C1.4: Form of Advance Payment Guarantee – NOT APPLICABLE

ADVANCE PAYMENT GUARANTEE

For use with the Conditions of Contract as described in C1.2: Contract Data Part 1: Contract Data provided by the Employer

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

"Physical address: .....

"Employer" means: The City of Cape Town, Water and Sanitation.

"Contractor" means: .....

"Employer's Agent" means: Zutari (Pty) Ltd.....

"Works" means: **Contract No 97Q/2021/22 CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1**

"Site" means: The site as defined in the Contract Data.

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

"Plant and materials" means: The Plant and materials stored at places other than the Site, or in respect of which an advance payment prior to manufacture is required, which the Employer has agreed may be subject to advance payment, such Plant and materials being listed in the Schedule of Plant and materials.

"Schedule of Plant and materials" means: A list of Plant and materials which shows the value thereof to be included in the Guaranteed Advance Payment Sum.

"Guaranteed Advance Payment Sum" means: The maximum aggregate amount of R.....

Amount in words: .....

"Expiry Date" means: The date of the payment certificate wherein the Plant and materials have been certified by the Employer's Agent as having been built into the Permanent Works.

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates and Final Payment Certificate.

ADVANCE PAYMENT GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Advance Payment Sum.

2. The Guarantor's period of liability shall be from and including the date of issue of this Advance Payment Guarantee and up to and including the Expiry Date or the date of payment in full of the Guaranteed Advanced Payment Sum, whichever occurs first.

3. The Guarantor hereby acknowledges that:

3.1 any reference in this Advance Payment Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;

3.2 its obligation under this Advance Payment Guarantee is restricted to the payment of money.

4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:

4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) calendar days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;

4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.

5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Advance Payment Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Advance Payment Guarantee, such demand stating that:

5.1 the Contract has been terminated due to the Contractor's default and that this Advance Payment Guarantee is called up in terms of 5; or

5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Advance Payment Guarantee is called up in terms of 5; and

5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

7. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

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

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

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

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

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

Signed at .....

Date .....

Guarantor's signatory (1) .....

Capacity .....

Guarantor's signatory (2) .....

Capacity .....

Witness signatory (1) .....

Witness signatory (2) .....

.

Schedule of Plant and materials

For use with Advance Payment Guarantees on contracts using the General Conditions of Contract for Construction Works, Third Edition, 2015.

Employer The City of Cape Town, Water and Sanitation

Contractor ……..

Works **CONTRACT NO. 97Q2021/22 CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9**

Payment Certificate No. …….

Advance payment is requested in respect of the following items of Plant and materials, which have been manufactured and are stored at places other than the Site, or in respect of which a deposit with order is required from the Contractor by a manufacturer/supplier:

Bill of Quantities item no.	Description of Plant and materials	Deposit with order required (Y/N)	Place of storage (or manufacture, if deposit with order is required)	Unit	Quantity	Unit price R c	Total Price R c
Total Value of Plant and materials to be included in Guaranteed Advance Payment Sum R							

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

…….. ……

for the Contractor As witness

……

Approved by Employer's Agent

C1.5: Occupational Health and Safety Agreement

AGREEMENT MADE AND ENTERED INTO BETWEEN THE CITY OF CAPE TOWN (HEREINAFTER CALLED THE "EMPLOYER") AND

……, (Contractor/Mandatary/Company/CC Name)

IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 85 OF 1993 AS AMENDED.

I, …… , representing

…… , as an employer in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work will be performed, and all equipment, machinery or plant used in such a manner as to comply with the provisions of the Occupational Health and Safety Act (OHSA) and the Regulations promulgated thereunder.

I furthermore confirm that I am/we are registered with the Compensation Commissioner and that all registration and assessment monies due to the Compensation Commissioner have been fully paid or that I/We are insured with an approved licensed compensation insurer.

COID ACT Registration Number: ……..

OR Compensation Insurer: ..... Policy No.: .....

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements of OHSA and the Regulations and to charge him/them with the duty of ensuring that the provisions of OHSA and Regulations as well as the Council's Special Conditions of Contract, Way Leave, Lock-Out and Work Permit Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any subcontractors employed by me will enter into an occupational health and safety agreement separately, and that such subcontractors comply with the conditions set.

I hereby declare that I have read and understand the Occupational Health and Safety Specifications contained in this tender and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan submitted and approved in terms thereof.

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

_____	_____
Witness	**Mandatary**

Signed at ..... on the.....day of.....20 ....

_____	_____
Witness	for and on behalf of City of Cape Town

CITY OF CAPE TOWN

WATER AND SANITATION DEPARTMENT

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

SCHEDULE 19: HEALTH AND SAFETY PLAN

Tenderers are referred to the requirements of Clause C.2.18.4 in Part T1.2 Tender Data and shall append the required draft Health and Safety Plan to this Schedule.

Number of sheets appended by the tenderer to this Schedule 56 (If nil, enter NIL).

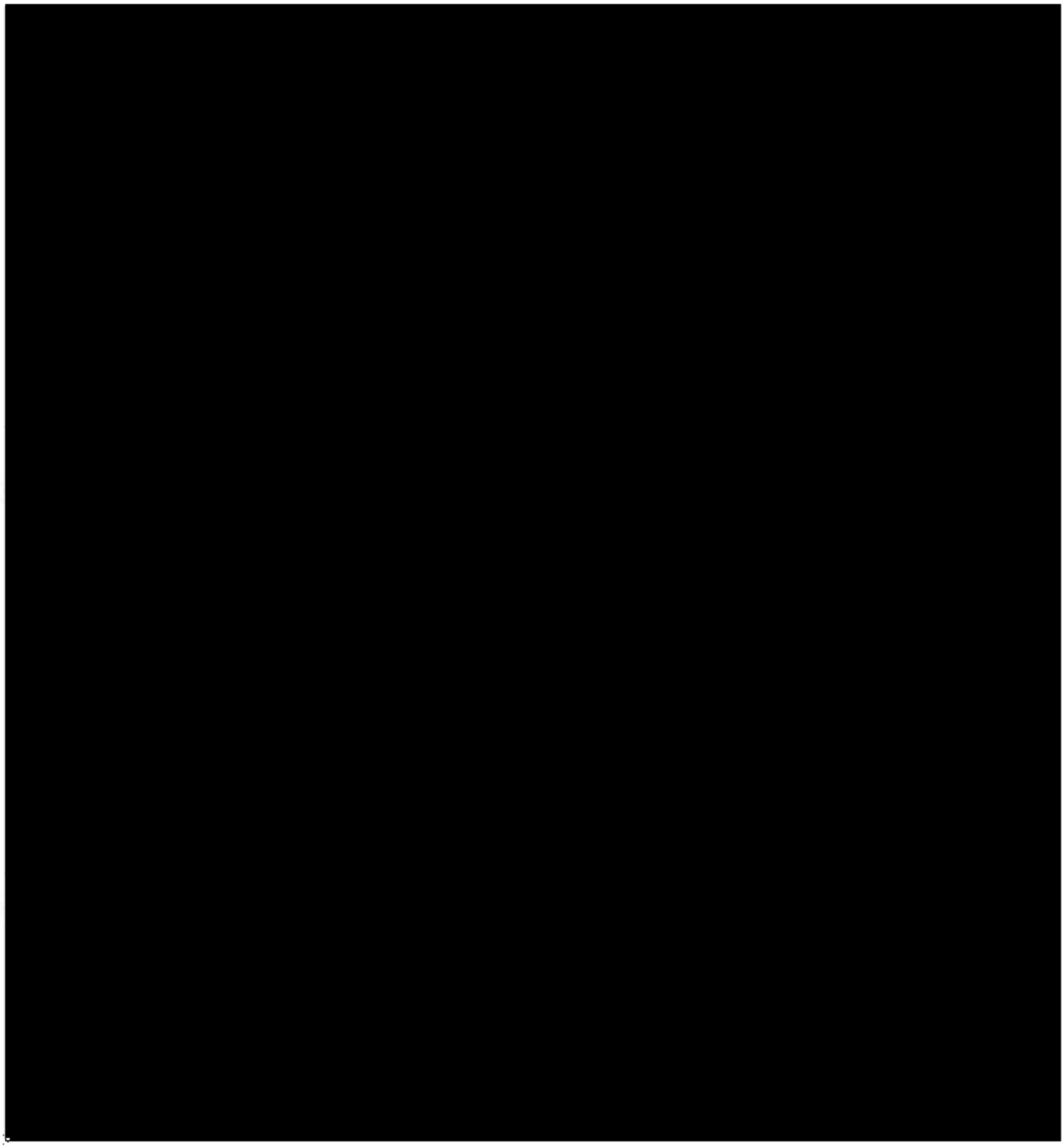
* Please see attached in extra File.

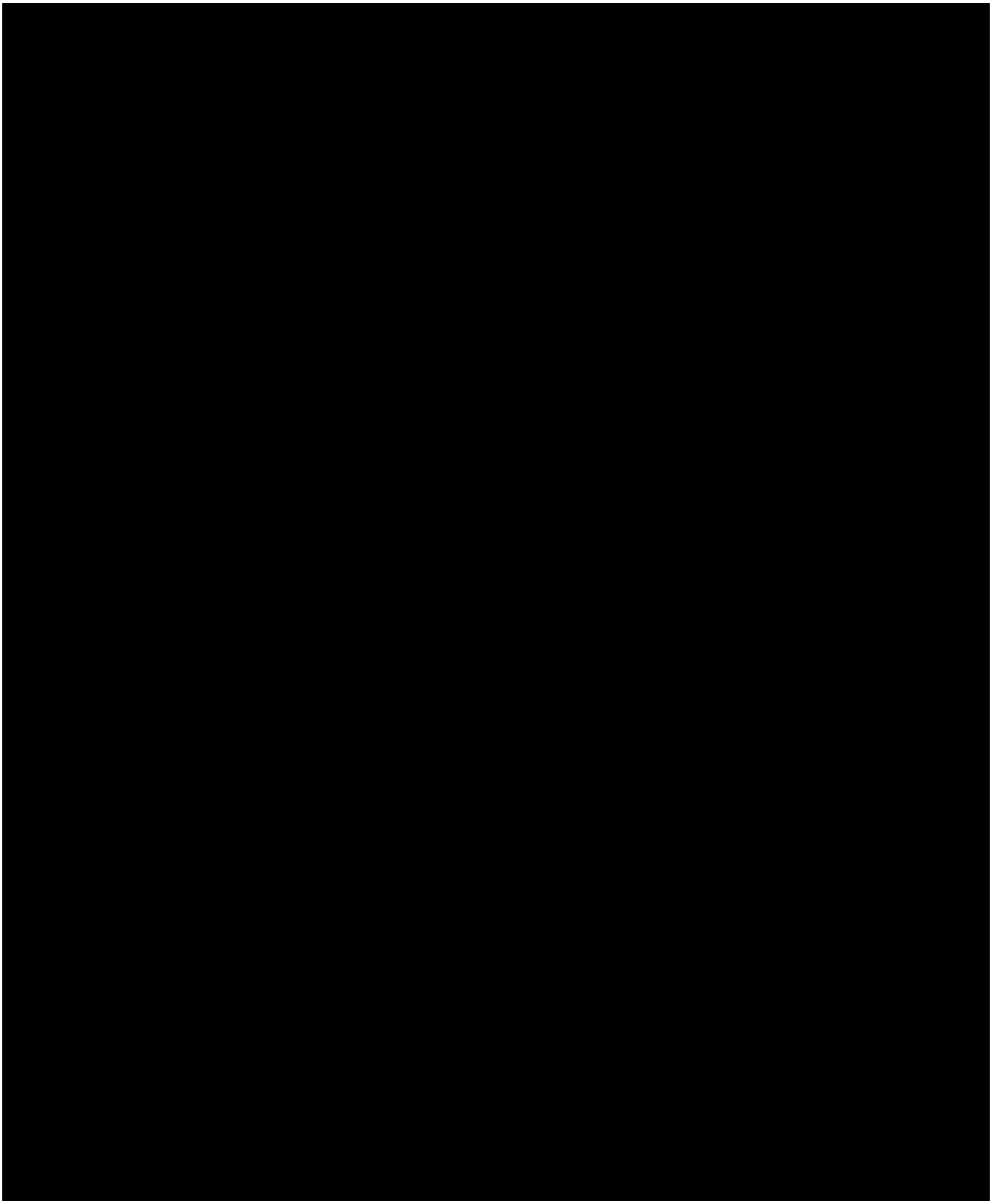
SIGNED ON BEHALF OF TENDERER: .....

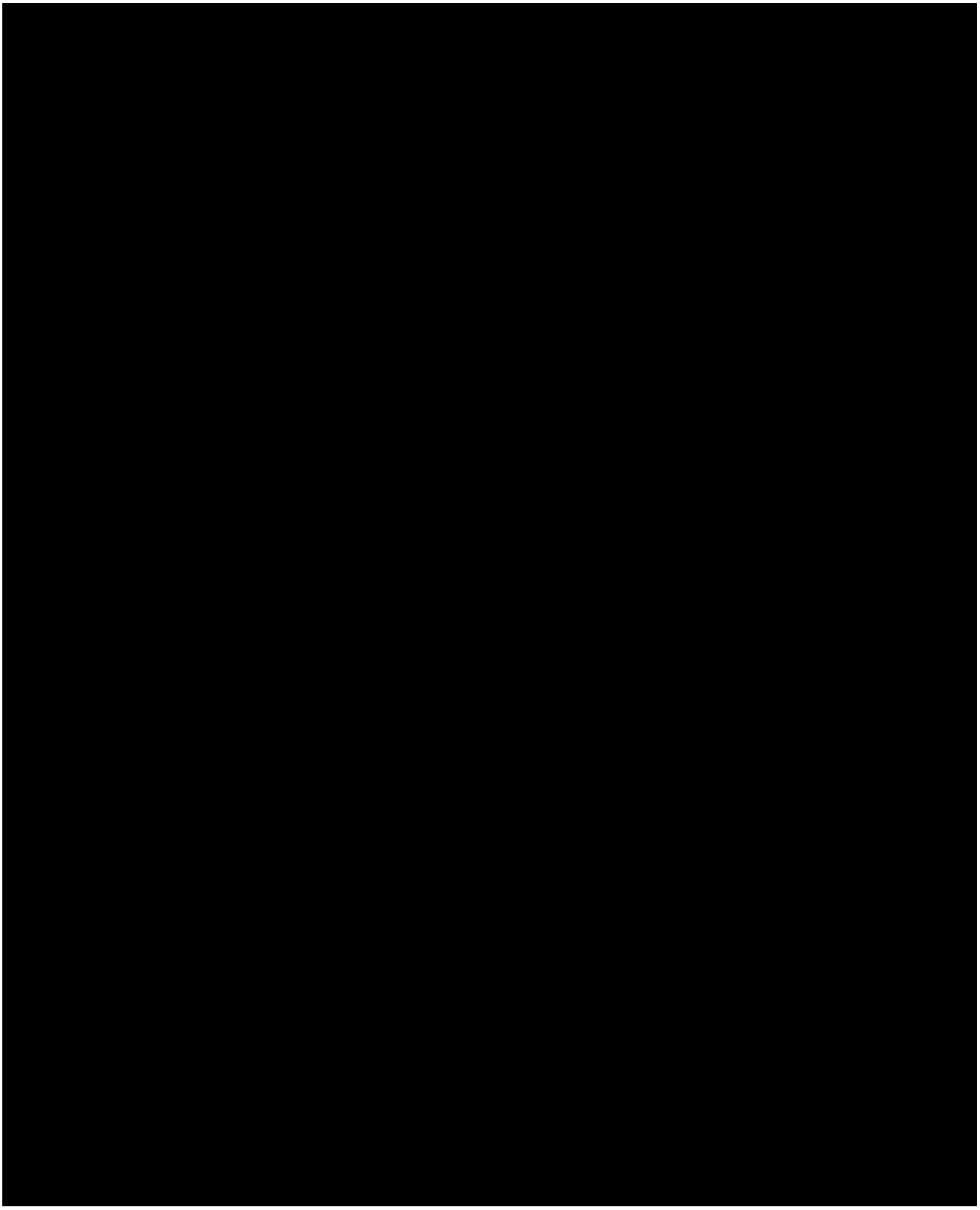


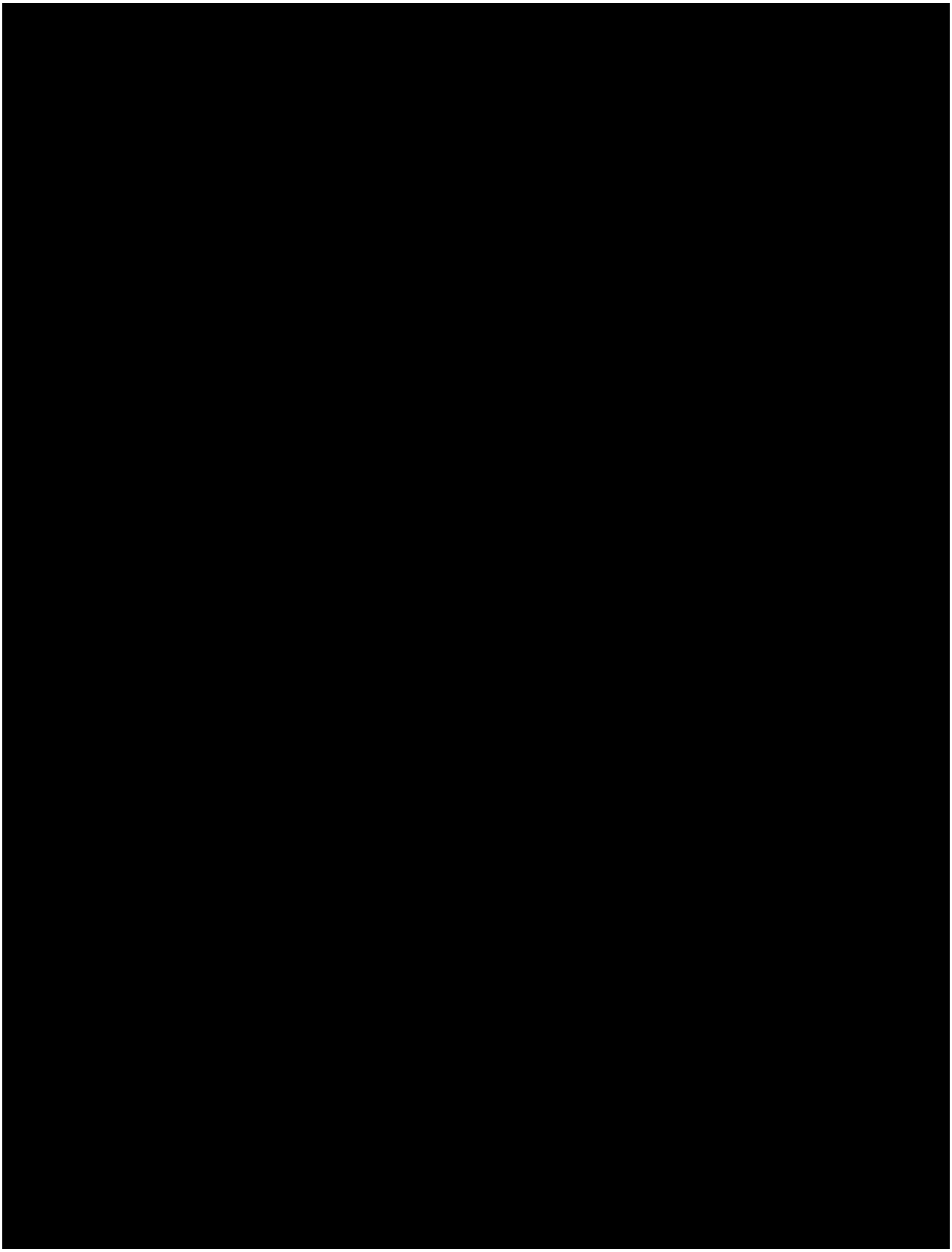
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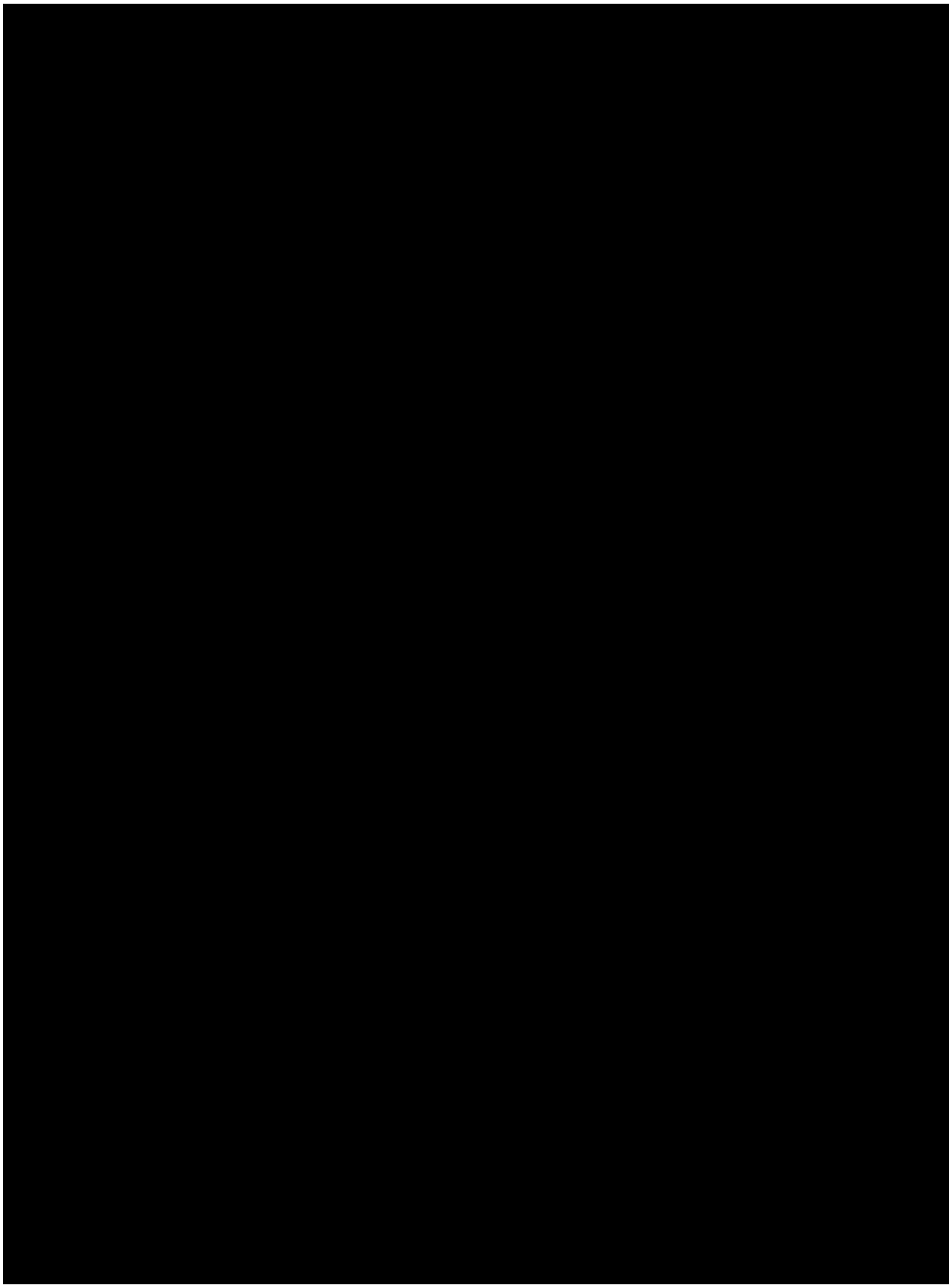
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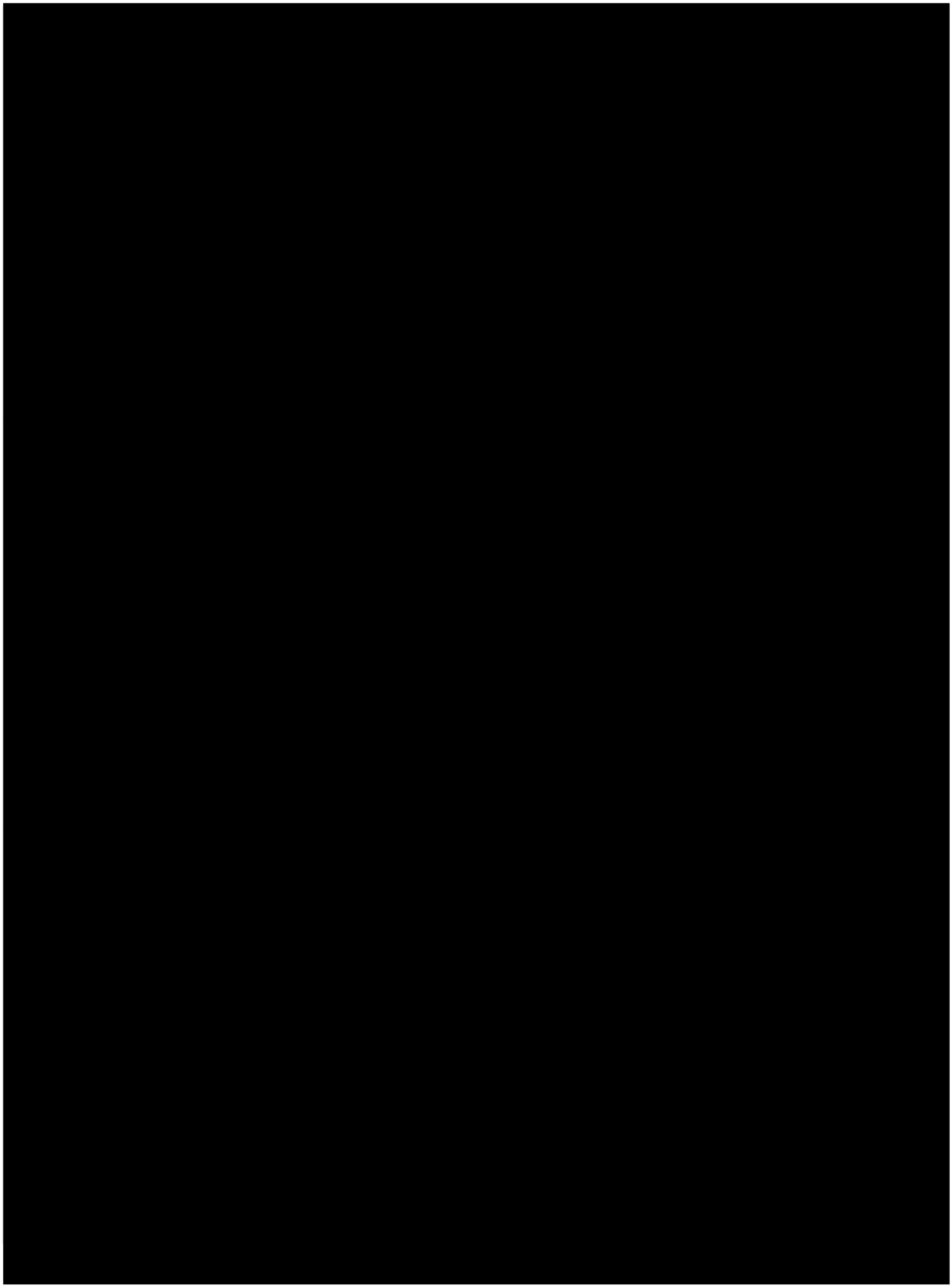


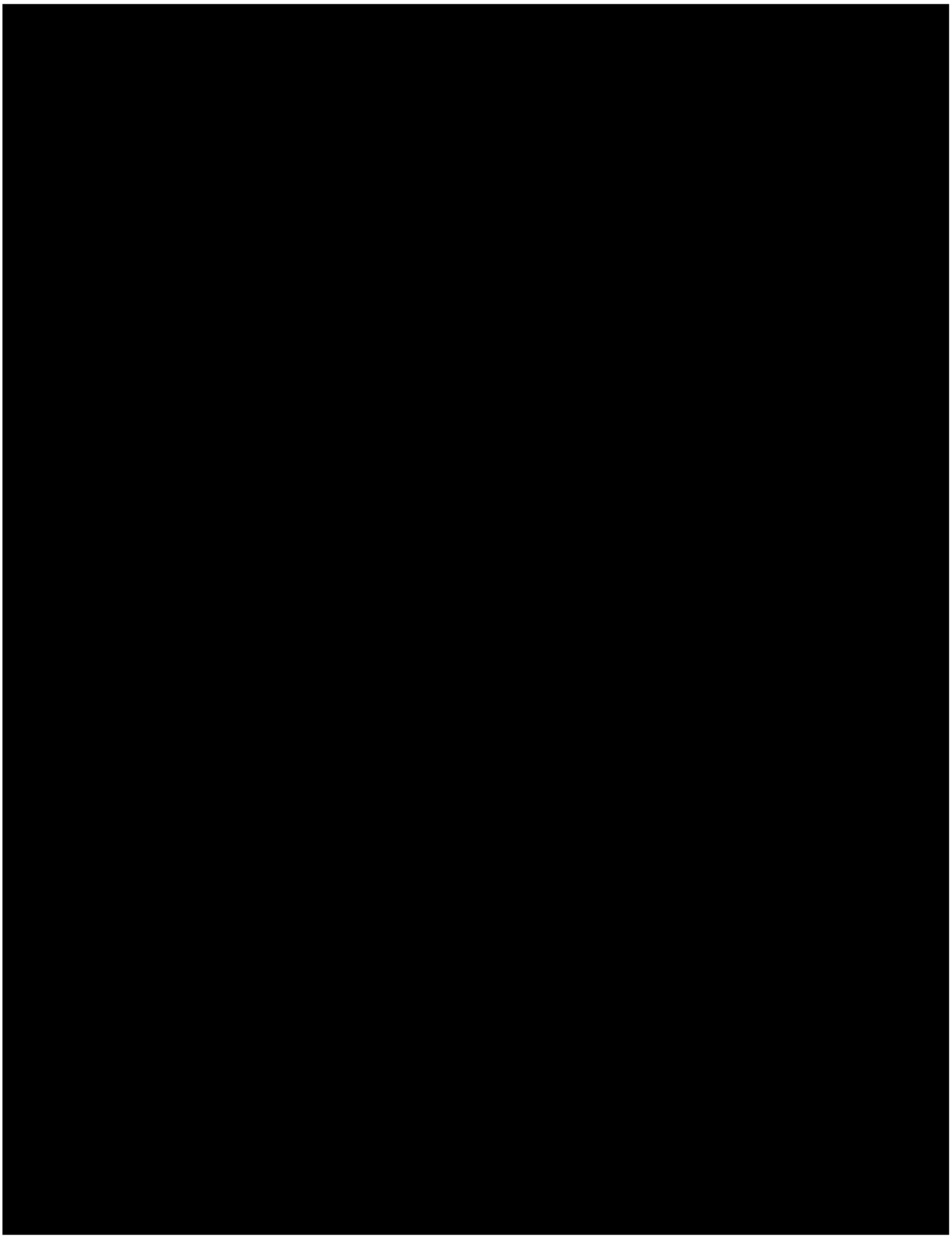


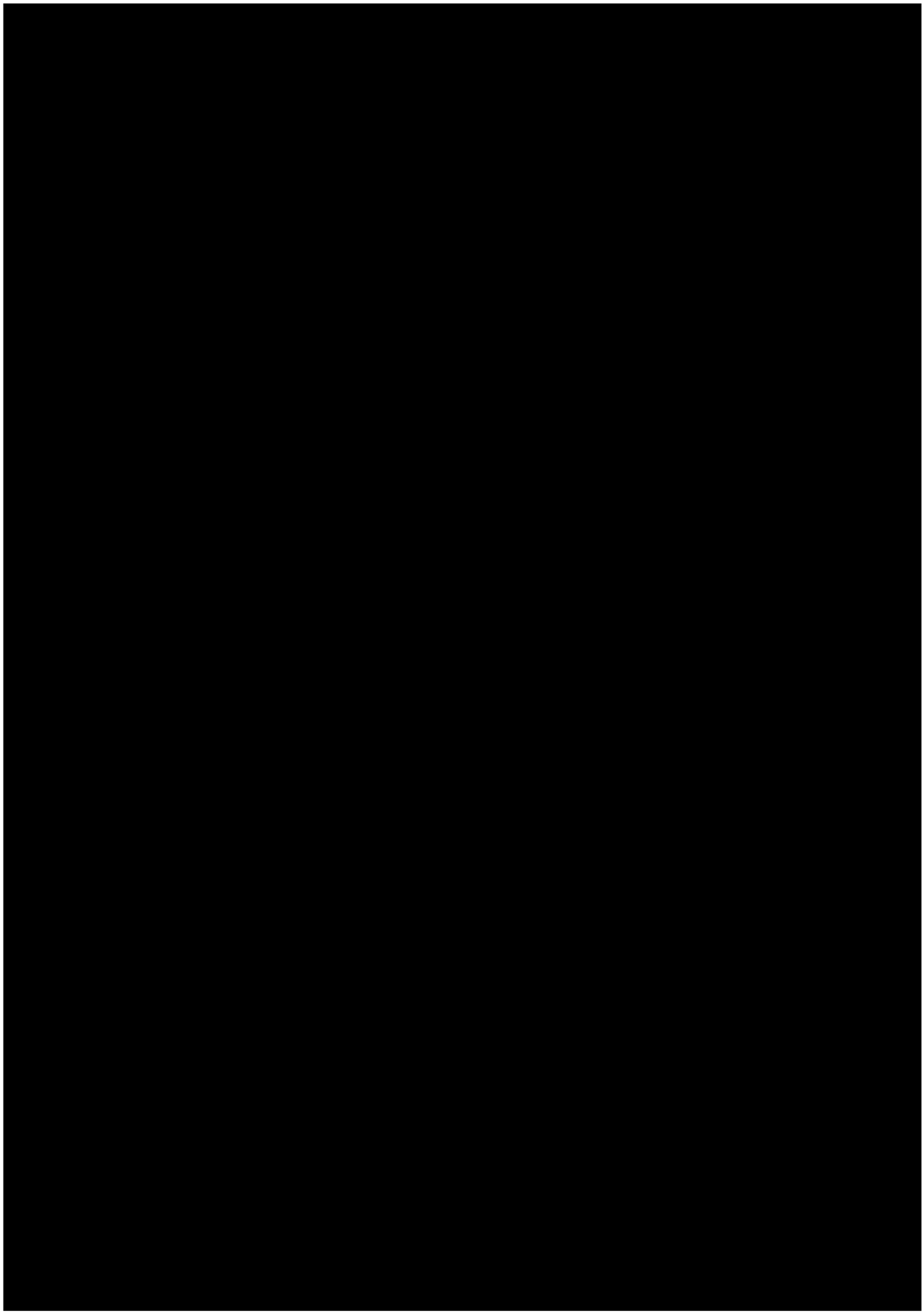


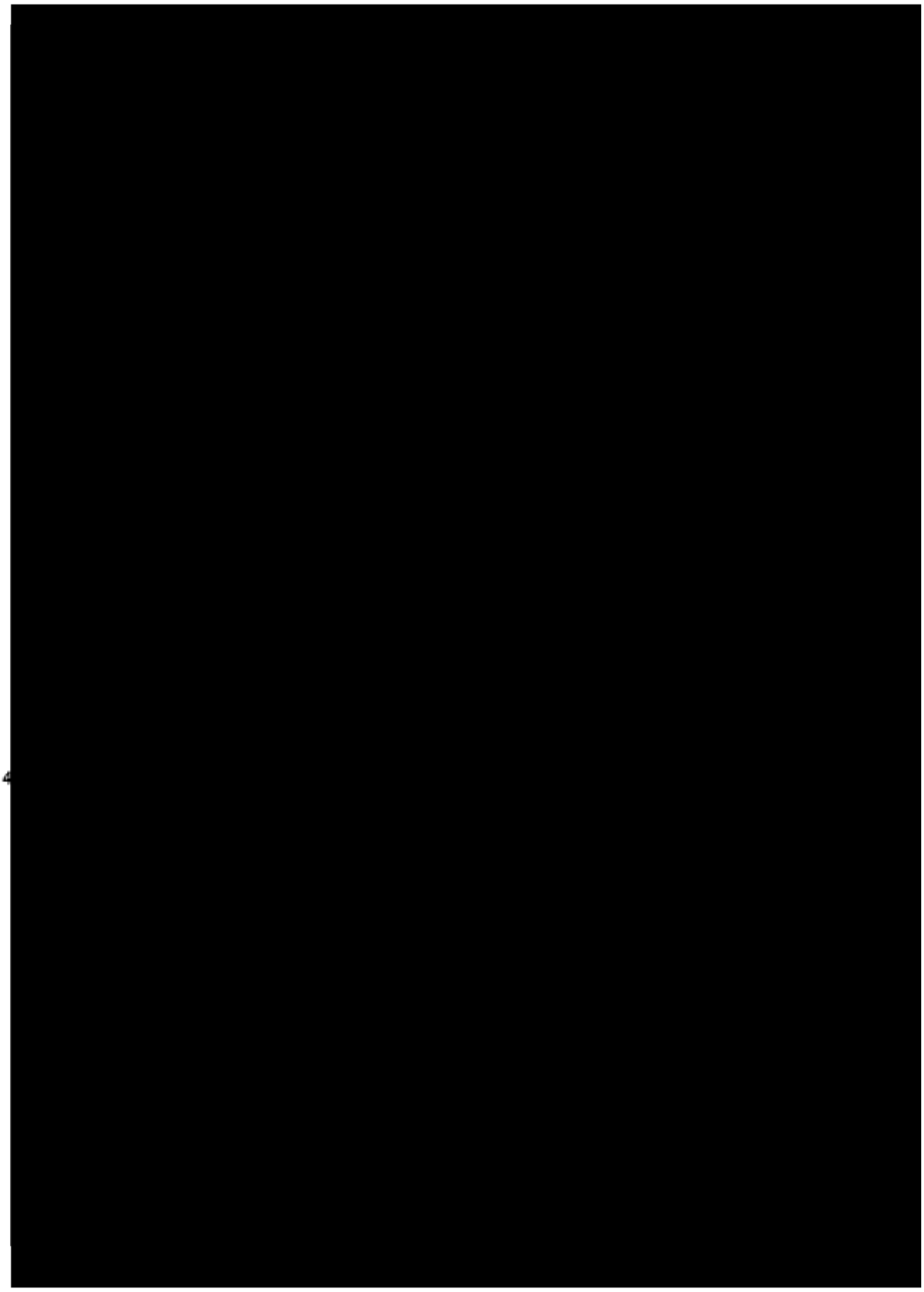


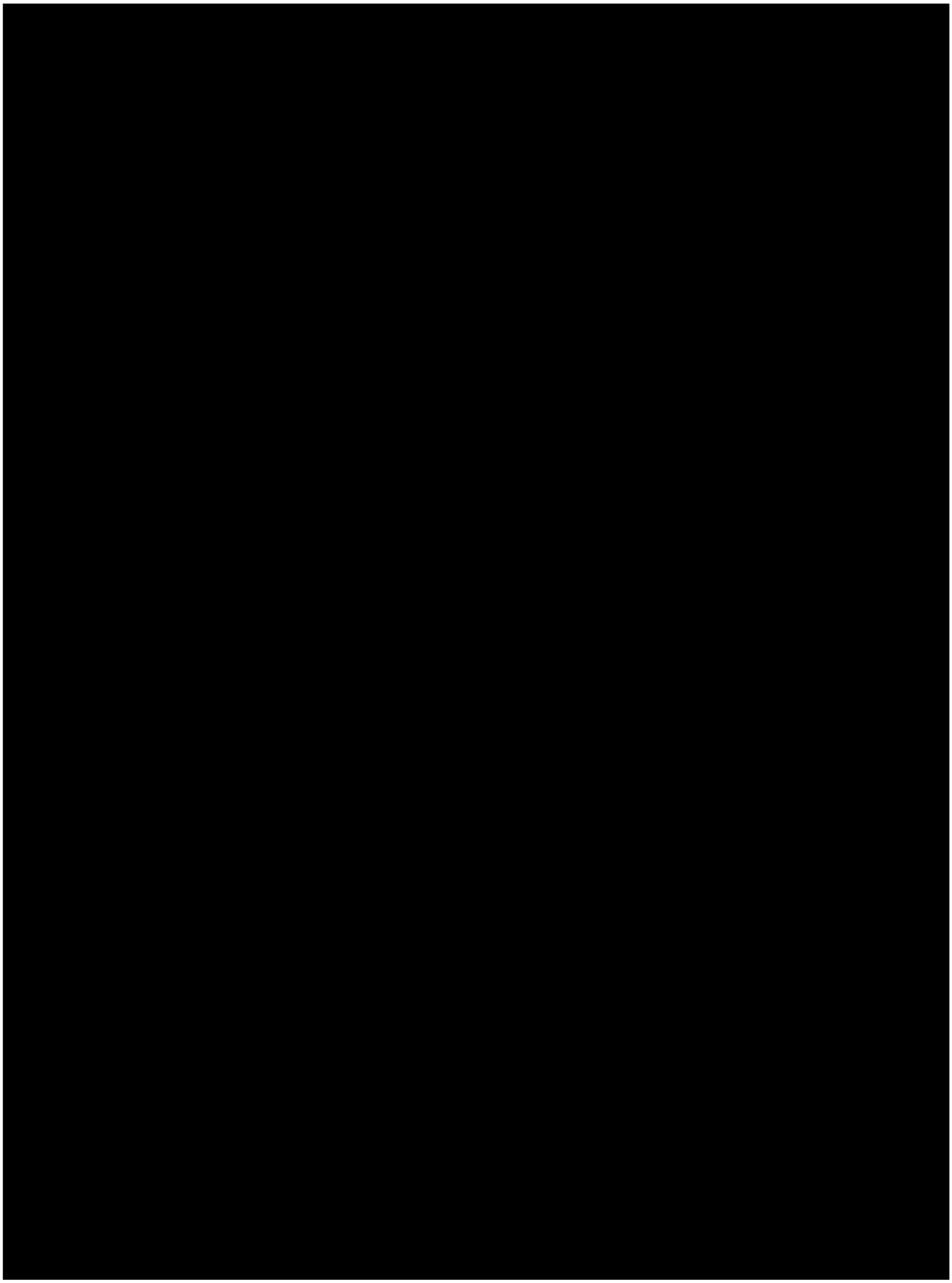


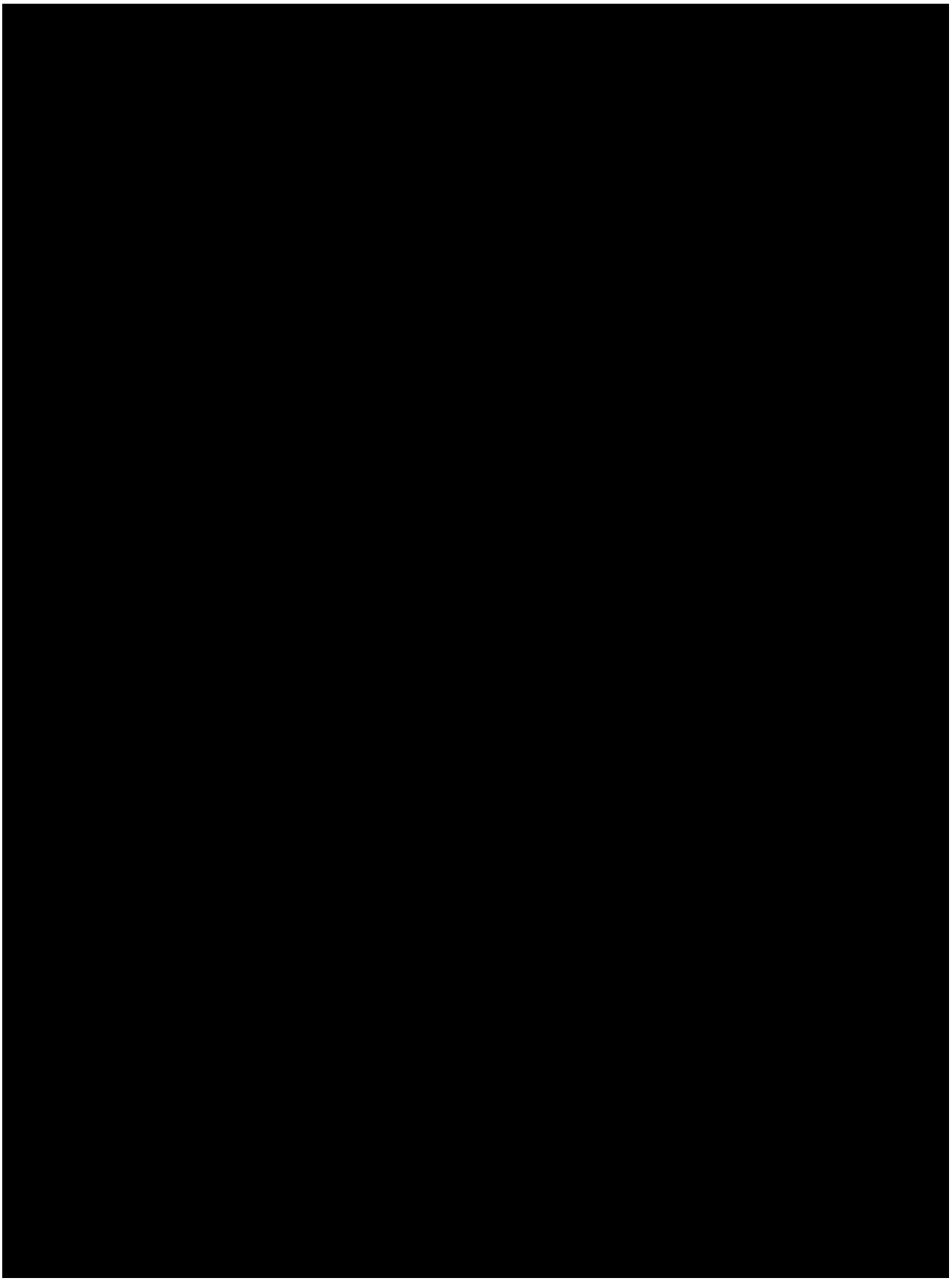


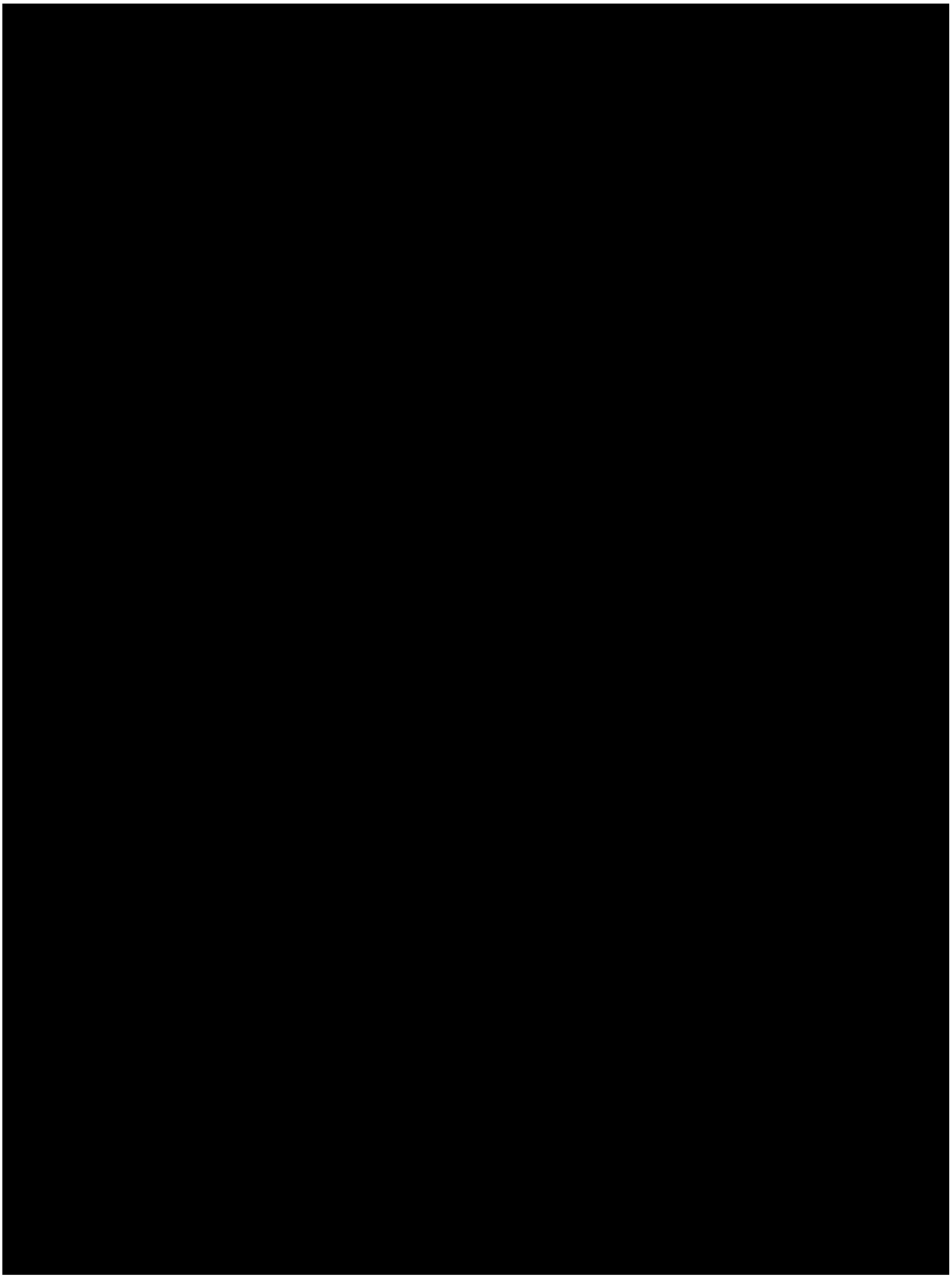


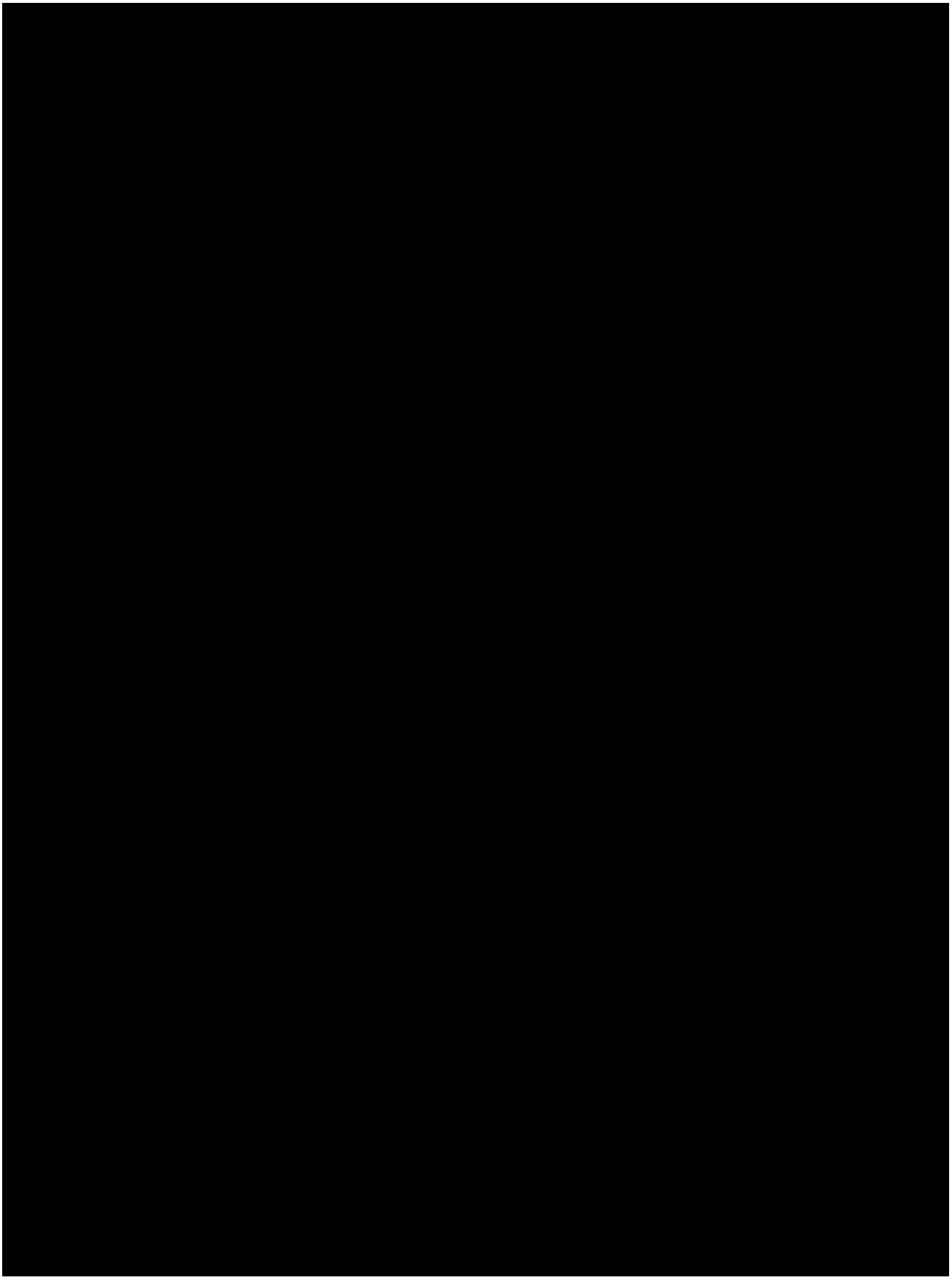


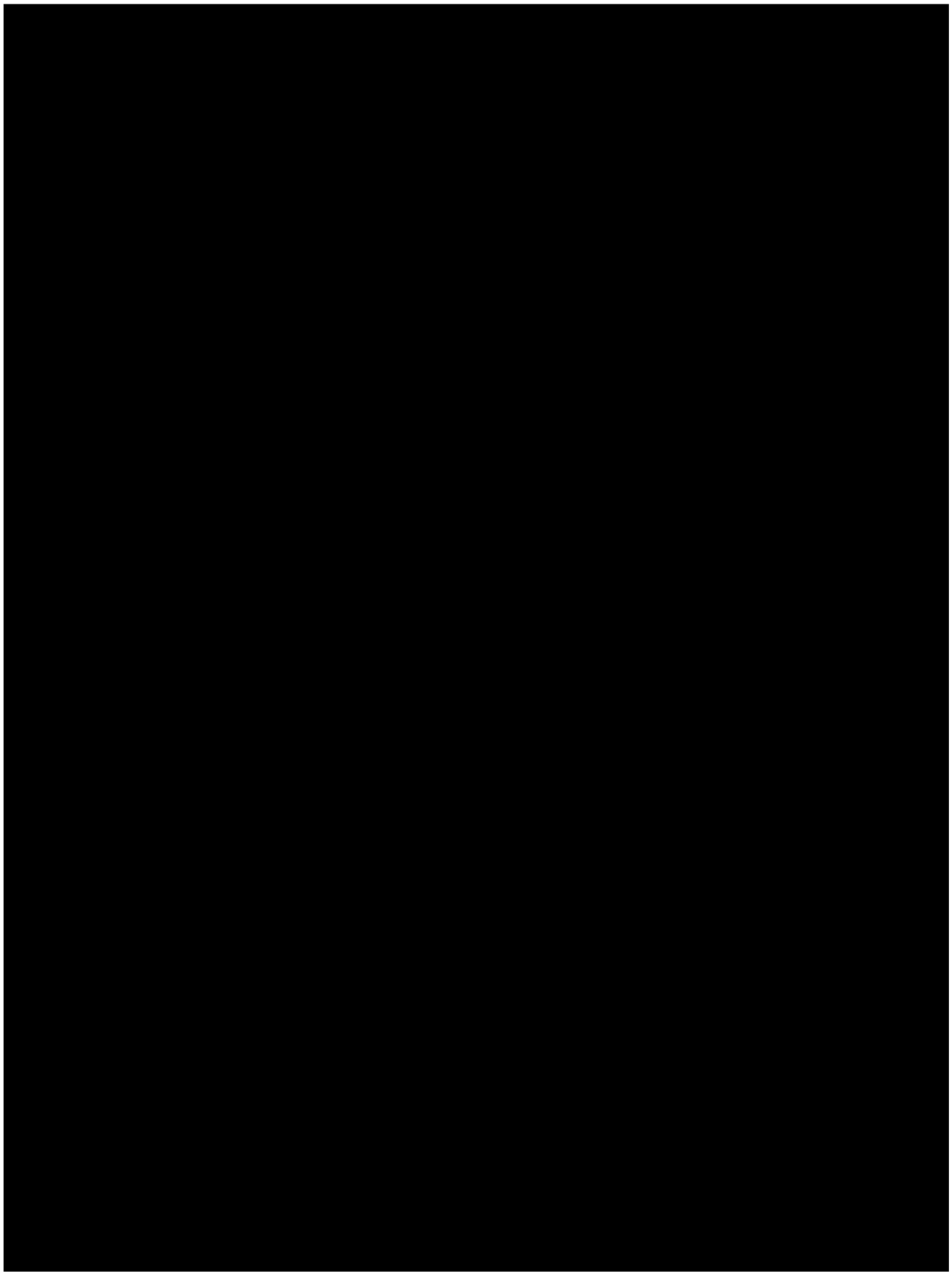


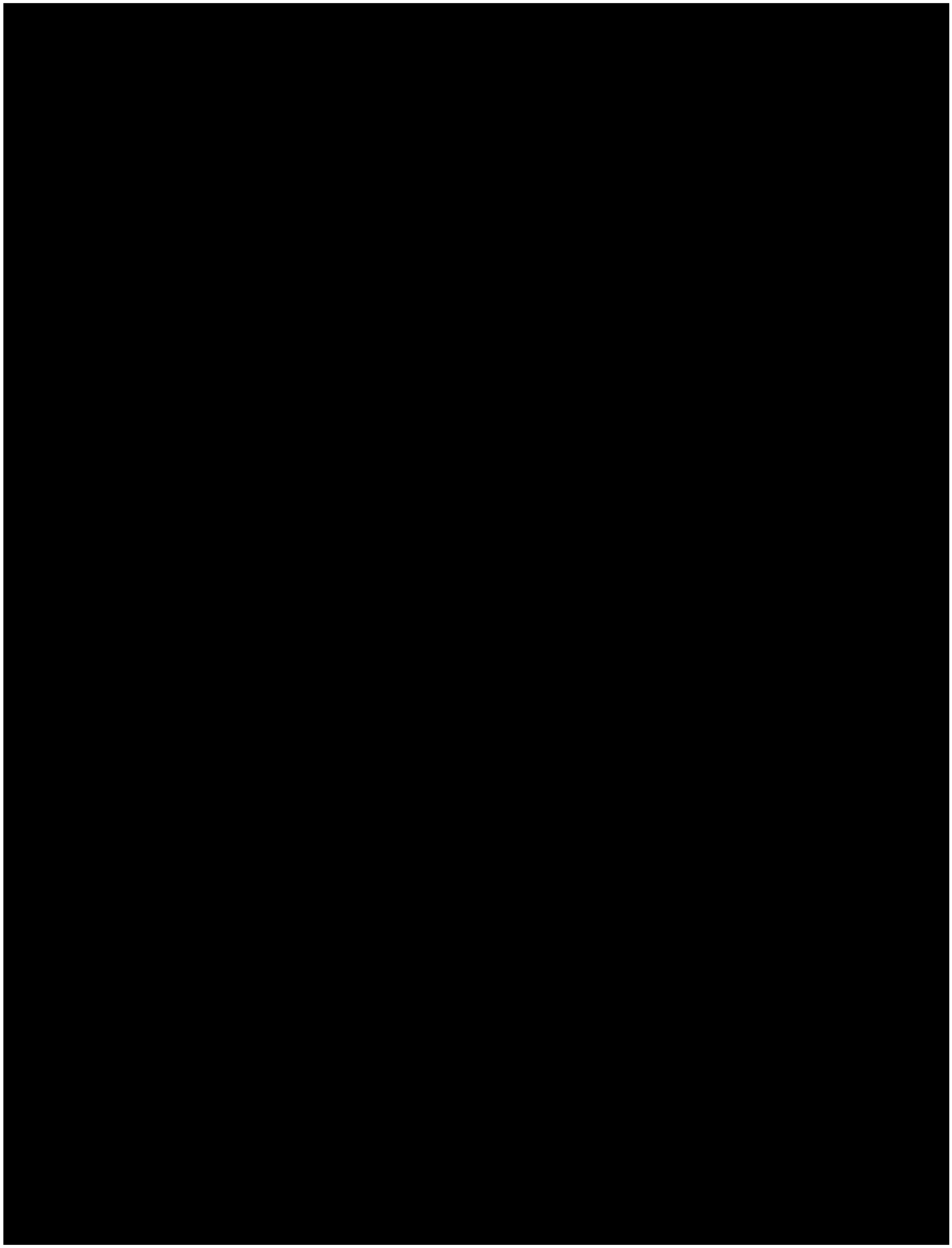


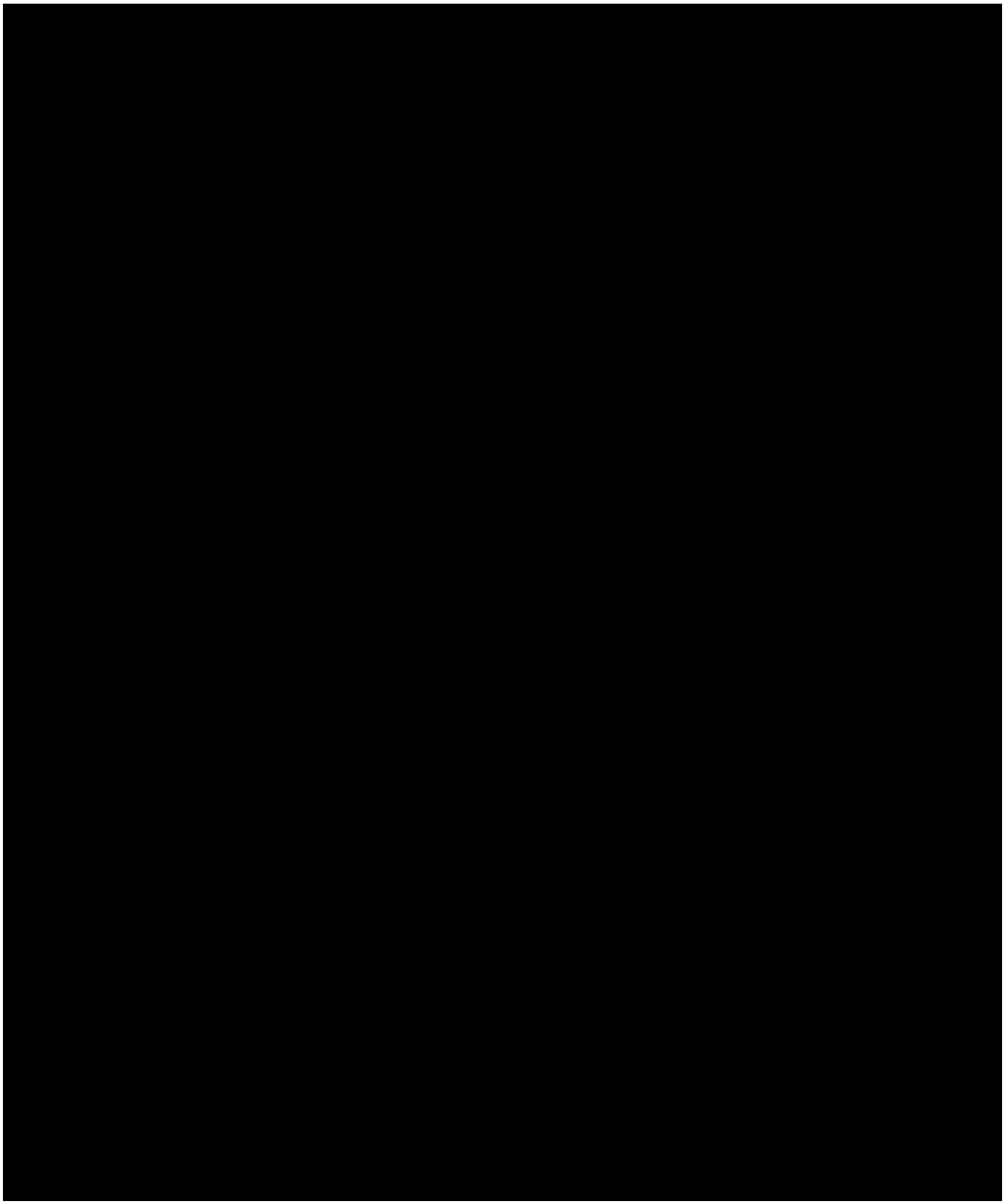


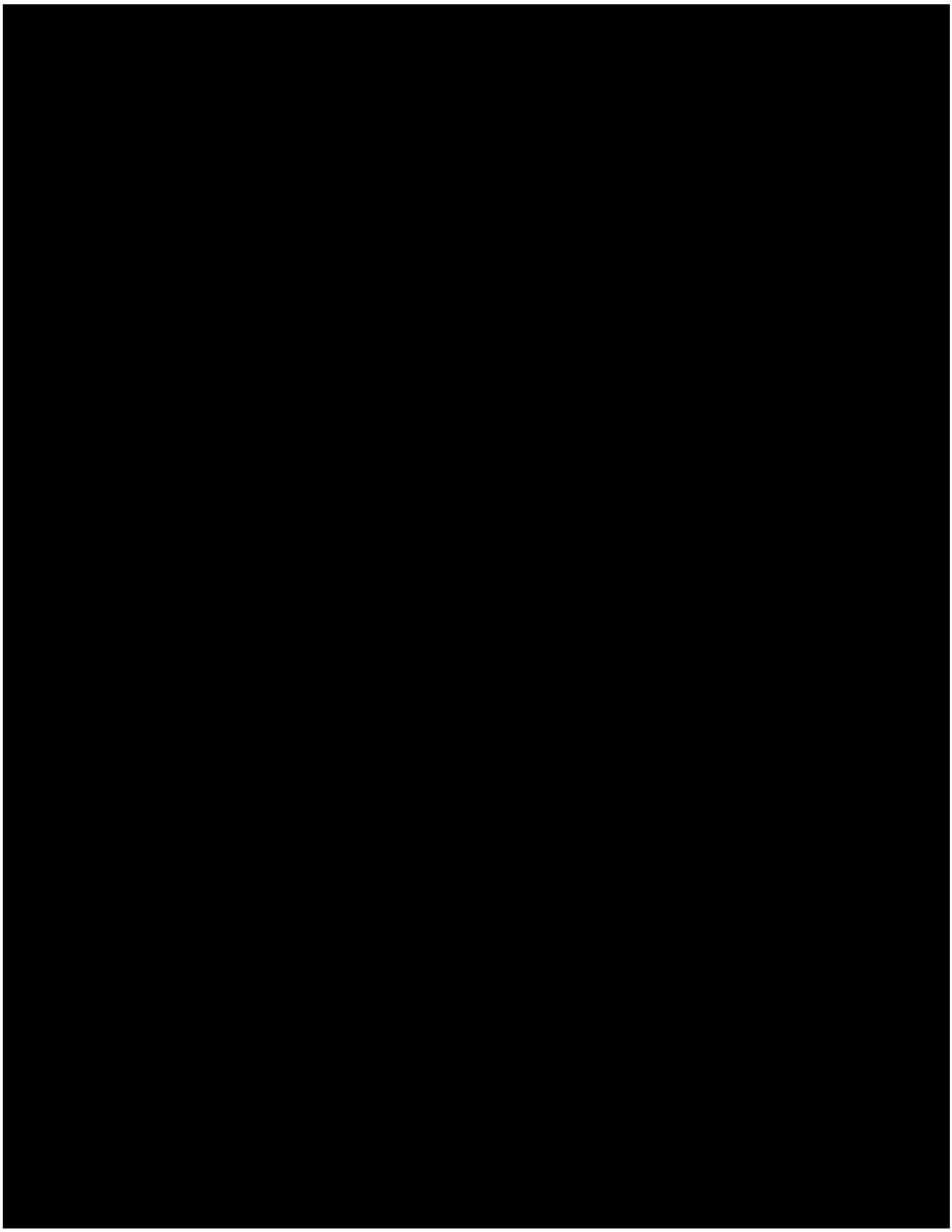


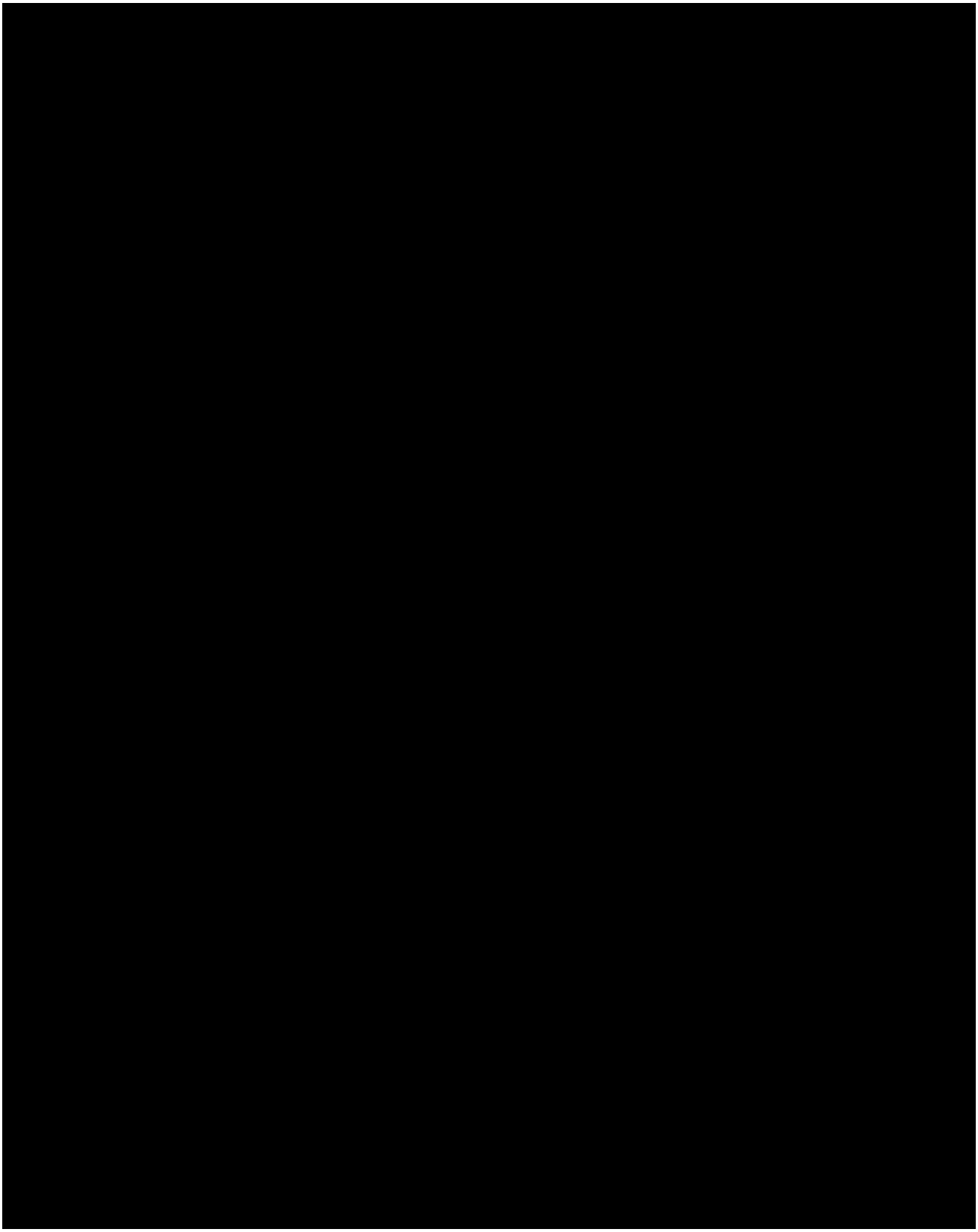


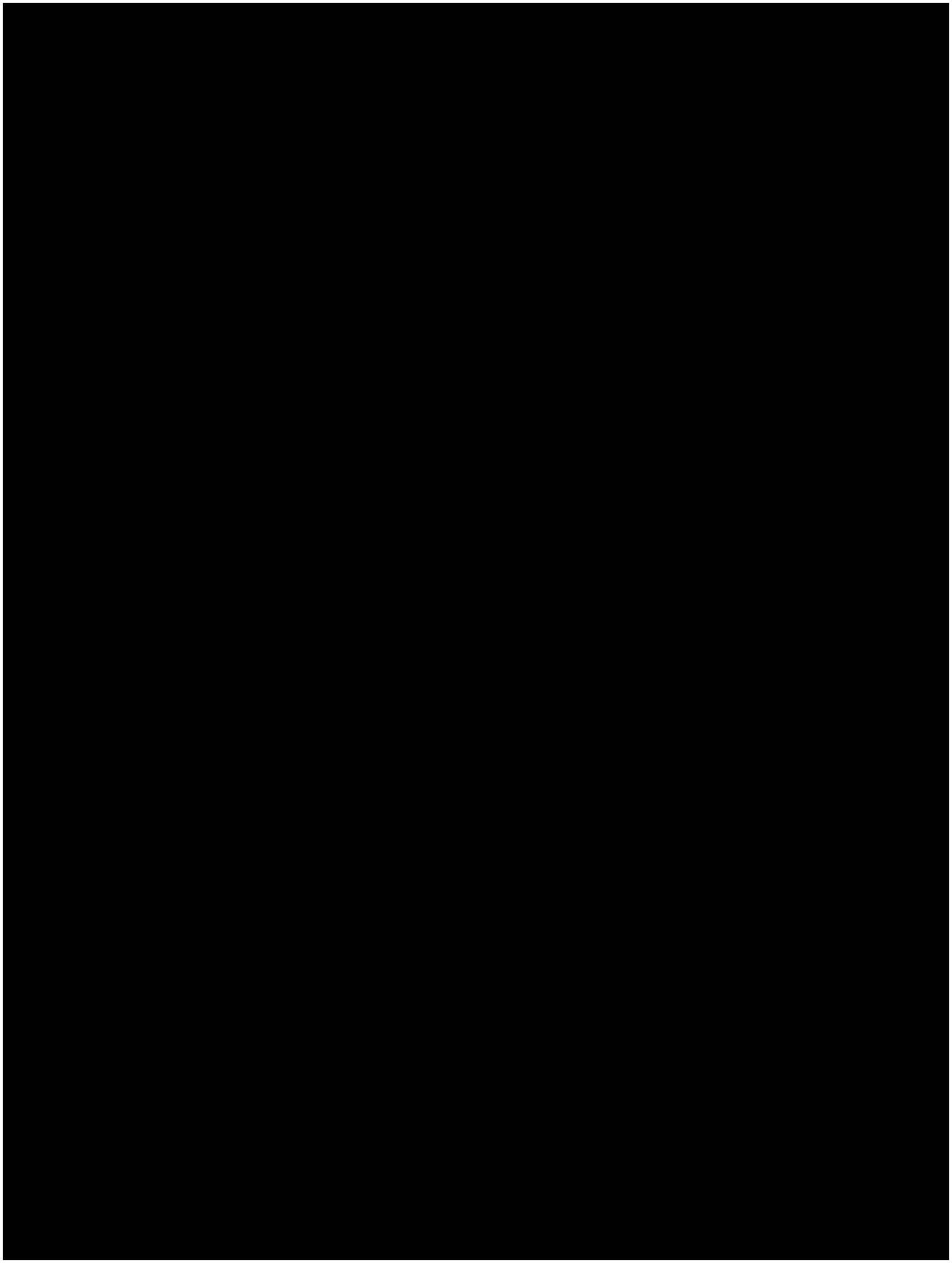


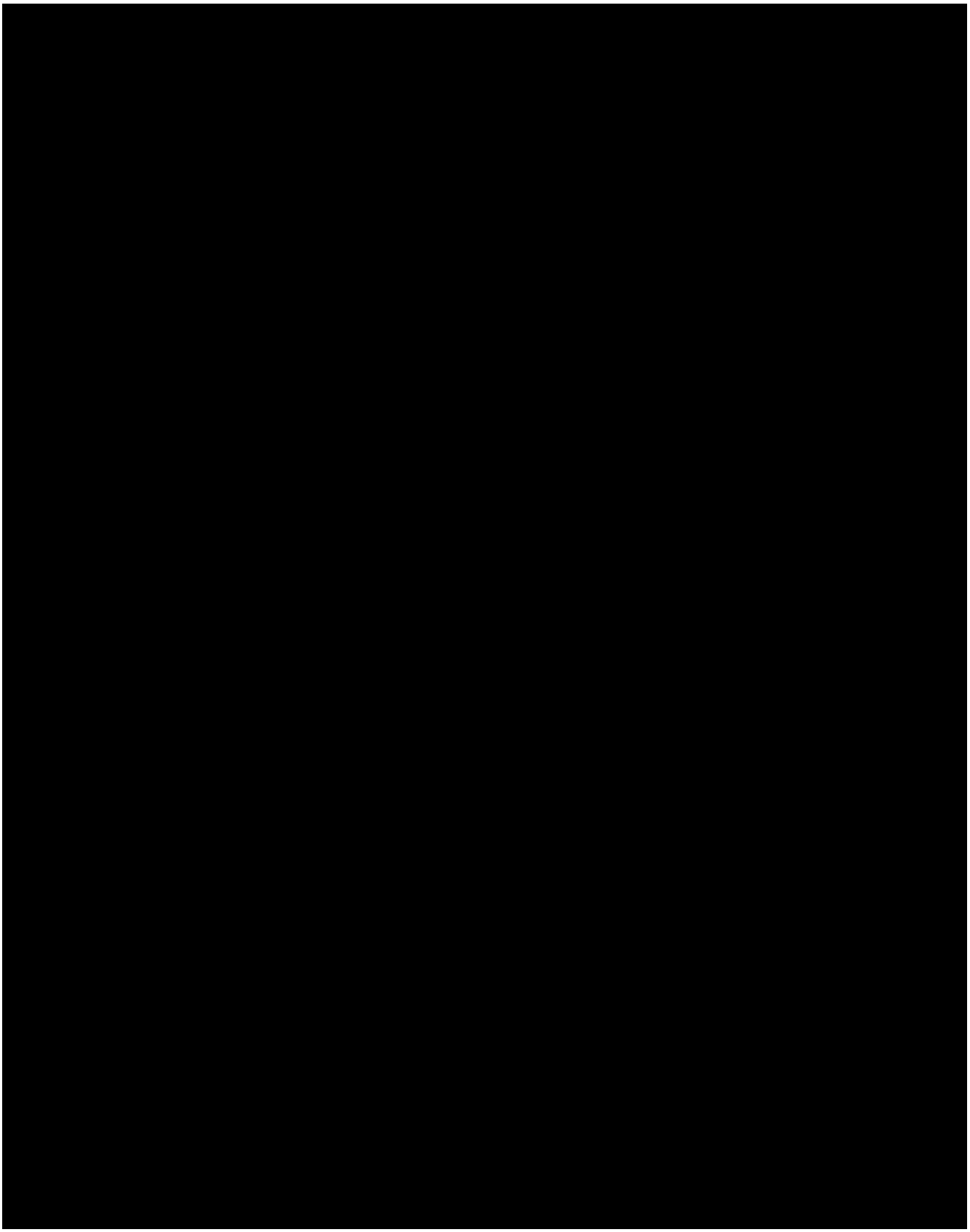


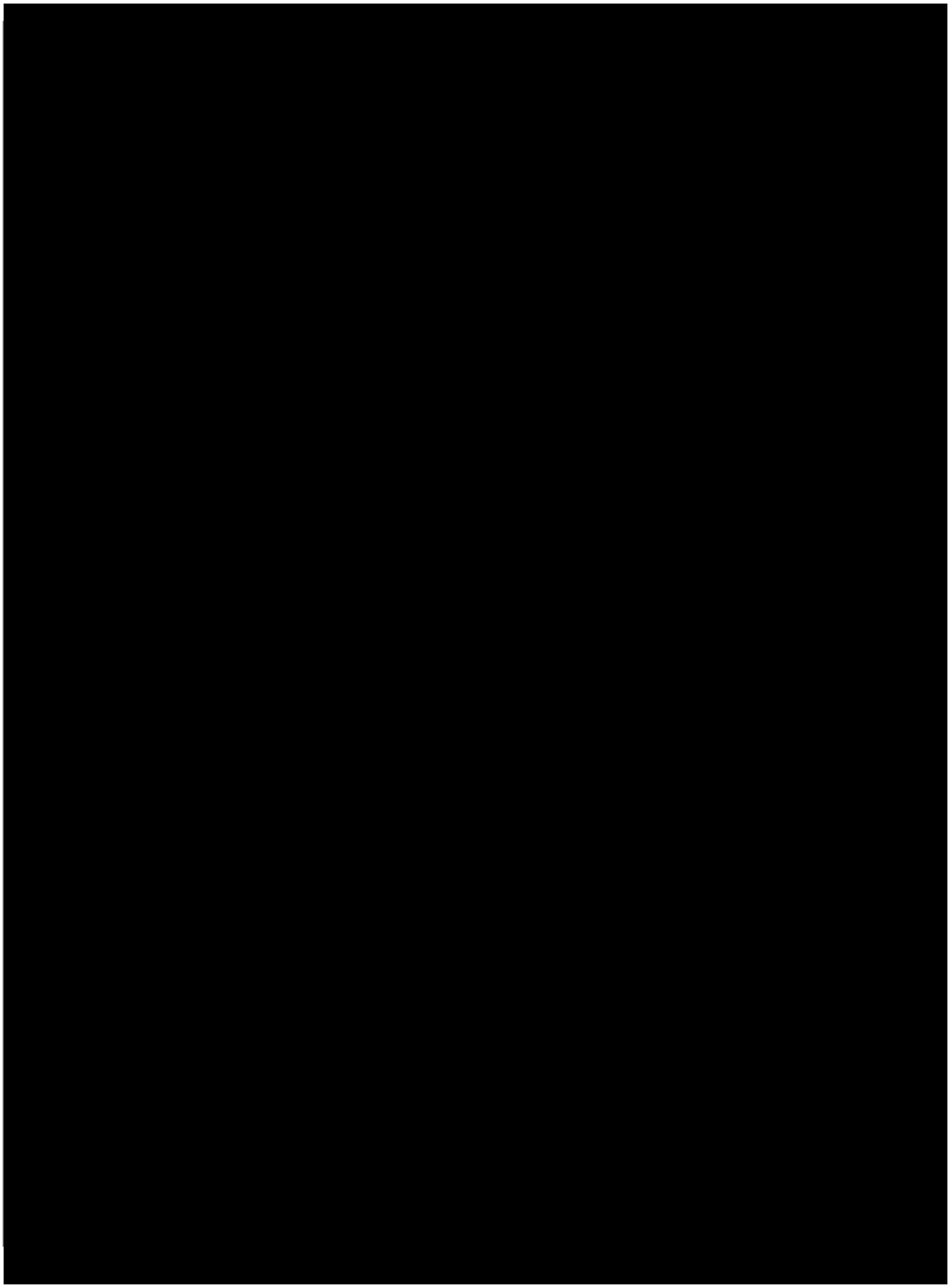


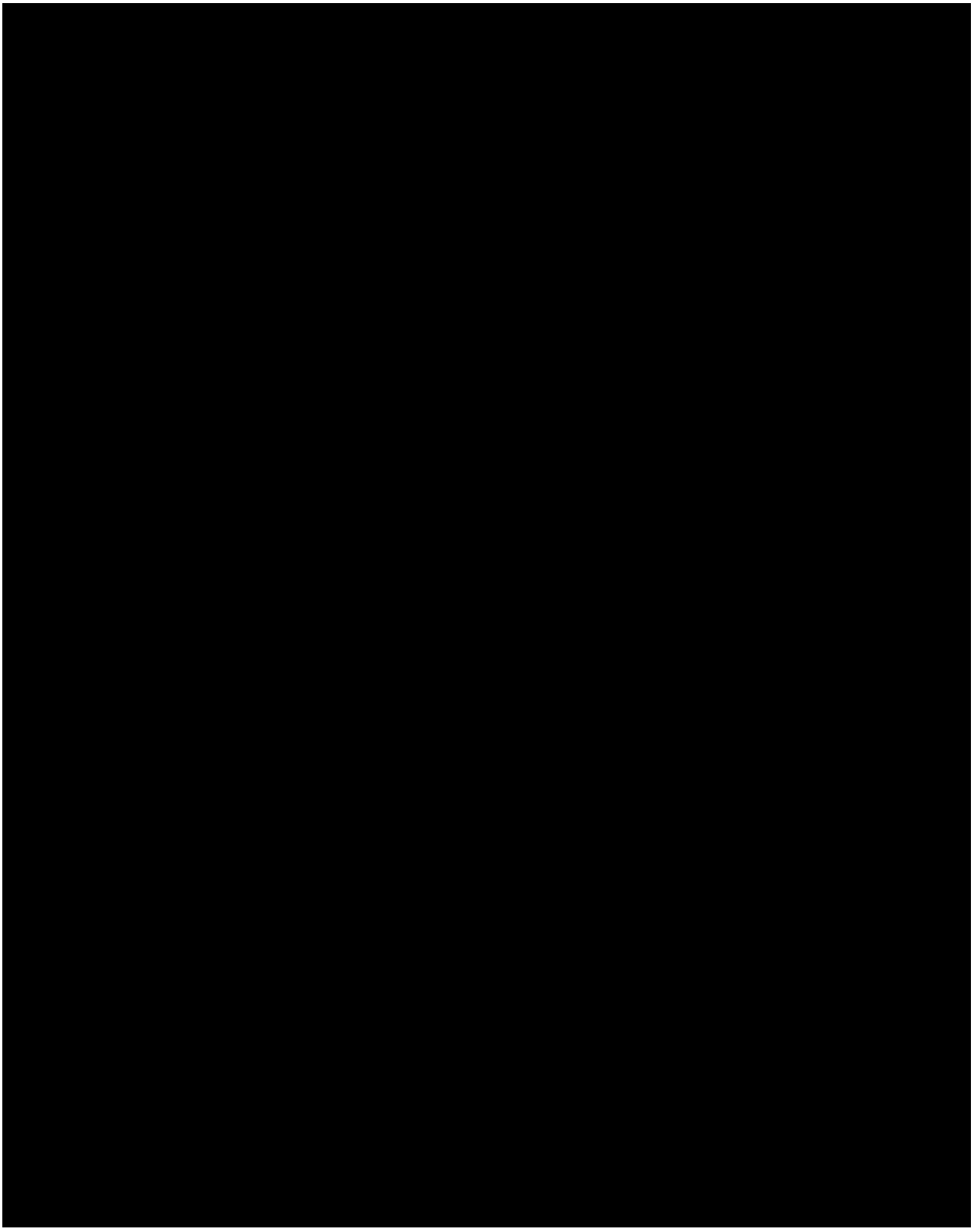


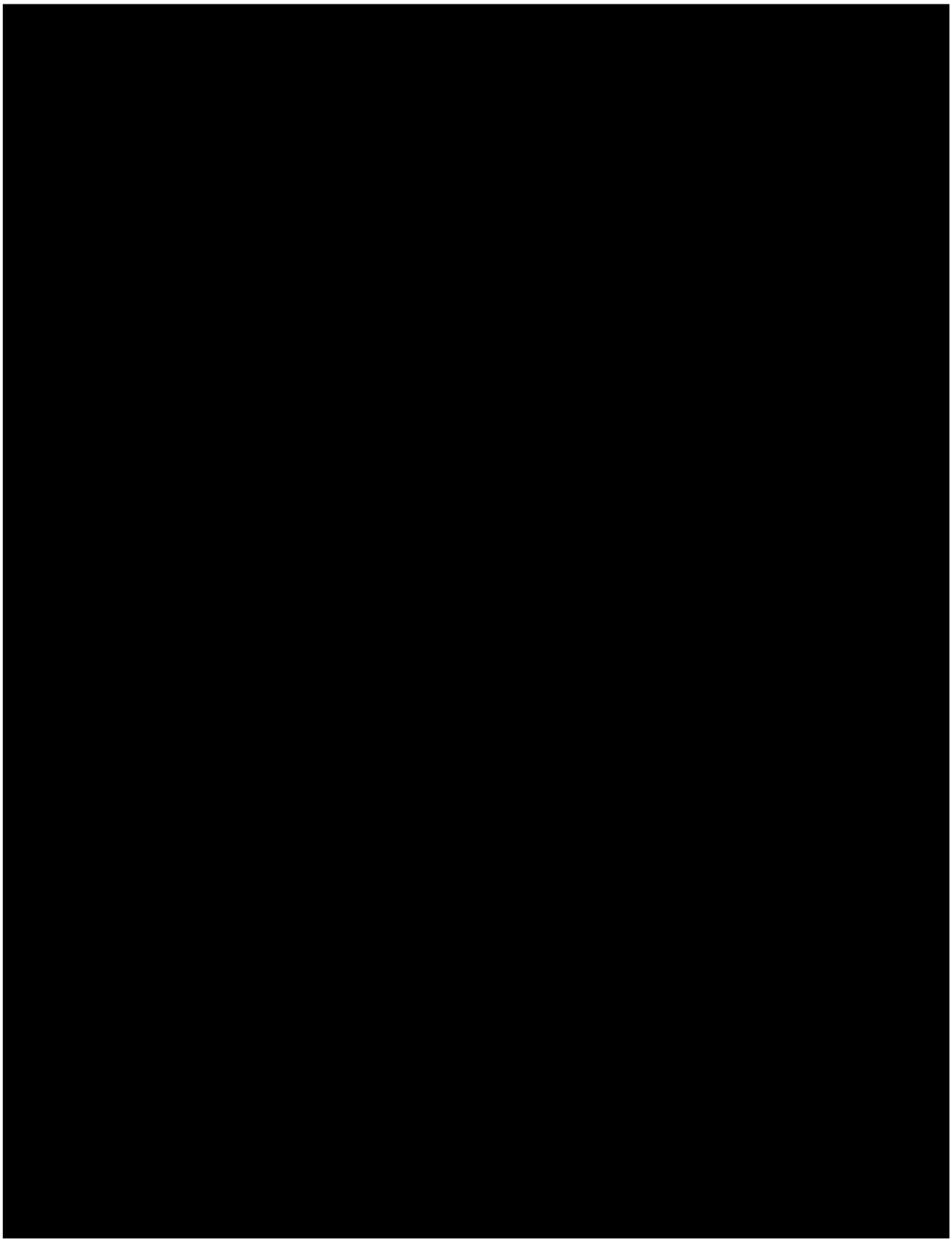


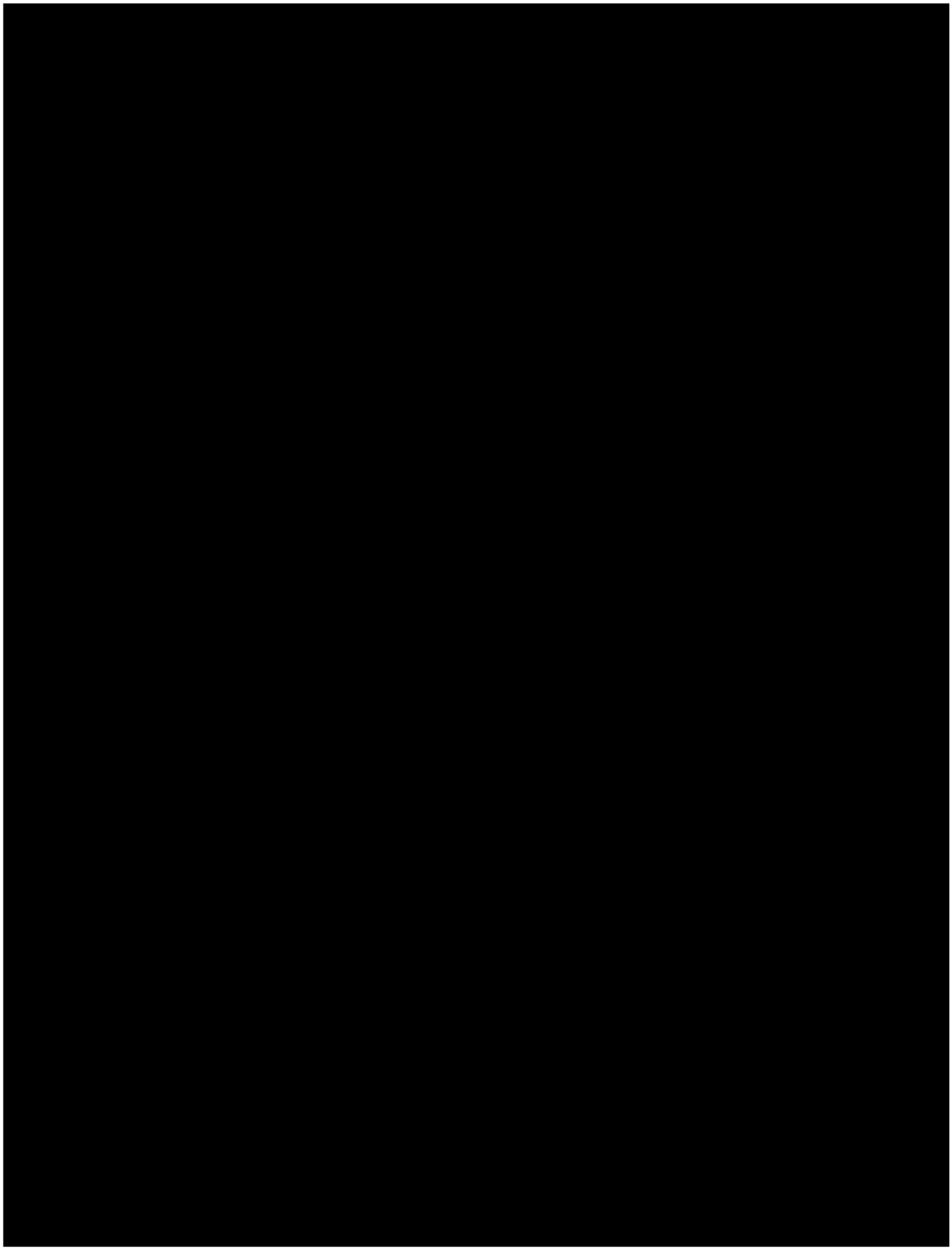


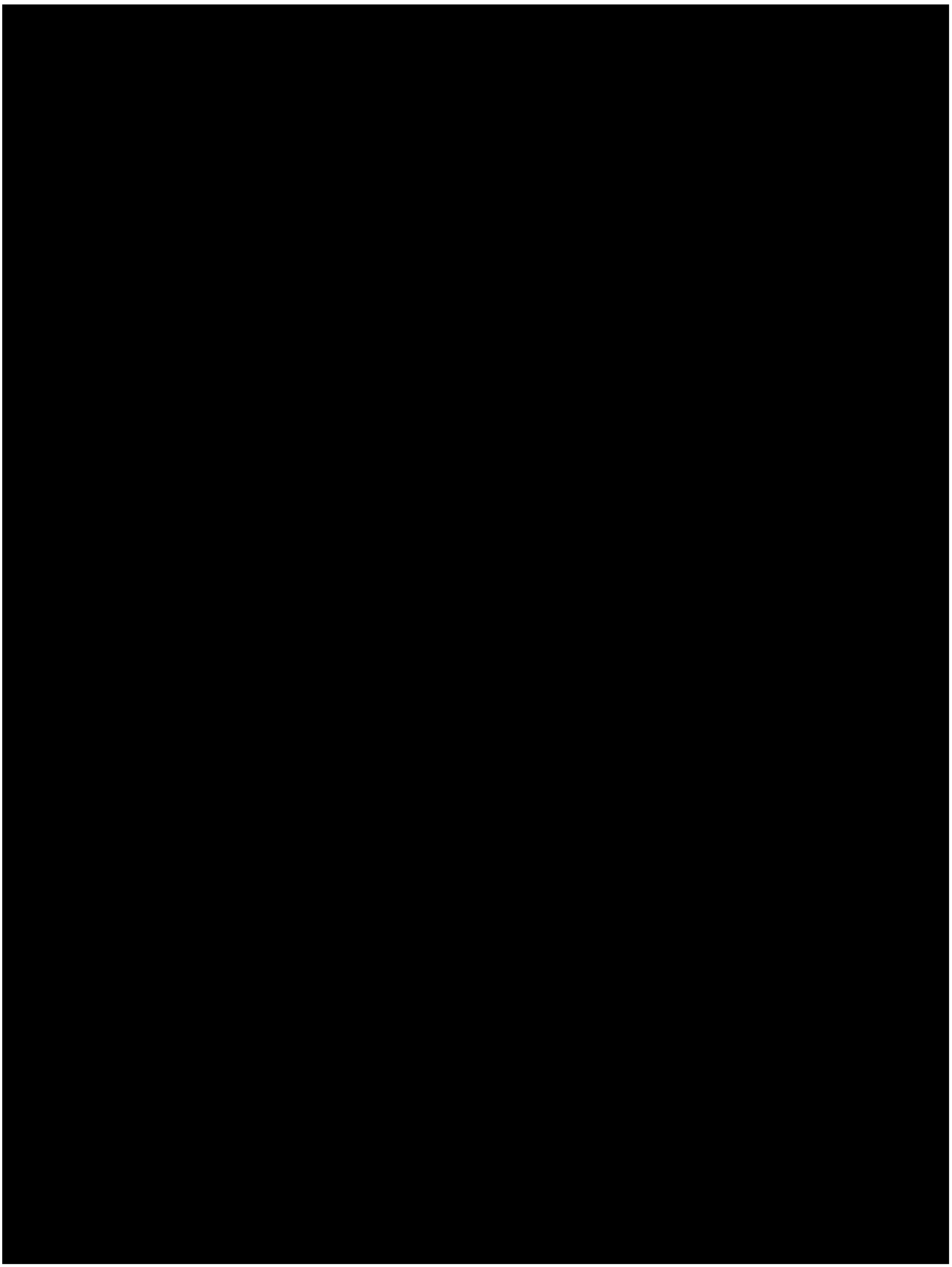


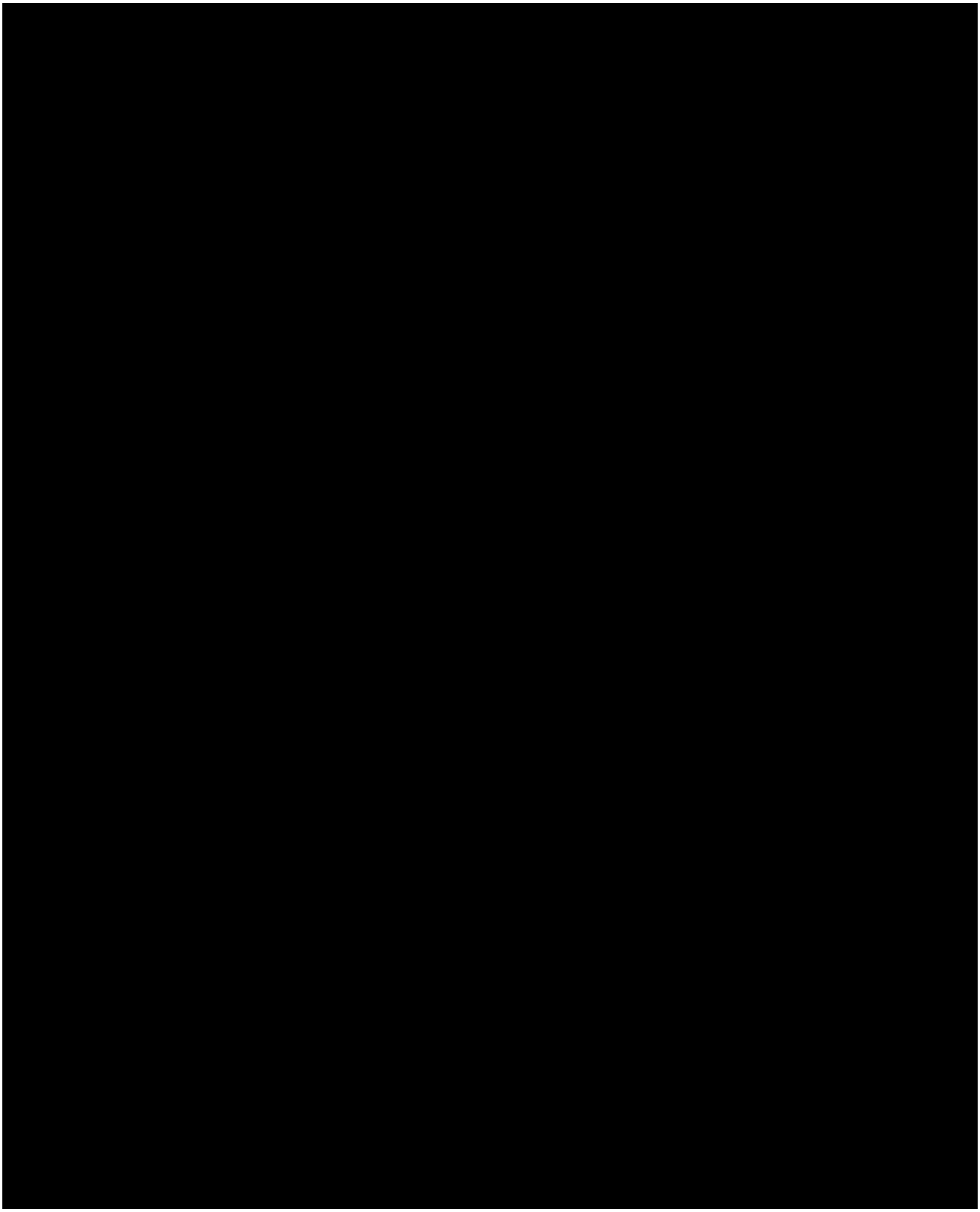














C1.6: Protection of the Environment Declaration

PROTECTION OF THE ENVIRONMENT DECLARATION

The Contractor will not be given right of access to the Site until this form has been signed

CONTRACT NO.: 97Q/2021/22

CONTRACT TITLE: CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

I/ we,.....{Contractor} record as follows:

1. I/ we, the undersigned, do hereby declare that I/ we am/ are aware of the increasing requirement by society that construction activities shall be carried out with due regard to their impact on the environment.

2. In view of this requirement of society and a corresponding requirement by the Employer with regard to this Contract, I/ we will, in addition to complying with the letter of the terms of the Contract dealing with protection of the environment, also take into consideration the spirit of such requirements and will, in selecting appropriate employees, plant, materials and methods of construction, in-so-far as I/ we have the choice, include in the analysis not only the technical and economic (both financial and with regard to time) aspects but also the impact on the environment of the options. In this regard, I/ we recognise and accept the need to abide by the "precautionary principle" which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive construction approach in the face of uncertainty with regard to the environmental implications of construction.

3. I/ we declare that I/ we have read and understood the contents of the Environmental Management Programme (which is comprised of the Environmental Management Specification and its Annexures) for this Contract, and that I/ we understand my/our responsibilities in terms of enforcing and implementing the Environmental Management Programme. I/ we also declare that I/ we have made appropriate provision in my/ our pricing of the Bills of Quantities items for the Environmental Management Programme.

4. I/ we acknowledge and accept the right of the Employer to deduct, should he so wish, from any amounts due to me/ us, such amounts (hereinafter referred to as fines) as the Employer's Agent shall certify as being warranted in view of my/ our failure to comply with the terms of the Contract dealing with protection of the environment, subject to the following:

4.1 The Employer's Agent, in determining the amount of such fine, shall take into account, *inter alia*, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance/non-compliance, the extent of the Contractor's overall compliance with environmental protection requirements and, in particular, the extent to which he considers it necessary to impose a sanction in order to eliminate/reduce future occurrences

4.2 The Employer's Agent shall, with respect to any fine imposed, provide me/ us with a written statement giving details of the offence, the facts on which the Employer's Agent has based his assessment and the terms of the Contract (by reference to the specific clause) which has been contravened.

Signed ..... Date.....
CONTRACTOR

C1.7: Insurance Broker's Warranty

Pro Forma

Logo

Letterhead of Contractor's Insurance Broker

Date _____

CITY OF CAPE TOWN
City Manager
Civic Centre
12 Hertzog Boulevard
Cape Town
8000

Dear Sir

CONTRACT NO.: **97Q/2021/22**

CONTRACT TITLE: **CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9**

NAME OF CONTRACTOR: _____

I, the undersigned, do hereby confirm and warrant that all the insurances required in terms of the abovementioned contract have been issued and/or in the case of blanket/umbrella policies, have been endorsed to reflect the interests of the CITY OF CAPE TOWN with regard to the abovementioned contract, and that all the insurances and endorsements, etc., are all in accordance with the requirements of the contract.

I furthermore confirm that all premiums in the above regard have been paid.

Yours faithfully

Signed: _____

For: _____

C1.8: Contract of Temporary Employment As Community Liaison Officer

Construction Contract No.: 97Q2021/22

PROJECT: **CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9**

AGREEMENT made between the CONTRACTOR .....
and the Community Liaison Officer....., hereafter referred to as the CLO, for the appointment and employment of a CLO for the duration of the work in respect of the above named construction contract.

1. **THE PARTIES HAVE AGREED THAT**

The CLO will be employed by the CONTRACTOR on a temporary basis for the duration of the work from the date of signing this agreement to the date of practical completion as defined in the Contract, subject to all the conditions set out below.

2. **THE DUTIES OF THE COMMUNITY LIAISON OFFICER SHALL BE:**

1. to keep the community informed on the progress of the project;
2. to keep the Contractor informed on relevant Community affairs and possible grievances;
3. to manage the recruitment of workers from the Sub-Council Job-Seekers Database;
4. to assist the Contractor's supervisory staff in the management of the workers.

3. **THE FOLLOWING CONDITIONS OF EMPLOYMENT SHALL APPLY:**

The Conditions of Temporary Employment as applicable on this Contract for the workers recruited from the Community shall apply equally to the CLO, except that the rate of remuneration shall be R 360.00 per working day. These conditions that apply are listed below as they appear in the Contract of Temporary Employment:

3.1 If required to work on a statutory public holiday or Sunday the payment will be double the amount stated in the previous paragraph.

3.2 Maximum hours of work:

(i) 9¼ hours per day
(ii) 45 hours per week;
(iii) 5 days per week;
(iv) 5 hours without an interval, whereupon there shall be an interval of at least 30 minutes;
(v) A spread-over period of 12 hours.

3.3 The CLO shall be entitled to payment where he is prevented from working by reasons which are within the control of the Contractor.

3.4 On days when it is raining the Contractor may, before 9 a.m., decide not to open the site and there will be no pay.

If the Contractor closes the site between 9 a.m. and 1 p.m., the CLO will be paid half the daily wage.

If the site works later than 1 p.m., the CLO will be paid the full daily wage.

3.5 Workers and the CLO will not be permitted to work under conditions of:

(i) undisciplined or unruly behaviour;
(ii) insubordination to Team Leader, Supervisors or Management;
(iii) abuse of intoxicating substances;
(iv) criminal actions by the employee;
(v) strike action or political stayaways.

3.6 Workers, including the CLO, may be dismissed after two official written warnings for the following behaviour:

(i) undisciplined or unruly behaviour;

(ii) insubordination to Team Leader, Supervisors or Management;
(iii) abuse of intoxicating substances;
(iv) wilful or negligent damage to or loss of machines or equipment.

The Contractor shall ensure that he has statements from at least two witnesses concerning any of the above situations.
The Contractor shall inform the CLO within 24 hours of any warning issued to workers employed from the Job-Seekers Database.

3.7 The CLO will be paid on a Friday afternoon every two weeks, one week in arrears.

3.8 The CLO shall be given a statement with each payment on which is recorded:

(i) the name of the Contractor;
(ii) the CLO's name;
(iii) the number of days worked by the CLO;
(iv) the rate per day;
(v) the details of any deductions made;
(vi) the actual amount paid to the CLO.

3.9 No deduction shall be made from the remuneration except where the CLO consents in writing or unless the Contractor is permitted or required to do so by law or the order of any competent court.

3.10 The CLO shall be supplied free of charge with all health and safety equipment required by the Occupation Health and Safety Act. The equipment shall remain the property of the Contractor.

3.11 The Contractor must give the CLO at least one week's notice of the termination of the Contract of Temporary Employment. If this is not done, the CLO must be paid earnings for five days. This condition does not apply if the CLO is dismissed.

3.12 At the end of the period of temporary employment, the Contractor shall provide a Certificate of Service recording the Contractor's name, the CLO's name and address, the period of service, the type of work on which the CLO was engaged and the rate of remuneration on termination.

4. **TERMINATION OF AGREEMENT**

4.1 If the CLO can no longer perform and execute his/her duties as detailed in this agreement, this agreement will be terminated without prejudice to any rights under this agreement.

5. **THE CONDITIONS OF THIS AGREEMENT**

5.1 The parties expressly declare that this agreement contains all the conditions negotiated between them, and no condition or stipulation not contained herein shall be binding upon the parties.

6. **THUS AGREED AND SIGNED BY THE PARTIES**:

Contractor: …….....

Community Liaison officer: .....

Date: .....

PART C2: PRICING DATA

Part C2.1: Pricing Assumptions

Pricing Assumptions mean the criteria as set out below, read together with all Parts of this contract document, which it will be assumed in the contract, that the tenderer has taken into account when developing his prices.

1. The method of measurement published by the South African Bureau of Standards in clause 8 of the Standardised Specifications for Civil Engineering Construction is applicable, subject to the variations and amendments contained in the section "Applicable SANS 1200 standardised specifications".

2. Descriptions in the Bills of Quantities are abbreviated and comply generally with those in the Standardised Specifications. Clause 8 of each Standardised Specification, read together with the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standardised Specification, or the Scope of Work, conflict with the terms of the Schedule, the requirements of the Standardised Specification or Scope of Work, as applicable, shall prevail.

3. The measurement and payment clauses in a specification in which further information regarding the scheduled items is given, are referenced under "Item" (pay items) in the Bills of Quantities. The referenced clauses are not necessarily the only sources of information in respect of scheduled items. Further information and specifications may be found elsewhere in the contract documents. Standardised Specifications are identified by the digits which follow SANS in the SANS 1200 series of specifications, e.g. G for SANS 1200 G.

4. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

5. The quantities set out in the Bills of Quantities are the estimated quantities of the Contract Works, but the Contractor will be required to undertake whatever quantities may be directed by the Employer's Agent from time to time. The Contract Price for the completed contract shall be computed from the actual quantities of work done, valued at the relevant unit rates and prices.

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

7. A price or rate should be entered against each item in the Bills of Quantities, whether the quantities are stated or not. **An item against which no rate is/are entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, it will also be regarded as a nil rate having been entered against that item, i.e. that there is no charge for that item.** The Tenderer may be requested to clarify nil rates, or items regarded as having nil rates; and the Employer may also perform a risk analysis with regard to the reasonableness of such rates.

8. Except where rates only are required, insert all amounts to be included in the total tendered price in the "Amount" column and show the corresponding total tendered price.

9. The units of measurement described in the Bills of Quantities are metric units. Abbreviations which may be used in these Bills of Quantities are as follows:

mm	=	millimetre	h	=	hour
m	=	metre	kg	=	kilogram
km	=	kilometre	t	=	ton (1000 kg)
m2	=	square metre	No.	=	number
m2.pass	=	square metre-pass	sum	=	lump sum
ha	=	hectare	MN	=	meganewton
m3	=	cubic metre	MN.m	=	meganewton-metre
m3.km	=	cubic metre-kilometre	P C sum	=	Prime Cost sum
l	=	litre	Prov sum	=	Provisional sum
kl	=	kilolitre	%	=	per cent
MPa	=	megapascal	kW	=	kilowatt
$t.m^3$	=	ton-kilometre			

10. Where fractions of a cent occur in calculations of prices and amounts, they shall be rounded up/down to the nearest whole cent.

11. The Tenderer is referred to C.2.24 in Part T1.2 Tender Data regarding the pricing of Deviations and/or Qualifications.

11. Clause C.2.13.11 c) in Part T1.2 Tender Data shall be applicable to the submission of Bills of Quantities which have been priced electronically, and which the Tenderer wishes to submit as a printed version with his/her tender in the place of handwritten priced Bills of Quantities.

    If there is found to be any variance between the printed version and the original issued document, the original shall stand. However, where Addenda have been issued which amend the Bills of Quantities, then the printed Bills of Quantities shall take these into account.

    The pages of the issued Bills of Quantities should not be removed from the tender document.

12. Tenderers are referred to Clause 8 Measurement and Payment in the Environmental Management (EM) Specification in Part C3.5 in the Scope of Work for the basic principles of measurement and pricing of the EM Specification.

13. All descriptions or clauses where trade names or proprietary products are specified, are deemed to include the phrase “or equal approved”

14. Provision is made for fixed and time-related items under the Preliminary and General section of each Bill of Quantities for Basin 6 and Basin 9. Tenderers shall price each Preliminary and General section for Basin 6 and Basin 9 separately. Not pricing these Preliminary and General sections separately may result in financial risk to the tenderer.

15. Tenderers are referred to Clause 6.8.2 in Part C1.2 Contract Data regarding contract price adjustment.

The following bill schedules in Part C2.2 Bills of Quantities are deemed applicable to the following categories for the purposes of Contract Price Adjustment:

BILL SCHEDULES	CPA CATEGORY
Basin 6: 1A, 1B **Basin 9**: 2A, 2B	To be proportioned between Roads & Earthworks and Concrete Works categories, as applicable
Basin 6: 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1N, 1O, 1P **Basin 9**: 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K	Roads & Earthworks
Basin 6: 1C, 1D, 1E, 1F, 1G, 1I, 1L **Basin 9**: 2D, 2E, 2F, 2G, 2I	Concrete Works

Part C2.2: Bill of Quantities

Bid specifications may not make any reference to any particular trade mark, name, patent, design, type, specific origin or producer, unless there is no other sufficiently precise or intelligible way of describing the characteristics of the work, in which case such reference must be accompanied by the words "or equivalent".

TENDERERS MUST NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADE MARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS 'OR EQUIVALENT"

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BILL NO. 1 **UPGRADE OF BASIN 6**
Schedule 1A: Preliminary and General
Schedule 1B: Dayworks (hourly rates)
Schedule 1C: Detention and Conditioning Ponds
Schedule 1D: Inlet Works
Schedule 1E: Outlet Structure
Schedule 1F: Overflow Spillway Structure
Schedule 1G: Evaporation Pond
Schedule 1H: Access Roads
Schedule 1I: Domestic Effluent Bypass Pipeline
Schedule 1J: Recharge Pipeline
Schedule 1K: Donkergat Diversion Pipeline
Schedule 1L: Stormwater Inflow Diversion Pipeline
Schedule 1M: Stormwater Inflow Temporary Diversion Pipeline and Canal
Schedule 1N: Industrial Effluent Diversion Pipeline
Schedule 1O: Subsoil Drains
Schedule 1P: Appurtenant Works (Paving, fencing, sluices, etc.)
Summary of Bill No. 1

BILL NO. 2 **UPGRADE OF BASIN 9**
Schedule 2A: Preliminary and General
Schedule 2B: Dayworks (hourly rates)
Schedule 2C: Detention and Conditioning Ponds
Schedule 2D: Inlet Works
Schedule 2E: Outlet Structure
Schedule 2F: Overflow Spillway Structure
Schedule 2G: Evaporation Pond
Schedule 2H: Access Roads
Schedule 2I: Evaporation Pond Discharge Pipeline
Schedule 2J: Sewage Connection Pipeline
Schedule 2K: Appurtenant Works (Paving, fencing, sluices, etc.)
Summary of Bill No. 2

SUMMARY OF BILLS

DECLARATION

BILL NO. 1: UPGRADE OF BASIN 6

BASIN 6 - SCHEDULE 1A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
A1	SANS 1200 A	**PRELIMINARY AND GENERAL**					
A1.1	8.3	**FIXED-CHARGE AND VALUE-RELATED ITEMS**					
A1.1.1	8.3.1	Contractual requirements (Performance guarantee, insurances, financing costs, general expenses incurred in complying with the GCC, SCC and all other expenses incurred in complying with the requirements of the Conditions of Tender and Contract)	Sum	1	430 929 04	430 929	04
	8.3.2	**Establishment of Facilities on the Site**					
	8.3.2.1	Facilities for Engineer					
A1.1.2		Office buildings with the inclusion of air conditioning, car ports, ablution and latrine facilities, communications equipment for the duration of the contract (2 cell phones), IT equipment, site instruction book, protective clothing and safety equipment, project nameboards (2 No), survey equipment, internet connectivity, colour printer / copier / scanner machine, steel plan cabinets to accommodate at least 40 A0 plans, an electric refrigerator of at least 200 litre capacity, etc.	Sum	1		Included	
	8.3.2.2	Facilities for the Contractor					
A1.1.3		Facilities for the Contractor, including offices, storage sheds, workshops, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, dealing with water, survey, access and accommodation of traffic, plant, etc.	Sum	1		Included	
A1.1.4	8.3.3	Other fixed-charge obligations (Specify)	Sum	1		N/A	
A1.1.5	8.3.4	Removal of Contractor's site establishment infrastructure and reinstatement of site on completion of construction phase.	Sum	1		Included	
TOTAL CARRIED FORWARD						430 929	04

BASIN 6 - SCHEDULE 1A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						630 929	04
A1.2	8.4	**TIME-RELATED ITEMS**					
A1.2.1	8.4.1	Contractual requirements (Performance security, insurances, financing costs, general expenses incurred in complying with the GCC, SCC and all other expenses incurred in complying with the requirements of the Conditions of Tender and Contract)	Sum	1	8 162 856	8 162 856	00
	8.4.2	Operate and maintain facilities on site for duration of construction phase except where otherwise stated					
A1.2.2	8.4.2.1	Facilities for the Engineer	Sum	1	162 000	162 000	00
A1.2.3	8.4.2.2	Facilities for the Contractor	Sum	1		Included	
A1.2.4	8.4.3	Supervision for duration of construction	Sum	1		Included	
A1.2.5	8.4.4	Company and Head Office overhead costs for duration of Contract	Sum	1		Included	
A1.2.6	8.4.5	Other time-related obligations (Specify)	Sum	1		N/A	
TOTAL CARRIED FORWARD						8 755 785	04

BASIN 6 - SCHEDULE 1A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						8 755 785	04
A1.3	SANS 1200 A	**SETTING OUT OF THE WORKS** Setting out of the Works and the preservation and replacement of beacons and reference pegs.					
A1.3.1	8.3.3	Fixed-charged obligations for Item A1.3	Sum	1		Included	
A1.3.2	8.4.5	Time-related obligations for Item A1.3	Sum	1		Included	
A1.4	8.5	**SUMS STATED PROVISIONIALLY BY ENGINEER**					
	8.5 b)	1) For work to be executed by the Employer or a nominated subcontractor					
A1.4.1		i) Material testing by commercial laboratories	Prov Sum	1	50,000.00	50,000	00
A1.4.2		ii) Overheads, charges and profit on item A1.4.1	%		50 000	2 000	00
A1.4.3	PS A 8.5.1	Additional survey for the provision of as-built information	Sum	1		Included	
A1.5	PS A 8.7	**DAYWORK**	Prov			PROV	
A1.6	8.8	**TEMPORARY WORKS**					
A1.6.1	PS A 8.8.2	Accommodation of traffic	Sum	1		Included	
A1.6.2	PS A 8.8.5	Cost of survey in terms of the Land Survey Act	Sum	1		Included	
A1.7	A 8.9	**OCCUPATIONAL HEALTH AND SAFETY**					
A1.7.1	PS A 8.9.1	Health And Safety Measures	Sum	1		Included	
A1.7.2	PS A 8.9.2	Health And Safety Plan	Sum	1		Included	
A1.7.3	PS A 8.9.3	Health And Safety File	Sum	1		Included	
	PS A 8.9.4	OCCUPATIONAL HEALTH AND SAFETY OFFICER					
A1.7.4		a) Employment of Occupational Health and Safety Officer	Sum	1	216 000	216 000	00
A1.7.5		b) Contractor's overheads, charges and profit on employment of Occupational Health and Safety Officer	%			Included	
A1.8	PS A 8.10	**COMMUNITY LIAISON OFFICER (CLO)**					
A1.8.1		a) Employment of CLO	Sum per working day	264	360.00	96,040	00
TOTAL CARRIED FORWARD						9118 825	04

BASIN 6 - SCHEDULE 1A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						9 118 825	04
A1.8.2		b) Contractor's overheads, charges and profit on employment of CLO	%		95 040	3 801	60
A1.9	PS A 8.11	**ENVIRONMENTAL MANAGEMENT PLAN**					
A1.9.1	PS A 8.11.1	Cost Of Environmental Management Plan	Sum	1		Included	
A1.9.2	PS A 8.11.2	Complying With The Environmental Management Plan (EMP)	Sum	1		Included	
	PS A 8.11.3	**ENVIRONMENTAL CONTROL OFFICER (ECO)**					
A1.9.3		a) Employment of ECO	Sum	1	480 000	480 000	00
A1.9.4		b) Contractor's overheads, charges and profit on employment of ECO	%		480 000	19 200	00
	PS A 8.11.4	Horticulturist					
A1.9.5		a) Employment of Horticulturist	Prov Sum	1	120,000.00	120,000	00
A1.9.6		b) Contractor's overheads, charges and profit on employment of Horticulturist	%		120 000	4 800	00
A1.10	PS A 8.12	Re-siting of Services	Prov Sum	1	20,000.00	20,000	00
A1.11	PS A 8.13	Re-vegetation of Conditioning Ponds	Prov Sum	1	150,000.00	150,000	00
A1.12	PS A 8.14	Re-vegetation of Fill Embankment and Cut Slopes	Prov Sum	1	50,000.00	50,000	00
TOTAL CARRIED FORWARD TO SUMMARY						9 966 626	64

BASIN 6 - SCHEDULE 1B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
B1	SANS 1200 PS A 8.7	**DAYWORK**					
B1.1		**Personnel during working hours**					
B1.1.1		a) Unskilled labour	h		51,66	Rate Only	
B1.1.2		b) Semi skilled labour	h		67,16	Rate Only	
B1.1.3		c) Skilled labour	h		82,46	Rate Only	
B1.1.4		d) Ganger	h		82,66	Rate Only	
B1.1.5		e) Foreman / Section leader	h		129,60	Rate Only	
B1.2		**Personnel outside working hours**					
B1.2.1		a) Unskilled labour	h		77,49	Rate Only	
B1.2.2		b) Semi skilled labour	h		100,74	Rate Only	
B1.2.3		c) Skilled labour	h		123,99	Rate Only	
B1.2.4		d) Ganger	h		125,99	Rate Only	
B1.2.5		e) Foreman / Section leader	h		194,40	Rate Only	
B1.3		**Personnel during special non-working hours**					
B1.3.1		a) Unskilled labour	h		103,33	Rate Only	
B1.3.2		b) Semi skilled labour	h		134,32	Rate Only	
B1.3.3		c) Skilled labour	h		165,32	Rate Only	
B1.3.4		d) Ganger	h		165,32	Rate Only	
B1.3.5		e) Foreman / Section leader	h		259,20	Rate Only	
TOTAL CARRIED FORWARD						0	00

BASIN 6 - SCHEDULE 1B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						0	00
B2		**Equipment**					
B2.1		Excavators					
B2.1.1		6 ton – 10 ton (40 – 55 kW)	h		739,80	Rate Only	
B2.1.2		10 ton – 14 ton (55 – 70 kW)	h		756,00	Rate Only	
B2.1.3		18 ton – 22 ton (70 – 105 kW)	h		783,00	Rate Only	
B2.1.4		22 ton – 26 ton (105 – 125 kW)	h		810,00	Rate Only	
B2.1.5		26 ton – 30 ton (120 – 150 kW)	h		855,56	Rate Only	
B2.1.6		30 ton – 35 ton (150 – 180 kW)	h		1080,00	Rate Only	
B2.1.7		35 ton – 40 ton (150 – 180 kW)	h		1296,00	Rate Only	
B2.2		Bulldozers					
B2.2.1		13 ton – 17 ton (90 – 135 kW)	h		970,92	Rate Only	
B2.2.2		17 ton – 20 ton (125 – 135 kW)	h		1179,36	Rate Only	
B2.2.3		25 ton – 30 ton (160 – 175 kW)	h		1415,23	Rate Only	
B2.2.4		35 ton – 45 ton (215 – 315 kW)	h		1651,10	Rate Only	
B2.3		Graders					
B2.3.1		101 – 130 kW	h		956,88	Rate Only	
B2.3.2		131 – 150 kW	h		1148,26	Rate Only	
B2.3.3		171 – 190 kW	h		1339,63	Rate Only	
B2.4		Concrete Batching Plant (m³/h)					
B2.4.1		8 m³/hr	h		600 -	Rate Only	
B2.4.2		12 m³/hr	h		900 -	Rate Only	
B2.5		Front-end loaders					
B2.5.1		5 – 8 ton	h		648,00	Rate Only	
B2.5.2		9 – 10 ton	h		702,00	Rate Only	
B2.5.3		14 – 18 ton	h		756,00	Rate Only	
B2.5.4		19 – 22 ton	h		838,08	Rate Only	
TOTAL CARRIED FORWARD						0	00

BASIN 6 - SCHEDULE 1B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						0	00
B2.6		Rollers					
B2.6.1		1,5 – 2,5 ton	h		486,00	Rate Only	
B2.6.2		4 - 7 ton	h		540,00	Rate Only	
B2.6.3		8 - 12 ton	h		594,00	Rate Only	
B2.6.4		12 - 15 ton	h		637,20	Rate Only	
B2.7		Small Rollers					
B2.7.1		500 – 550 kg	h		86,40	Rate Only	
B2.7.2		650 – 700 kg	h		86,40	Rate Only	
B2.7.3		900 – 1000 kg	h		108,00	Rate Only	
B2.7.4		1000 – 1500 kg	h		129,60	Rate Only	
B2.8		Trucks (m³ specified)					
B2.8.1		3 m³	h		541,08	Rate Only	
B2.8.2		5 m³	h		541,08	Rate Only	
B2.8.3		10 m³	h		573,48	Rate Only	
B2.8.4		15 m³	h		1112,40	Rate Only	
B2.9		Water trucks (litres specified)					
B2.9.1		4000 – 6000 l	h		412,99	Rate Only	
B2.9.2		6000 – 10 000 l	h		516,24	Rate Only	
B2.9.3		10 000 – 15 000 l	h		516,24	Rate Only	
B2.9.4			h		NA	Rate Only	
B2.10		Tractor and trailer					
B2.10.1		4 – 6 ton	h		486,00	Rate Only	
B2.10.2		8 – 12 ton	h		702,00	Rate Only	
B2.10.3		12 – 15 ton	h		918,00	Rate Only	
B2.10.4		15 – 20 ton	h		1080,00	Rate Only	
TOTAL CARRIED FORWARD						0	00

BASIN 6 - SCHEDULE 1B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						0	00
B2.11		Backhoe loaders (TLB)					
B2.11.1		6 – 7 ton	h		486,80	Rate Only	
B2.11.2		7 – 8 ton	h		532,44	Rate Only	
B2.11.3		8 – 9 ton	h		702,00	Rate Only	
B2.11.4			h			Rate Only	
B2.12		Crane truck (tons specified)					
B2.12.1		2 – 4 ton	h		503,28	Rate Only	
B2.12.2		4 – 6 ton	h		540,00	Rate Only	
B2.12.3		6 – 8 ton	h		702,00	Rate Only	
B2.12.4			h			Rate Only	
B2.13		Compressor					
B2.13.1		74 cfm	h		108,00	Rate Only	
B2.13.2		250 cfm	h		216,00	Rate Only	
B2.13.3		600 cfm	h		432,00	Rate Only	
B2.13.4		750 cfm	h		540,00	Rate Only	
B2.14		Concrete mixer (litres specified)					
B2.14.1		150L	h		150.00	Rate Only	
B2.14.2			h			Rate Only	
B2.14.3			h			Rate Only	
B2.14.4			h			Rate Only	
B2.15		"Dumper" (m³ specified)					
B2.15.1		11 – 13 m³	h		143,10	Rate Only	
B2.15.2		14 – 16 m³	h		162,00	Rate Only	
B2.15.3		17 – 20 m³	h		216,00	Rate Only	
B2.15.4		21 – 25 m³	h		378,00	Rate Only	
TOTAL CARRIED FORWARD						0	00

BASIN 6 - SCHEDULE 1B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						0	00
B2.16		Water pumps (mm specified)					
B2.16.1		225 m³/hr	h		378,00	Rate Only	
B2.16.2		680 m³/hr	h		702,00	Rate Only	
B2.16.3		1 135 m³/hr	h		1080,00	Rate Only	
B2.16.4		2 265 m³/hr	h		1296,00	Rate Only	
B2.17		Compactors (Plate)					
B2.17.1			h		100.00	Rate Only	
B2.17.2			h			Rate Only	
B2.17.3			h			Rate Only	
B2.17.4			h			Rate Only	
B2.18		Other equipment					
B2.18.1			h			Rate Only	
B2.18.2			h			Rate Only	
B2.18.3			h			Rate Only	
B2.18.4			h			Rate Only	
TOTAL CARRIED FORWARD TO SUMMARY						0	00

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 C	**SITE CLEARANCE**					
C1.1	8.2.1	Clear and grub					
C1.1.1		i) Clear and grub for detention and conditioning ponds, inlet works, outlet structure, overflow spillway structure, evaporation pond and platforms.	ha	3	13616,72	40850	16
C1.1.2		ii) Clear and grub for stockpile and spoil areas as requested by the Engineer	ha	1	13616,72	13616	72
C1.2	8.2.2	Remove and grub large trees and tree stumps of girth					
C1.2.1		i) Over 1 m and up to and including 2 m	No	10	1620,00	16200	00
C1.2.2		ii) Over 2 m and up to and including 3 m	No	5	2160,00	10800	00
C1.2.3		iii) Over 3 m	No	2	2700,00	5400	00
C1.3	PS C 8.2.7	Dismantle And Remove Pipelines					
C1.3.1		i) Basin 6 inlet pipeline (1500mm Ø concrete)	m	55	285,09	15679	95
C1.3.2		ii) Domestic effluent pipeline (450mm Ø concrete)	m	70	178,18	12472	60
C1.3.3		iii) Industrial effluent pipeline (375mm Ø concrete)	m	50	178,18	8909	00
C1.3.4		iv) Outlet recharge pipeline (1050mm Ø concrete)	m	36	285,09	10263	24
C1.3.5		v) Precast concrete collector channels upstream of Basin 6 outlet (700mm wide x 400mm deep)	m	200	142,54	28508	00
C1.3.6		vi) Donkergat diversion pipeline (300mm Ø concrete)	m	460	178,18	81962	80
C1.4	PS C 8.2.8	Demolish And Remove Structures/Buildings And Dismantle Steelwork, Etc					
C1.4.1		i) Basin 6 concrete inlet structure from 1500mm Ø pipeline (27 m² in size and up to 300mm thick concrete)	Sum	1	5686,20	5686	20
C1.4.2		ii) Domestic effluent concrete chute from 450mm Ø pipeline into Basin 6 (11m² in size and up to 300mm thick concrete)	Sum	1	2316,60	2316	60
C1.4.3		iii) Basin 6 concrete outlet structure to 1050mm Ø pipeline (11 m² in size and up to 300mm thick concrete)	Sum	1	2316,60	2316	60
TOTAL CARRIED FORWARD						254981	87

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						254981	87
C1.4.4		iv) Basin 6 Donkergat diversion manhole (Brick manhole on 1050mm Ø pipeline with concrete floor, benching and cover)	No	2	3064,33	6128	66
C1.4.5		v) Basin 6 outlet pipeline manhole (Brick manhole on 1050mm Ø pipeline with concrete floor, benching and cover)	Sum	1	3064,33	3064	33
C1.4.6		vi) Basin 6 domestic effluent pipeline manhole (Brick manhole on 450mm Ø pipeline with concrete floor, benching and cover)	Sum	1	1532,17	1532	17
C1.4.7		vii) Basin 6 industrial effluent pipeline manhole (Brick manhole on 375mm Ø pipeline with concrete floor, benching and cover)	Sum	1	1532,17	1532	17
C1.4.8		viii) Basin 6 Donkergat diversion pipeline manhole (Precast concrete ring manholes on 300mm Ø pipeline)	No	6	1532,17	9193	02
C1.5	PS C 8.2.9	Transport materials and debris to dumping / spoil / compost facility and dump (Provisional)					
C1.5.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (40 km)	t.km	4,900	2,52	12096	00
C1.5.2		ii) Demolished material from items listed under PS C 8.2.7 to spoil at landfill or other approved spoil site (30 km)	t.km	3,750	2,52	9450	00
C1.5.3		iii) Demolished material from items listed under PS C 8.2.8 to spoil at landfill or other approved spoil site (30 km)	t.km	3,150	2,52	7938	00
C1.5.4		iv) Reeds removed above ground south of Basin 6 and spoiled at compost facility (40 km)	t.km	240	2,52	604	80
C1.5.5		v) Reed root-stock removed below ground south of Basin 6 and spoiled at compost facility (40 km)	t.km	1,960	2,52	4939	20
C1.5.6		vi) Reeds and vegetation removed from within Basin 6 and spoiled at compost facility (40 km)	t.km	6,720	2,52	16934	40
C1.5.7		vii) Reed root-stock removed below ground from within Basin 6 and spoiled at compost facility (40 km)	t.km	24,600	2,52	61992	00
C1.5.8		viii) Contaminated reed root-stock removed below ground from within Basin 6 and spoiled at landfil facility (30 km)	t.km	3,522	2,52	8875	44
TOTAL CARRIED FORWARD						399,262	06

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						399262	06
C1.5.9		ix) Rubbish and debris removed from the waste stockpile adjacent to Basin 6 and spoiled at landfill facility (30 km)	t.km	7,650	2,52	19278	00
C1.5.10		x) Soil material screened out from the Reed root-stock removed south of Basin 6 and spoiled at Apollo brick quarry or other approved spoil site (4 km)	m³.km	1,600	6,55	10480	00
C1.5.11		xi) Soil material screened out from the Reed root-stock removed from within Basin 6 and spoiled at Apollo brick quarry or other approved spoil site (4 km)	m³.km	19,800	6,55	129690	00
C1.5.12		xii) Soil material screened out from the contaminated reed root-stock removed from within Basin 6 and spoiled at Apollo brick quarry or other approved spoil site (4 km)	m³.km	2,080	6,55	13624	00
C1.5.13		xiii) Soil material screened out from the waste stockpile adjacent to Basin 6 and spoiled at Apollo brick quarry or other approved spoil site (4 km)	m³.km	2,400	6,55	15720	00
C1.6	PS C 8.2.10	Remove and Replace Topsoil	m³	1,620	101,68	164721	60
C1.7	PS C 8.2.12	Remove And Re-erect Existing Fences					
C1.7.1		i) Stock-proof fences (1,4m high)	m	50	162,00	8100	00
C1.8	PS C 8.2.13	Clearance and removal of reed beds downstream of Basin 6					
C1.8.1		i) Reeds removed above ground south of Basin 6	ha	0.2	13616,72	2723	34
C1.8.2		ii) Reed root-stock removed below ground south of Basin 6	ha	0.2	13616,72	2723	34
C1.9	PS C 8.2.14	Clearance and removal of reed beds and other water plants within the basins					
C1.9.1		i) Reeds and vegetation removed from within Basin 6	ha	2.8	13616,72	38126	82
C1.9.2		ii) Reed root-stock removed below ground from within Basin 6	ha	2.5	13616,72	34041	80
C1.9.3		iii) Contaminated reed root-stock removed below ground from within Basin 6	ha	0.3	13616,72	4085	00
C1.10	PS C 8.2.15	Extra over items PS C 8.2.13 and PS C 8.2.14 for screening of soil / sediment material from root-stock (rhizomes) / plant material					
C1.10.1		i) Reed root-stock removed below ground south of Basin 6	m³	1,400	67,56	94584	00
TOTAL CARRIED FORWARD						937159	98

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						937159	98
C1.10.2		ii) Reed root-stock removed below ground from within Basin 6	m³	17,325	67,56	1170477	96
C1.10.3		iii) Contaminated reed root-stock removed below ground from within Basin 6	m³	1,925	67.56	130053	00
C1.11	PS C 8.2.16	Removal and spoil of existing waste dump material adjacent to the Basins	m³	850	42,23	35895	50
C1.12	PS C 8.2.17	Extra over items PS C 8.2.16 for screening of rubbish / debris from existing waste dump adjacent to the Basins	m³	850	67,56	57426	00
C1.13	PS C 8.2.18	Co-disposal charges					
C1.13.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (R160/t)	Prov Sum	1	19,200.00	19,200	00
C1.13.2		ii) Demolished material from items listed under PS C 8.2.7 to spoil at landfill or other approved spoil site (R710/t)	Prov Sum	1	88,750.00	88,750	00
C1.13.3		iii) Demolished material from items listed under PS C 8.2.8 to spoil at landfill or other approved spoil site (R710/t)	Prov Sum	1	74,550.00	74,550	00
C1.13.4		iv) Reeds removed above ground south of Basin 6 and spoiled at compost facility (R160/t)	Prov Sum	1	960.00	960	00
C1.13.5		v) Reed root-stock removed below ground south of Basin 6 and spoiled at compost facility (R160/t)	Prov Sum	1	7,840.00	7,840	00
C1.13.6		vi) Reeds and vegetation removed from within Basin 6 and spoiled at compost facility (R160/t)	Prov Sum	1	26,880.00	26,880	00
C1.13.7		vii) Reed root-stock removed below ground from within Basin 6 and spoiled at compost facility (R160/t)	Prov Sum	1	98,400.00	98,400	00
C1.13.8		viii) Contaminated reed root-stock removed below ground from within Basin 6 and spoiled at landfill facility (R710/t)	Prov Sum	1	83,354.00	83,354	00
C1.13.9		ix) Rubbish and debris removed from the waste stockpile adjacent to Basin 6 and spoiled at landfill facility (R710/t)	Prov Sum	1	181,050.00	181,050	00
C1.14	PS C 8.2.19	Mark-up / Overhead costs, surcharge and profit on PS C 8.2.18					
C1.14.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (R160/t)	%	19,200	0,04	768	00
TOTAL CARRIED FORWARD						2912763	48

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						2912763	48
C1.14.2		ii) Demolished material from items listed under PS C 8.2.7 to spoil at landfill or other approved spoil site (R710/t)	%	88,750	0,04	3550	00
C1.14.3		iii) Demolished material from items listed under PS C 8.2.8 to spoil at landfill or other approved spoil site (R710/t)	%	74,550	0,04	2982	00
C1.14.4		iv) Reeds removed above ground south of Basin 6 and spoiled at compost facility (R160/t)	%	960	0,04	~~38~~ 38 INF	40
C1.14.5		v) Reed root-stock removed below ground south of Basin 6 and spoiled at compost facility (R160/t)	%	7,840	0,04	313	60
C1.14.6		vi) Reeds and vegetation removed from within Basin 6 and spoiled at compost facility (R160/t)	%	26,880	0,04	1075	20
C1.14.7		vii) Reed root-stock removed below ground from within Basin 6 and spoiled at compost facility (R160/t)	%	98,400	0,04	3936	00
C1.14.8		viii) Contaminated reed root-stock removed below ground from within Basin 6 and spoiled at landfill facility (R710/t)	%	83,354	0,04	3334	16
C1.14.9		ix) Rubbish and debris removed from the waste stockpile adjacent to Basin 6 and spoiled at landfill facility (R710/t)	%	181,050	0,04	7242	00
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
	PS DB 8.3.2	Excavation for Items listed under C1.3					
C1.15	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 125mm and up to 700 mm diam. for total trench depth:					
C1.15.1		Exceeding 0,0 m but not exceeding 1,0 m	m	240	151,75	36420	00
C1.15.2		Exceeding 1,0 m but not exceeding 2,0 m	m	220	227,63	50078	60
C1.15.3		Exceeding 2,0 m but not exceeding 3,0 m	m	120	476,80	57216	00
C1.15.4		Exceeding 3,0 m but not exceeding 4,0 m	m	——	920,81	Rate Only	
		Over 1000mm and up to 2000 mm diam. for total trench depth:					
C1.15.5		Exceeding 0,0 m but not exceeding 1,0 m	m	——	347	Rate Only	
C1.15.6		Exceeding 1,0 m but not exceeding 2,0 m	m	36	468,11	16995	96
TOTAL CARRIED FORWARD						3095945	40

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						3095945	40
C1.15.7		Exceeding 2,0 m but not exceeding 3,0 m	m	55	884,28	48635	40
C1.15.8		Exceeding 3,0 m but not exceeding 4,0 m	m		1491,28	Rate Only	
C1.16	8.3.2	b) Extra-over items listed in C1.15 above for:					
C1.16.1		Intermediate excavation	m³	10	21,11	211	10
C1.16.2		Hard rock excavation	m³	1	450,07	450	07
	SANS 1200 LE	**STORMWATER DRAINAGE**					
C1.17	PS LE 8.2.21	Brick up of pipe ends					
C1.17.1		i) Donkergat Diversion Pipeline (230mm brick wall in 300mm Ø pipe x 2)	m²	0.15	918,00	137	70
C1.17.2		ii) Industrial Effluent Pipeline (230mm brick wall in 375mm Ø pipe x 4)	m²	0.45	918,00	413	10
C1.17.3		iii) Industrial Effluent Pipeline (230mm brick wall in 450mm Ø pipe x 1)	m²	0.16	918,00	146	88
C1.17.4		iv) Subsoil drainage pipe lower end (345mm brick wall in 350mm Ø pipe x 1)	m²	0.10	918,00	91	80
TOTAL CARRIED FORWARD						3146031	45

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						3146031	45
	SANS 1200D 8.3.2	**EARTHWORKS** **Bulk Excavation**					
C2.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
C2.1.1		i) Detention and conditioning basin to stockpile	m³	28,500	42,23	1203555	00
C2.1.2		ii) Detention and conditioning basin to embankment fill compacted to 90% (100% for sand) of MOD AASHTO density	m³	24,000	83,00	1992000	00
C2.1.3		iii) Detention and conditioning basin to spoil at Atlantis Sand Mine (No compaction)	m³	37,000	42,23	1562510	00
C2.1.4		iv) Detention and conditioning basin to spoil at Apollo Bricks Atlantis (No compaction)	m³	16,000	42,3	675680	00
C2.2	8.3.2	b) Extra-over for:					
C2.2.1		1) intermediate excavation	m³	2,000	21,11	42220	00
C2.2.2		2) hard rock excavation	m³	100	450,07	45007	00
C2.2.3		3) boulder excavation, Class A	m³		162,00	Rate Only	
C2.2.4		4) boulder excavation, Class B	m³		162,00	Rate Only	
C2.3	PS D 8.3.2	c) Hand excavation in all materials and use for embankment or backfill or dispose, as ordered					
C2.3.1		i) Detention and conditioning basin to stockpile	m³	10	191,08	1910	80
C2.4	PS D 8.3.2	d) Extra-over for hand excavation in					
C2.4.1		1) intermediate excavation	m³	1	162,00	162	00
C2.4.2		2) hard rock excavation	m³		702,00	Rate Only	
C2.4.3		3) boulder excavation, Class A	m³		270,00	Rate Only	
C2.4.4		4) boulder excavation, Class B	m³		270,00	Rate Only	
C2.5	PS D 8.3.2	e) Fill from stockpile to					
C2.5.1		i) Backfill compacted to 90% (100% for sand) of Mod AASHTO	m³	4,400	83,00	365200	00
C2.5.2		ii) Embankment fill compacted to 90% (100% for sand) of MOD AASHTO density	m³	11,800	83,00	979400	00
TOTAL CARRIED FORWARD						10 013676	25

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1093676	25
C2.5.3		iii) Stabilised Sand/Cement embankment core	m³	2,800	83,00	232400	00
C2.5.4		iv) Conditioning Basin clean sand layer (No compaction)	m³	6,800	62,24	423232	00
C2.5.5		v) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	300	83,00	24900	00
C2.5.6		vi) Spoil (No compaction) at Atlantis Sand Mine	m³	2,500	42,23	105575	00
C2.6	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement)	m³	10	284,44	2844	40
C2.7	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	10	42,23	422	30
C2.8	PS D 8.3.2	h) Preparation of exposed excavated surfaces					
C2.8.1		i) Detention Pond floor	m²	9,500	6,12	58140	00
C2.8.2		ii) Conditioning Pond floor	m²	22,500	6,12	137700	00
C2.8.3		iii) Rip Rap Rock Berm base	m²	1,700	6,12	10404	00
C2.8.4		iv) Fill embankment base	m²	11,100	6,12	67932	00
C2.8.5		v) Detention and Conditioning Pond cut embankments	m²	3,300	6,12	20196	00
C2.8.6		vi) Rip Rap Rock Berm cut embankments	m²	1,500	6,12	9180	00
	8.3.3	**Restricted Excavation**					
C2.9	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose					
C2.9.1		i) 0m up to 2m : Hardening layer excavation below stabilised embankment core to stockpile	m³	130	255,11	33164	30
C2.10	8.3.3	b) Extra-over for:					
C2.10.1		1) intermediate excavation	m³	5	21,11	105	55
C2.10.2		2) hard rock excavation	m³		450,07	Rate Only	
C2.10.3		3) boulder excavation, Class A	m³		162,00	Rate Only	
C2.10.4		4) boulder excavation, Class B	m³		162,00	Rate Only	
C2.11	8.3.6	Overhaul					
TOTAL CARRIED FORWARD						11139871	80

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						11139 871	80
C2.11.1		a) Limited overhaul	m³	55,500	6,55	363525	00
C2.11.2		b) Long overhaul	m³.km	56,000	6,55	366800	00
C2.12	8.3.8	**Existing Services**					
C2.12.1	PS D 8.3.8.1	c) Excavate by hand in soft material to expose service	m³	10	132,85	1328	50
	PS D 8.3.8.1	d) Extra-over PS D 8.3.8.1(c) for excavation in					
C2.12.2		1) Intermediate excavation	m³	1	21,11	21	11
C2.13	PS D 8.3.11	Grassing Or Other Vegetation Cover					
C2.13.1		i) Wetland Vegetation	m²	21,300	8,61	183 393	00
C2.13.2		ii) Dry bed vegetation	m²	5,400	4,63	25002	00
C2.14	PS D 8.3.14	Shaping and Trimming of Earthworks	m²	19,000	2,58	49020	00
C2.15	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	32,000	6,48	207360	00
C2.16	PS D 8.3.16	Filter Stone					
C2.16.1		i) 19mm single sized stone	m³	10	686,99	6869	90
C2.17	PS D 8.3.19	Removal And Reinstatement Of Existing Grass Areas	m²	100	4,63	463	00
C2.18	PS D 8.3.20	Reinstatement OF Shrubs	No	100	112,54	11254	00
C2.19	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls in Dam	m²	100	298,36	29836	00
C2.20	PS D 8.3.22	Placing of Protection Layer on Geotextile for Rip Rap	m²	180	75,49	13588	20
C2.21	PS D 8.5	Clay Layers in Detention and Conditioning Ponds					
C2.21.1	PS D 8.5.1	Clay Layer on Pond Floors and Horizontal Sections	m³	10,000	225,57	2255700	00
C2.21.2	PS D 8.5.2	Clay Layer on Pond Side Slopes	m³	4,200	225,57	947394	00
TOTAL CARRIED FORWARD						15 661426	51

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1560426	57
	SABS 1200 DK	**GABIONS AND PITCHING**					
C3.1	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
C3.1.1		i) Grade 1, Kaytech Grade A10 or equivalent below Rip Rap	m²	1,850	56,94	105 339	00
C3.2	PS DK 8.2.8	Rip rap rock sourced from commercial sources	m³	1,800	826,48	1487664	00
TOTAL CARRIED FORWARD						17194429	51

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						17194429	51
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
C4.1	8.3.3	Treatment of road-bed					
	8.3.3	a) Road-bed preparation and compaction of material below the stabilised embankment core					
C4.1.1		1) 300mm Rip and re-compacted in situ material to minimum of 90% of MOD AASHTO density (100% for sand)	m³	400	40,79	16312	00
	SANS 1200 ME	**SECTION : SUBBASE**					
C4.2	8.3.3	Construct gravel subbase course with material from commercial sources or designated borrow areas					
C4.2.1		i) 200mm Thick G6 on embankment side slopes compacted with plate compactor (5 passes)	m³	880	447,72	393993	60
C4.2.2		ii) 200mm Thick G6 on embankment crest compacted to at least 95% of MOD AASHTO density	m³	480	447,72	214905	60
C4.2.3		iii) 110mm Thick G6 on embankment crest below paving compacted to at least 95% of MOD AASHTO density	m³	70	447,72	31340	40
C4.2.4		iv) 100mm Thick G6 hardening layer below stabilised embankment core compacted to at least 90% of MOD AASHTO density	m³	130	447,72	58203	60
TOTAL CARRIED FORWARD						17909184	71

BASIN 6 - SCHEDULE 1C: DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						17909194	71
	PE	**CEMENT STABILISED SAND**					
C5.1	PE 8.2	STABILISING AGENT	t	500	1839,79	919895	00
C5.2	PE 8.3	STABILISATION	m³	3,050	40,78	124379	00
C5.3	PE 8.4	SPREADING OF SUCCESSIVE LAYERS	t	2	270,00	540	00
C5.4	PE 8.5	FINISHING OF SURFACES					
C5.4.1		Finishing of horizontal surfaces	m²	1,350	5,17	6979	50
C5.4.2		Finishing of inclined surfaces	m²	3,700	5,74	21238	00
C5.5	PE 8.6	BACK TIPPING	m³	14,000	13,69	191660	00
TOTAL CARRIED FORWARD TO SUMMARY						19173876	21

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
D1.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
D1.1.1		i) Inlet woks to spoil at Apollo Bricks Atlantis	m³	5,000	42.23	211 150,	00
D1.2	8.3.2	b) Extra-over for:					
D1.2.1		1) intermediate excavation	m³	50	21.11	1 055,	50
D1.2.2		2) hard rock excavation	m³		450.07	Rate Only	
D1.2.3		3) boulder excavation, Class A	m³		162.00	Rate Only	
D1.2.4		4) boulder excavation, Class B	m³		162.00	Rate Only	
D1.3	PS D 8.3.2	c) Hand excavation in all materials and use for embankment or backfill or dispose, as ordered					
D1.3.1		i) Inlet woks to spoil at Apollo Bricks Atlantis	m³	10	191.08	1 910,	80
D1.4	PS D 8.3.2	d) Extra-over for hand excavation in					
D1.4.1		1) intermediate excavation	m³	1	162.00	162,	00
D1.4.2		2) hard rock excavation	m³		702.00	Rate Only	
D1.4.3		3) boulder excavation, Class A	m³		270.00	Rate Only	
D1.4.4		4) boulder excavation, Class B	m³		270.00	Rate Only	
D1.5	PS D 8.3.2	e) Fill from stockpile to					
D1.5.1		i) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	30	83.00	2 490,	00
D1.6	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction	m³	20	284.44	5 688,	80
D1.7	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	20	42.23	844,	60
TOTAL CARRIED FORWARD						223 301,	70

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						223 201,	70
	8.3.3	**Restricted Excavation**					
D1.8	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and spoil at Apollo Bricks Atlantis					
D1.8.1		i) 0 m up to 2 m	m³	1,000	128.62	128 620,	00
D1.8.2		ii) Exceeding 2 m up to 4 m	m³	400	128.62	51 448,	00
D1.9	8.3.3	b) Extra-over for:					
D1.9.1		1) intermediate excavation	m³	10	21.11	211,	10
D1.9.2		2) hard rock excavation	m³		460.07	Rate Only	
D1.9.3		3) boulder excavation, Class A	m³		162.00	Rate Only	
D1.9.4		4) boulder excavation, Class B	m³		162.00	Rate Only	
D1.10	8.3.6	Overhaul					
D1.10.1		a) Limited overhaul	m³	6,400	4.10	26 240,	00
D1.10.2		b) Long overhaul	m³.km	22,400	4.10	91 840,	00
D1.11	8.3.8	**Existing Services**					
D1.11.1	PS D 8.3.8.1	c) Excavate by hand in soft material to expose service	m³	10	132.65	1 328,	50
	PS D 8.3.8.1	d) Extra-over PS D 8.3.8.1(c) for excavation in					
D1.11.2		1) Intermediate excavation	m³	1	21.11	21,	11
	PS D 8.3.8.2	d) Services crossing excavations					
D1.11.3		i) Sewer Pipe	No	1	1080.00	1 080,	00
	PS D 8.3.8.2	e) Services that adjoin excavations					
D1.11.4		i) Sewer Pipe	m	20	108.00	2 160,	00
D1.12	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	480	36.68	17 606,	40
D1.13	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	1,500	6.48	9 729,	00
D1.14	PS D 8.3.16	Filter Stone					
D1.14.1		i) 19mm single sized stone	m³	100	686.99	68 699,	00
TOTAL CARRIED FORWARD						622 275,	81

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						622 275	81
D1.15	PS D 8.3.17	Shore Excavation Opposite Structure Or Service					
D1.15.1		i) 0 m up to 1m deep	m	10	108.00	1 080,	00
D1.15.2		ii) 1 m up to 2m deep	m	10	216.00	2 160,	00
D1.15.3		iii) 2 m up to 3m deep	m	10	324.00	3 240,	00
D1.16	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls at Inlet Works	m³	50	298.36	14 918,	00
TOTAL CARRIED FORWARD						643 673,	81

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						643 673,	81
	SABS 1200 DK	**GABIONS AND PITCHING**					
D2.1	8.2.2	Gabions Refer to the drawings for the Gabion Specification for the following box sizes:					
D2.1.1		i) 2m x 1m x 0.5m (No = 2)	m³	4	2038.24	8 152,	84
D2.1.2		ii) 4m x 1m x 0.5m (No = 4)	m³	32	2038.21	65 222,	72
D2.1.3		iii) 2m x 1m x 1m (No = 2)	m³	4	2038.21	8 152,	84
D2.1.4		iv) 3m x 1m x 1m (No = 3)	m³	6	2038.24	12 229,	26
D2.2	8.2.2	Reno Mattresses Refer to the drawings for the Reno Mattress Specification for the following mattress sizes:					
D2.2.1		i) 2m x 1m x 0.3m (No = 2)	m³	2.4	233.40	5 552,	16
D2.2.2		ii) 6m x 2m x 0.3m (No = 6)	m³	144.0	233.40	333 129,	60
D2.3	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
D2.3.1		i) Grade 1, Kaytech Grade A6 or equivalent for Gabions and Reno Mattresses	m²	610	2475	15 097,	50
TOTAL CARRIED FORWARD						~~447 586,~~ 1 091 210,	~~92~~ 73

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1091 210,	73
	SANS 1200G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
D3.1		PLANE VERTICAL					
D3.1.1		All faces of shear wall	m²	150	535.12	80 268,	00
D3.1.2		All faces of DP RC thickening	m²	20	535.12	10 702,	40
D3.1.3		All faces of 650mm thick contamination pond, silt trap and grit trap floor slab	m²	130	535.12	69 565,	60
D3.1.4		All faces of contamination pond's walkway access ramp walls	m²	10	535.12	5 361,	20
D3.1.5		All faces of contamination pond's walkway access ramp floor slab	m²	10	535.12	5 351,	20
D3.1.6		All faces contamination pond's walkway access ramp corbel	m²	2	535.12	1 070,	24
D3.1.7		External faces of contamination pond's access ramp floor slab (including DP RC thickening)	m²	25	535.12	13 378,	00
D3.1.8		External faces of contamination pond's access ramp walls	m²	55	535.12	29 431,	60
D3.1.9		External faces of silt trap's access ramp floor slab (including DP RC thickening)	m²	20	535.12	10 707,	40
D3.1.10		External faces of silt trap's access ramp walls (including portion underneath the domestic effluent box)	m²	45	535.12	24 080,	40
D3.1.11		External faces of litter trap's access ramp floor slab	m²	25	535.12	13 378,	00
D3.1.12		External faces of litter trap's access ramp walls (including extension of long continuous perimeter wall	m²	100	535.12	53 512,	00
D3.1.13		All faces of the retaining floor slab	m²	35	535.12	18 729,	20
D3.1.14		Vertical faces of the retaining wall	m²	80	535.12	42 809,	60
D3.1.15		External faces of contamination ponds two perimeter walls	m²	160	535.12	85 619,	20
D3.1.16		External faces of monitoring and inlet manholes floor slab	m²	5	535.12	2 675,	60
D3.1.17		External faces of monitoring and inlet manholes walls	m²	60	535.12	32 107,	20
TOTAL CARRIED FORWARD						~~498 731,~~ 1 589 942,	~~84~~ 57

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						~~4 498 754 87~~	
D3.1.18		External face of domestic effluent box floor slab	m²	5	535.12	2 675	60
D3.1.19		External face of domestic effluent box wall	m²	10	535.12	5 351	20
D3.2		PLANE SLOPING					
D3.2.1		Sloping faces of retaining walls	m²	75	626.49	46 986	75
D3.3		PLANE CURVING/CYLINDRICAL					
D3.3.1		External face of silt trap floor slab	m²	10	603.16	6 031	60
D3.3.2		External face of silt trap wall	m²	33	603.16	19 904	28
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
D3.4		PLANE VERTICAL					
D3.4.1		All faces of contamination pond's walkway access ramp walls (including full internal face)	m²	25	535.12	13 378	00
D3.4.2		External faces of contamination pond's access ramp walls	m²	25	535.12	13 378	00
D3.4.3		External faces of silt trap's access ramp walls	m²	20	535.12	10 702	40
D3.4.4		External faces of litter trap's access ramp walls (including extension of long continuous perimeter wall	m²	30	535.12	16 053	60
D3.4.5		Vertical faces of the retaining wall	m²	20	535.12	10 702	40
D3.4.6		External faces of contamination ponds two perimeter walls	m²	30	535.12	16 053	60
D3.4.7		External face and all internal faces of domestic effluent box	m²	45	535.12	24 080	40
D3.4.8		External faces of monitoring and inlet manholes	m²	15	535.12	8 026	80
D3.4.9		External faces of contamination pond's two perimeter overflow weir walls	m²	75	535.12	40 134	00
D3.5		PLANE SLOPING					
D3.5.1		Sloping faces of retaining walls	m²	20	626.49	12 529	80
D3.6		PLANE CURVING/CYLINDRICAL					
D3.6.1		External face of silt trap	m²	10	638.16	6 381	60
TOTAL CARRIED FORWARD						~~751 101 87~~	
						NF 1 842 312	60

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						~~1 842 761 10, 87~~	
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
D3.7		PLANE VERTICAL					
D3.7.1		All internal faces of contamination pond perimeter overflow weir walls	m²	60	558 45	33 507,	00
D3.7.2		All faces of access walkway support columns	m²	60	558·45	33 507,	00
D3.7.3		All face of access walkway walls	m²	170	558.45	94 936,	50
D3.7.4		All face of access walkway floor slab	m²	37	558·45	20 662,	65
D3.7.5		All faces of the low level overflow weir	m²	62	558.45	34 623,	90
D3.7.6		All faces of the domestic effluent box's support walls	m²	12	558·45	6 701,	40
D3.7.7		All faces of the domestic effluent box's floor slab	m²	8	558·45	4 467,	60
D3.7.8		All external faces of the domestic effluent box's walls	m²	16	558.45	8 935,	20
D3.7.9		Face of division wall between litter trap and contamination pond	m²	28	558·45	15 636,	60
D3.7.10		All faces of division wall between the silt trap and litter trap	m²	80	558 45	44 676,	00
D3.7.11		All faces of the vertical portion of litter trap cantilever wall	m²	40	558·45	22 338,	00
D3.7.12		All internal faces monitoring and inlet manhole 250mm thick walls	m²	80	558·45	44 676,	00
D3.8		PLANE SLOPING					
D3.8.1		All internal faces of contamination pond perimeter walls	m²	130	626.49	81 443,	70
D3.8.2		All internal faces of contamination pond main access ramp	m²	75	626.49	46 986,	75
D3.8.3		All internal faces of silt trap main access ramp and internal walls of silt trap	m²	85	626.49	53 261,	65
D3.8.4		All internal faces of litter trap main access ramp	m²	75	626.49	46 986,	75
D3.8.5		All internal faces of litter trap perimeter wall	m²	45	626.49	28 192,	05
D3.8.6		Soffit of cantilever wall inside the litter trap	m²	30	626.49	18 794,	70
D3.9		PLANE HORIZONTAL					
TOTAL CARRIED FORWARD						~~1 891 426, 32~~ 2 482 636, 05	

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD							
D3.9.1		Soffit of domestic effluent box floor slab	m²	25	574.65	14 366,	25
D3.9.2		Soffit of access walkway floor slab	m²	150	574.65	86 197,	50
D3.10		PLANE CURVING/CYLINDRICAL					
D3.10.1		All internal faces of litter trap perimeter wall	m²	35	638.16	22 335	60
	PS G 8.2.6	**BOX OUT HOLES/ FORM VOIDS**					
D3.11	PS G 8.2.6 (b)	Cubical of volume:					
D3.11.1		ii) Over 0.01m³ and up to and including 0.05m³ (500 x 300mm Recess)	No	6	270.00	1 620,	00
D3.11.2		iii) Over 0.05m³ and up to and including 0.15m³ (1500 x 300mm Opening)	No	1	378.00	378,	00
D3.11.3		iv) Over 0.15m³ (1000 x 3000mm Opening)	No	1	486.00	486,	00
D3.12	PS G 8.2.7	Chamfers Exceeding 20 mm x 20 mm, Grooves And Rebates					
D3.12.1		75mm x 75mm Chamfer on both sides of division wall between the silt trap and litter trap (Refer to detail B)	m	15	27.00	405,	00
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
D3.13	8.3.1	HIGH TENSILE STEEL BARS					
D3.13.1		i) Y25 mm dia. : basic price	t	169.32	16502.40	2 794 186,	37
D3.14		EXTRA OVER ITEM D3.13.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
D3.14.1		i) Y10 mm	t	1.69		Incl.	
D3.14.2		ii) Y12 mm	t	18.63		Incl.	
D3.14.3		iii) Y16 mm	t	123.60		Incl.	
D3.14.4		iv) Y20 mm	t	25.40		Incl.	
D3.15	8.3.1	MILD STEEL BARS					
D3.15.1		i) R25 mm dia. : basic price	t	42.33	16502.40	698 546,	97
D3.16		EXTRA OVER ITEM D 15.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
D3.16.1		i) R8 mm	t	4.23		Incl.	
D3.16.2		ii) R10 mm	t	4.23		Incl.	
D3.16.3		iii) R12 mm	t	21.17		Incl.	
TOTAL CARRIED FORWARD						6 091 746, 62 / 6 191 157, 36	

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						5 009 946	65
D3.16.4		iv) R16 mm	t	12.70		Incl.	
D3.16.5		v) R20 mm	t	4.23		Incl.	
	8.4	**SCHEDULED CONCRETE ITEMS**					
D3.17	8.4.2	BLINDING LAYER IN GRADE 20/19 CONCRETE 100 mm					
D3.17.1		i) Horizontal	m³	10	1659.00	16 590	00
D3.18	8.4.3	NO-FINES CONCRETE STRENGTH: NF19 FOR FILLING OF DRAINAGE PIPES					
D3.18.1		i) For filling of 50mm diameter pipes in division wall between the silt and litter trap	m³	1	1659.00	1 659,	00
D3.19	8.4.3	STRENGTH CONCRETE 25/19					
D3.19.1		i) Mass concrete for pipe supports	m³	3	1738.38	5 215	14
D3.19.2		ii) Mass concrete where instructed by the engineer	m³	12	1738.38	20 860,	56
D3.19.3		iii) Mass concrete for underneath RC retaining wall footings	m³	2	1738.38	3 476	76
D3.20	8.4.3	STRENGTH CONCRETE 25/10					
D3.20.1		i) Benching in domestic effluent boxes	m³	8	1738.38	13 907,	04
D3.21	8.4.3	STRENGTH CONCRETE 35/19					
D3.21.1		Floor slab and toe of contamination pond, litter and grit trap (Excluding Access ramps)	m³	950	1964.10	1 865 895,	00
D3.21.2		300 x 850mm DP RC thickening along two edges of contamination pond overflow weir	m³	6.5	1964.10	12 766,	65
D3.21.3		300 x 1000mm DP RC shear key	m³	22	1964.10	43 210,	20
D3.21.4		Two perimeter RC walls of contamination pond sloping from 250mm to 300mm thick	m³	55	1964.10	108 025,	50
D3.21.5		Two 250mm thick RC front overflow weir walls on contamination pond's perimeter	m³	18	1964.10	35 353,	80
D3.21.6		250mm thick RC low overflow weir in contamination pond	m³	9	1964.10	17 676,	90
D3.21.7		Contamination pond access walkway's 500 x 500mm RC columns	m³	8	1964.10	15 712,	80
D3.21.8		Contamination pond access walkway's 250mm thick RC wall in between RC columns	m³	20	1964.10	39 282,	00
TOTAL CARRIED FORWARD						8 300 768,	71

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						9 300 788, 71	
D3.21.9		Contamination pond access walkway's 250mm thick RC floor slab	m³	19	1964.10	37 317,	90
D3.21.10		New domestic effluent pipe box 250mm RC support walls	m³	1.5	1964.10	2 946,	15
D3.21.11		New domestic effluent pipe box 200mm RC floor slab	m³	7.0	1964.10	13 748,	70
D3.21.12		New domestic effluent pipe box 250mm RC walls	m³	7.0	1964.10	13 748,	70
D3.21.13		300mm DP RC retaining wall footings	m³	15.0	1964.10	29 461,	50
D3.21.14		DP RC retaining walls sloping 300mm to 250mm	m³	23.0	1964.10	45 174,	30
D3.21.15		Contamination Pond Access Walkway Ramp's 250mm thick RC floor slab	m³	4.0	1964.10	7 856,	40
D3.21.16		Contamination Pond Access Walkway Ramp's RC walls 250mm thick	m³	3.5	1964.10	6 874,	35
D3.21.17		Contamination Pond Access Walkway Ramp's 150 x 150mm DP RC corbel	m³	0.5	1964.10	982,	05
D3.21.18		Contamination pond access ramp 300mm thick RC floor slab (including DP RC thickening)	m³	35.0	1964.10	68 743,	50
D3.21.19		Contamination pond access ramp RC walls sloping from 300mm to 250mm	m³	20.0	1964.10	39 282,	00
D3.21.20		Litter trap access ramp 300mm thick RC floor slab (including DP RC thickening)	m³	35.0	1964.10	68 743,	50
D3.21.21		Litter trap access ramp RC walls sloping from 300mm to 250mm	m³	19.0	1964.10	37 317,	90
D3.21.22		Slit trap access ramp 300mm thick RC floor slab (including DP RC thickening)	m³	40.0	1964.10	78 564,	00
D3.21.23		Litter trap access ramp RC walls and perimeter walls sloping from 300mm to 250mm	m³	33.0	1964.10	64 835,	30
D3.21.24		Litter trap RC wall sloping from 300mm to 250mm	m³	15.0	1964.10	29 461,	50
D3.21.25		Litter trap 250mm thick RC cantilever wall for fixing one side of litter grids	m³	12.0	1964.10	23 569,	20
D3.21.26		250mm thick RC division wall between litter trap and silt trap cantilever wall for fixing one side of litter grids	m³	10.0	1964.10	19 641,	00
D3.21.27		250mm thick RC walls for silt trap, monitoring manhole and inlet manhole	m³	17.0	1964.10	33 389,	70
TOTAL CARRIED FORWARD						8 922 426,	36

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R c
BROUGHT FORWARD						~~8 926 426, 26~~ ~~7 862 215, 63~~
D3.21.28		300mm thick RC floor slab for monitoring manhole, inlet manhole and false floor	m³	6.0	196410	11 784, 60
D3.22	PS G 8.4.4	**UNFORMED SURFACE FINISHES**				
D3.22.1		To upper surfaces of concealed work and surfaces to receive benching or screed	m²	40	25.83	1 033, 20
D3.22.2		Upper surfaces of retaining wall footings 1000mm wide toe	m²	95	25.83	2 453, 85
D3.22.3		Upper surfaces of domestic effluent box's floor slab	m²	25	2583	645, 75
D3.23	PS 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:				
D3.23.1		Top of walls (Excluding overflow weirs)	m²	80	41.33	3 306, 40
D3.23.2		Contamination pond's access walkway and two access ramps	m²	90	41.33	3 719, 70
D3.24	PS 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:				
D3.24.1		Floor slab of contamination pond, grit trap and silt trap	m²	1,300	51.66	67 198, 00
D3.24.2		Top of overflow weirs and division wall	m²	40	51.66	2 066, 40
D3.24.3		Top of litter trap inclined cantilever wall	m²	40	51.66	2 066, 40
D3.24.4		Floor slab of inlet and monitoring manhole	m²	15	51.66	774, 90
D3.25	PS 8.4.4(d)	BROOMED FINISH TO UPPER SURFACES OF:				
D3.25.1		Floor slabs of access ramps	m²	330	62.00	20 460, 00
	PS G 8.5	**JOINTS: NOTE THAT FORMWORK IS INCLUDED IN THE COST OF THE JOINT**				
D3.26		EXPANSION JOINTS				
D3.26.1		Joint type 1: Between perimeter walls (sloping from 300mm to 250mm) of the contamination pond / grit trap / slit trap and access ramp walls sloping from 300mm to 250mm	m	30	417.80	12 534, 00
D3.26.2		Joint type 2: Between access ramp floor slabs (300mm thick) of the contamination pond / grit trap / slit trap	m	20	486.55	9 731, 00
D3.26.3		Joint type 3: Between perimeter walls (sloping from 300mm to 250mm) of the contamination pond and access walkway's ramp walls	m	10	417.80	4 178, 00
TOTAL CARRIED FORWARD						9 064 336, 56

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						9 044 338	56
D3.26.4		Joint type 4: Between access walkway's ramp floor slabs (300mm thick) of the contamination pond	m	10	486.55	4 865	50
D3.26.5		Joint type 5: Between perimeter walls (sloping from 300mm to 250mm) of the contamination and the retaining walls sloping from 300mm to 250mm	m	10	417.80	4 178	00
D3.26.6		Joint type 6: Between 1000mm wide toe (650mm thick) of the contamination pond and the retaining wall floor slab	m	10	587.93	5 879	30
D3.26.7		Joint type 7: Between perimeter walls of the contamination pond / litter trap and or silt trap	m	20	432.00	8 640	00
D3.27	PS G 8.9	TESTING STRUCTURES FOR WATERTIGHTNESS					
D3.27.1		Pond 6 Inlet Structure	Sum	1	43200.00	43 200	00
D3.28	PS G 8.11	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
D3.28.1		50mm diameter	No	62	108.00	6 696	00
D3.28.2		400mm diameter	No	5	216.00	1 080	00
D3.28.3		1500mm diameter	No	1	1080.00	1 080	00
TOTAL CARRIED FORWARD						9 139 957	36

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						9 139 957,	30
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
D3.29	PS HA 8.3.7	Handrails	m	430	1435.92	617 445,	60
D3.30	PS HA 8.3.8	Pre-Fabricated UHMWPE Grids at Litter Trap					
D3.30.1		i) Supply and installation of uHDPE litter grids complete with frames (1780 x 1478)	Sum	10	4374.00	43 740,	00
D3.30.2		ii) Supply and installation of uHDPE litter grids complete with frames (500 x 300)	Sum	6	364.50	2187,	00
D3.31	PS HA 8.3.13	Step irons for Concrete Structures	No	12	162.00	1944,	00
	SANS 1200 LD	**SEWERS**					
D3.32	PS LD 8.2.15	Installation of oil absorbent boom	m	60	83.20	4 992,	00
TOTAL CARRIED FORWARD						9 810 265,	96

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						9 810 265	96
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
	8.3.3	Treatment of road-bed					
D4.1	8.3.3	a) Road-bed preparation and compaction of material below the inlet structure floor					
D4.1.1		1) G7 Material compacted to 98% of Modified AASHTO density (100% for sand)	m³	280	40·78	11 418,	40
	SANS 1200 ME	**SECTION : SUBBASE**					
D4.2	8.3.3	Construct gravel subbase course with material from commercial sources or designated borrow areas					
D4.2.1		i) 150mm layer G5 material compacted to 98% Modified AASHTO density below inlet structure	m³	280	452·90	126 812,	00
	SANS 1200 MJ	**SECTION : SEGMENTED PAVING**					
D4.3	PS MJ 8.2.2	Construction of Paving Complete					
D4.3.1		i) 200 x 100 x 50mm clay brick pavers placed on 20mm sand levelling layer	m²	14	247·35	3 462,	90
D4.4	8.2.3	Cutting Units to Fit Edge Restraints					
D4.4.1		i) Straight	m	4	37·80	151,	20
TOTAL CARRIED FORWARD						9 952 110,	40

BASIN 6 - SCHEDULE 1D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						9952 110,	46
		STORMWATER DRAINAGE					
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
D5.1	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	20	230·93	4 618,	60
	SANS 1200 LE	**STORMWATER DRAINAGE**					
D5.2	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
D5.2.1		i) Monitoring Manhole, Dwg No C00686-ZF-DRD-0006-008, 1.7m deep	No.	1	23200.84	23 209	84
D5.3	PS LE 8.2.14	Supply And Install Subsurface Drains According To Drawings	m	120	327·27	39 272,	40
TOTAL CARRIED FORWARD TO SUMMARY						10 019 202,	30

BASIN 6 - SCHEDULE 1E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
E1.1	PS D 8.3.2	e) Fill from stockpile to					
E1.1.1		i) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	1	83.00	83	-00
E1.2	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction	m³	1	284.44	284-	44
E1.3	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	1	42.23	42	-23
	8.3.3	**Restricted Excavation**					
E1.4	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials to stockpile					
E1.4.1		i) 0 m up to 2 m	m³	5	255.11	1275	-55
E1.5	8.3.3	b) Extra-over for:					
E1.5.1		1) intermediate excavation	m³	1	21.11	21	-11
E1.5.2		2) hard rock excavation	m³	——	450.07	Rate Only	
E1.5.3		3) boulder excavation, Class A	m³	——	162.00	Rate Only	
E1.5.4		4) boulder excavation, Class B	m³	——	162.00	Rate Only	
E1.6	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	15	36.68	550	-20
E1.7	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	35	6.48	226	-80
E1.8	PS D 8.3.16	Filter Stone					
E1.8.1		i) 19mm single sized stone	m³	5	686.99	3434	-95
E1.9	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls at Outlet Structure	m³	5	298.36	1491	-80
TOTAL CARRIED FORWARD						7410	-08

BASIN 6 - SCHEDULE 1E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						7410	08
	SABS 1200 DK	**GABIONS AND PITCHING**					
E2.1	8.2.2	Gabions Refer to the drawings for the Gabion Specification for the following box sizes:					
E2.1.1		i) 1m x 1m x 0.5m (No = 1)	m³	1	2038.21	2038	21
E2.1.2		ii) 1m x 1m x 1m (No = 1)	m³	4	2038.21	8152	84
E2.1.3		iii) 2m x 1m x 1m (No = 2)	m³	4	2038.21	8152	84
E2.3	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
E2.3.1		i) Grade 1, Kaytech Grade A6 or equivalent for Gabions and Reno Mattresses	m²	16	24.75	396	00
TOTAL CARRIED FORWARD						26 149	97

BASIN 6 - SCHEDULE 1E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						26 149	97
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
E3.1		PLANE VERTICAL					
E3.1.1		All faces of outlet structure floor slab	m²	6	535.12	3210	72
E3.1.2		All faces of outlet structure concrete collar wall	m²	40	535.12	21 404	80
E3.2		PLANE CURVING/CYLINDRICAL					
E3.2.1		Face of outlet structure floor slab	m²	4	638.16	2552	64
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
E3.3		PLANE VERTICAL					
E3.3.1		All external faces of outlet structure (excluding 250mm thick RC weir walls)	m²	40	535.12	21 404	80
E3.3.2		All faces of precast concrete slabs (1700mm x 500mm)	m²	10	535.12	5351	20
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
E3.4		PLANE VERTICAL					
E3.4.1		All faces of outlet structure 250mm thick RC weir walls	m²	5	558.45	2792	25
E3.4.2		All internal faces of outlet structure	m²	32	558.45	17870	40
E3.5		PLANE HORIZONTAL					
E3.5.1		Soffit of outlet structure	m²	1.5	574.65	861	98
E3.6		PLANE CURVING/CYLINDRICAL					
E3.6.1		All faces of outlet structure 250mm thick RC weir walls	m²	14	638.16	8934	24
	PS G 8.2.6	**BOX OUT HOLES/ FORM VOIDS**					
E3.7	PS G 8.2.6 (b)	CUBICAL OF VOLUME					
E3.7.1		i) Over 0.15m³ (4000 x 400mm Opening)	No	1	486.00	486	00
E3.8	PS G 8.2.7	Chamfers Exceeding 20 mm x 20 mm, Grooves And Rebates				111 019	00
TOTAL CARRIED FORWARD						~~84 869 - 03~~	

BASIN 6 - SCHEDULE 1E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
						111 819-00
BROUGHT FORWARD						84869-03
E3.8.1		150mm x 150mm Chamfer in overflow weir	m	6.75	27.06	182-25
	8.3	**SCHEDULED REINFORCEMENT ITEMS**				
E3.9	8.3.1	HIGH TENSILE STEEL BARS				
E3.9.1		i) Y25 mm dia. : basic price	t	2.78	16502.40	45876-67
		EXTRA OVER ITEM E 3.9.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:				
E3.9.2		i) Y10 mm	t	0.33		incl.
E3.9.3		ii) Y12 mm	t	2.42		incl.
E3.9.4		iii) Y16 mm	t	0.00		incl.
E3.9.5		iv) Y20 mm	t	0.00		incl.
E3.10	8.3.1	MILD STEEL BARS				
E3.10.1		i) R25 mm dia. : basic price	t	0.70	16502.40	11551-68
		EXTRA OVER ITEM E3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:				
E3.10.2		i) R8 mm	t	0.07		incl.
E3.10.3		ii) R10 mm	t	0.07		incl.
E3.10.4		iii) R12 mm	t	0.35		incl.
E3.10.5		iv) R16 mm	t	0.21		incl.
E3.10.6		v) R20 mm	t	0.07		incl.
	8.4	**SCHEDULED CONCRETE ITEMS**				
E3.11	8.4.3	STRENGTH CONCRETE 25/19				
E3.11.1		i) Mass concrete where instructed by the engineer	m³	5	1738.38	8691-90
E3.11.2		ii) Collar wall	m³	6	1738.38	10430-28
E3.12	8.4.3	STRENGTH CONCRETE 35/19				
E3.12.1		Floor slab of outlet structure	m³	14	1964.10	27497-40
E3.12.2		Overflow weir wall	m³	2.5	1964.10	4910-25
E3.12.3		250 x 300mm DP RC shear key	m³	0.4	1964.10	785-64
E3.12.4		Outlet structure walls	m³	8.5	1964.10	16694-85
E3.12.5		Precast concrete slabs (1700mm x 500mm)	m³	2	2946.14	5892-28
						243532-20
TOTAL CARRIED FORWARD						217382-25

BASIN 6 - SCHEDULE 1E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						~~217382~~ ~~23~~ 243532 20	
E3.13	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
E3.13.1		To upper surfaces of concealed work and surfaces to receive benching or screed	m²	10	25.83	258	30
E3.14	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
E3.14.1		Top of walls (Excluding overflow weirs)	m²	1.2	41.33	49	60
E3.14.2		Top and bottom of precast concrete slabs (1700mm x 500mm)	m²	17	41.33	702	41
E3.15	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
E3.15.1		Floor slab of outlet structure	m²	35	51.66	1808	10
E3.15.2		Overflow weir wall	m²	1.1	51.66	56	83
E3.16	PS G 8.11	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
E3.16.1		600mm diameter	No	1	1080.00	1080	00
E3.16.2		1200mm diameter	No	1	1080.00	1080	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
E3.17	PS HA 8.3.13	Step irons for Concrete Structures	No	7	162.00	1134	00
						249 70164	
TOTAL CARRIED FORWARD						~~223551~~ ~~67~~ 90	

BASIN 6 - SCHEDULE 1E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						249 701	64
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
E4.1	8.3.3	Treatment of road-bed					
	8.3.3	a) Road-bed preparation and compaction of material below the outlet structure floor					
E4.1.1		1) G7 Material compacted to 98% of Modified AASHTO density (100% for sand)	m³	5	40.78	203	90
TOTAL CARRIED FORWARD TO SUMMARY						249 905 ~~203~~	54 ~~90~~

BASIN 6 - SCHEDULE 1F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
F1.1	PS D 8.3.2	e) Fill from stockpile to					
F1.1.1		i) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	10	83.00	830	00
F1.2	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction	m³	2	284.44	568	88
F1.3	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	10	42.23	422	30
	8.3.3	**Restricted Excavation**					
F1.4	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials to stockpile					
F1.4.1		i) 0 m up to 2 m	m³	3	255.11	765	33
F1.5	8.3.3	b) Extra-over for:					
F1.5.1		1) intermediate excavation	m³	1	21.11	21	11
F1.5.2		2) hard rock excavation	m³		450.07	Rate Only	
F1.5.3		3) boulder excavation, Class A	m³		162.00	Rate Only	
F1.5.4		4) boulder excavation, Class B	m³		162.00	Rate Only	
F1.6	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	220	36.68	8069	60
F1.7	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	320	6.48	2073	60
F1.8	PS D 8.3.16	Filter Stone					
F1.8.1		i) 19mm single sized stone	m³	10	686.99	6869	90
F1.9	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls at Outlet Structure	m³	25	298.36	7459	00
F1.10	PS D 8.3.23	Filling of Voids in Reno Mattresses	m³	20	135.22	2704	40
TOTAL CARRIED FORWARD						29784	12

BASIN 6 - SCHEDULE 1F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						29 784	12
	SABS 1200 DK	**GABIONS AND PITCHING**					
F2.1	8.2.2	Gabions Refer to the drawings for the Gabion Specification for the following box sizes:					
F2.1.1		i) 1m x 1m x 1m (No = 1)	m³	2	2038.21	4076	42
F2.1.2		ii) 3m x 1m x 1m (No = 3)	m³	12	2098.21	24458	52
F2.2	8.2.2	Reno Mattresses Refer to the drawings for the Reno Mattress Specification for the following mattress sizes:					
F2.2.1		i) 6m x 2m x 0.3m (No = 6)	m³	39.6	2313.40	91610	64
F2.3	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
F2.3.1		i) Grade 1, Kaytech Grade A6 or equivalent for Gabions and Reno Mattresses	m²	160	24.75	3960	00
TOTAL CARRIED FORWARD						153889	70

BASIN 6 - SCHEDULE 1F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						153 889	70
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
F3.1		PLANE VERTICAL					
F3.1.1		All faces of mass concrete collar walls	m²	33	535.12	17658	96
F3.2		PLANE SLOPING					
F3.2.1		Faces of concrete wingwall on overflow spillway	m²	29	626 49	18 168	21
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
F3.3		PLANE VERTICAL					
F3.3.1		Faces of concrete coping over stabilized sand/cement core for overflow spillway	m²	105	535.12	56 187	60
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
F3.4		PLANE VERTICAL					
F3.4.1		Faces of concrete wingwall on overflow spillway	m²	25	626.49	15 662	25
F3.5		PLANE SLOPING					
F3.5.1		Sloping face of concrete coping over stabilized sand/cement core for overflow spillway	m²	63	626.49	39468	87
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
F3.6	8.3.1	HIGH TENSILE STEEL BARS					
F3.6.1		i) Y25 mm dia. : basic price	t	1.11	16502.40	18 317	66
		EXTRA OVER ITEM F 3.6.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
F3.6.2		i) Y10 mm	t	0.03		Incl.	
F3.6.3		ii) Y12 mm	t	0.62		Inc.	
F3.6.4		iii) Y16 mm	t	0.29		Incl.	
F3.6.5		iv) Y20 mm	t	0.17		Incl.	
F3.7 F3.7.1	PS G 8.3.2	High-Tensile Welded Mesh i) Mesh Ref. 617 in concrete coping	t	2.3	22 221·33	51 109	06
TOTAL CARRIED FORWARD						370462	31

BASIN 6 - SCHEDULE 1F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						370462	31
	8.4	**SCHEDULED CONCRETE ITEMS**					
F3.8	8.4.3	STRENGTH CONCRETE 25/19					
F3.8.1		i) Mass concrete where instructed by the engineer	m³	2	1738·38	3 476	76
F3.8.2		ii) Concrete coping over stabilized sand/cement core for overflow spillway	m³	115	1738·38	199913	70
F3.8.3		iii) Concrete wingwalls on the overflow spillway	m³	23	1738·38	39 982	74
F3.8.4		iv) Mass concrete collar walls on the overflow spillway	m³	5	1738·38	8 691	90
F3.8.5		v) Concrete fill between brick walls of wingwall extension	m³	1	1738·38	1 738	38
F3.8.6		vi) Concrete foundation below brick wall of wingwall extension	m³	3	1738·38	5 215	14
	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
F3.9	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
F3.9.1		Top of collar walls	m²	3	41·33	123	99
F3.10	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
F3.10.1		Horizontal and sloping face of concrete coping over stabilized sand/cement core for overflow spillway	m²	270	51·66	13948	20
F3.10.2		Horizontal and sloping face of wingwalls on overflow spillway	m²	9	51·66	464	94
	PS G 8.5	**JOINTS: NOTE THAT FORMWORK IS INCLUDED IN THE COST OF THE JOINT**					
F3.11		KEY JOINTS					
F3.11.1		Joint type 1: Key Joint "B" on horizontal and sloping face of concrete coping over stabilized sand/cement core for overflow spillway	m	47	417·80	19 636	60
F3.11.2		Joint type 2: Key Joint "A" on concrete spillway wingwalls	m	4	4865S	1946	20
TOTAL CARRIED FORWARD						665 600	86

BASIN 6 - SCHEDULE 1F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						665 600	86
	SANS 1200 LE	**STORMWATER DRAINAGE**					
F3.12	8.2.9(a)	BRICKWORK					
F3.12.1		1) 115 mm thick	m²	15	486·00	7290	00
F3.13	8.2.9(b)	Plaster (not less than 10 mm and not more than 15 mm thick)	m²	19	91·80	1 744	20
TOTAL CARRIED FORWARD						674 634	06

BASIN 6 - SCHEDULE 1F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						674635	06
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
F4.1	8.3.3	Treatment of road-bed					
	8.3.3	a) Road-bed preparation and compaction of material below the stabilised overflow spillway structure					
F4.1.1		1) 300mm Rip and re-compacted in situ material to minimum of 90% of MOD AASHTO density (100% for sand)	m³	125	40·78	5097	90
	SANS 1200 ME	**SECTION : SUBBASE**					
F4.2	8.3.3	Construct gravel subbase course with material from commercial sources or designated borrow areas					
F4.2.1		i) 100mm Thick G6 hardening layer below stabilised overflow spillway structure compacted to at least 95% of MOD AASHTO density	m³	42	447·72	18804	24
TOTAL CARRIED FORWARD						698536	80

BASIN 6 - SCHEDULE 1F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						698936	80
	PE	**CEMENT STABILISED SAND**					
F5.1	PE 8.2	STABILISING AGENT	t	95	1839·79	174780	05
F5.2	PE 8.3	STABILISATION	m³	600	40·78	24468	00
F5.3	PE 8.4	SPREADING OF SUCCESSIVE LAYERS	t	0.5	270·00	135	00
F5.4	PE 8.5	FINISHING OF SURFACES					
F5.4.1		Finishing of horizontal surfaces	m²	295	5·17	1525	15
F5.4.2		Finishing of inclined surfaces	m²	245	5·74	1406	30
F5.5	PE 8.6	BACK TIPPING	m³	600	13·69	8214	00
F5.6	PE 8.7	PREPARATION OF STEPPED SURFACE BEFORE THE PLACEMENT	m³	5	108·00	540	00
TOTAL CARRIED FORWARD TO SUMMARY						909606	30

BASIN 6 - SCHEDULE 1G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
G1.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
G1.1.1		i) Evaporation Pond to spoil at Atlantis Sand Mine	m³	350	42.23	14 780	50
G1.2	8.3.2	b) Extra-over for:					
G1.2.1		1) intermediate excavation	m³	5	21.11	105	55
G1.2.2		2) hard rock excavation	m³			Rate Only	
G1.2.3		3) boulder excavation, Class A	m³			Rate Only	
G1.2.4		4) boulder excavation, Class B	m³			Rate Only	
G1.3	PS D 8.3.2	c) Hand excavation in all materials and use for embankment or backfill or dispose, as ordered					
G1.3.1		i) Evaporation Pond to spoil at Atlantis Sand Mine	m³	1	191.08	191	08
G1.4	PS D 8.3.2	d) Extra-over for hand excavation in					
G1.4.1		1) intermediate excavation	m³			Rate Only	
G1.4.2		2) hard rock excavation	m³			Rate Only	
G1.4.3		3) boulder excavation, Class A	m³			Rate Only	
G1.4.4		4) boulder excavation, Class B	m³			Rate Only	
G1.5	PS D 8.3.2	e) Fill from stockpile to					
G1.5.1		i) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	5	83.00	415	00
G1.6	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction	m³	2	284.44	568	88
G1.7	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	20	42.23	844	60
TOTAL CARRIED FORWARD						16 905	61

BASIN 6 - SCHEDULE 1G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						16 905	61
	8.3.3	**Restricted Excavation**					
G1.8	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and spoil at Atlantis Sand Mine					
G1.8.1		i) 0 m up to 2 m	m³	25	255.11	6 377	75
G1.9	8.3.3	b) Extra-over for:					
G1.9.1		1) intermediate excavation	m³	1	21.11	21	11
G1.9.2		2) hard rock excavation	m³	——		Rate Only	
G1.9.3		3) boulder excavation, Class A	m³	——		Rate Only	
G1.9.4		4) boulder excavation, Class B	m³	——		Rate Only	
G1.10	8.3.6	Overhaul					
G1.10.1		a) Limited overhaul	m³	375	6.55	2456	25
G1.11	8.3.8	**Existing Services**					
G1.11.1	PS D 8.3.8.1	c) Excavate by hand in soft material to expose service	m³	2	132.85	265	70
	PS D 8.3.8.1	d) Extra-over PS D 8.3.8.1(c) for excavation in					
G1.11.2		1) intermediate excavation	m³	——		Rate Only	
	PS D 8.3.8.2	d) Services crossing excavations					
G1.11.3		i) Sewer Pipe	No	1	1080.00	1080	00
	PS D 8.3.8.2	e) Services that adjoin excavations					
G1.11.4		i) Sewer Pipe	m	20	108.00	2160	00
G1.12	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	50	36.68	1834	00
G1.13	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	100	6.48	648	00
G1.14	PS D 8.3.16	Filter Stone					
G1.14.1		i) 19mm single sized stone	m³	2	686.99	1373	98
G1.15	PS D 8.3.17	Shore Excavation Opposite Structure Or Service					
G1.15.1		i) 0 m up to 1m deep	m	2	108.00	216	00
G1.15.2		ii) 1 m up to 2m deep	m	2	216.00	431	00
TOTAL CARRIED FORWARD						33 770	40

BASIN 6 - SCHEDULE 1G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						33 770	60
G1.16	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls at Inlet Works	m³	5	298.36	1 491	80
TOTAL CARRIED FORWARD						35 262	20

BASIN 6 - SCHEDULE 1G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						35 262	20
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
G2.1		PLANE VERTICAL					
G2.1.1		All faces of evaporation pond floor slab	m²	20	535.12	10 702	40
G2.1.2		All faces of evaporation pond sump floor slab	m²	6	535.12	3 210	72
G2.1.3		All faces of evaporation pond access ramp floor slab (including DP RC thickening)	m²	8	535.12	4 280	96
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
G2.2		PLANE VERTICAL					
G2.2.1		All external faces of evaporation pond walls	m²	70	535.12	37 458.	40
G2.2.2		All external faces of evaporation pond sump walls	m²	25	535.12	13 378	00
G2.2.3		All external faces of evaporation pond access ramp walls	m²	8	535.12	4 280	96
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
G2.3		PLANE VERTICAL					
G2.3.1		All internal faces of evaporation pond walls	m²	70	626.69	43 854	30
G2.3.2		All internal faces of evaporation pond sump walls	m²	30	626.69	18 796	70
G2.3.3		All internal faces of evaporation pond access walls	m²	8	626.69	5 011	92
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
G2.4	8.3.1	HIGH TENSILE STEEL BARS					
G2.4.1		i) Y25 mm dia. : basic price	t	13.63	16 502.40	224 927	71
G2.5		EXTRA OVER ITEM G2.4.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
G2.5.1		i) Y10 mm	t	0.68		included	
G2.5.2		ii) Y12 mm	t	12.95		included	
TOTAL CARRIED FORWARD						~~365 900~~ 401 162	~~07~~ 27

BASIN 6 - SCHEDULE 1G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						401 162	27
G2.5.3		iii) Y16 mm	t	0.00		included	
G2.5.4		iv) Y20 mm	t	0.00		included	
G2.6	8.3.1	MILD STEEL BARS					
G2.6.1		i) R25 mm dia. : basic price	t	3.41	16502.60	56 273	18
G2.7		EXTRA OVER ITEM G 2.6.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
G2.7.1		i) R8 mm	t	0.34		included	
G2.7.2		ii) R10 mm	t	0.34		included	
G2.7.3		iii) R12 mm	t	1.70		included	
G2.7.4		iv) R16 mm	t	1.02		included	
G2.7.5		v) R20 mm	t	0.34		included	
	8.4	**SCHEDULED CONCRETE ITEMS**					
G2.8	8.4.3	STRENGTH CONCRETE 25/19					
G2.8.1		i) Mass concrete where instructed by the engineer	m³	10	1738.38	17 383.	80
G2.9	8.4.3	STRENGTH CONCRETE 35/19					
G2.9.1		Floor slab of evaporation pond	m³	22	1964.10	43 210	20
G2.9.2		Floor slab of evaporation pond sump	m³	8.0	1964.10	15 712	80
G2.9.3		Floor slab of evaporation pond (including DP RC thickening)	m³	24	1964.10	47 138	40
G2.9.4		Perimeter walls of evaporation pond (excluding access ramp and sump walls)	m³	58	1964.10	113 917	80
G2.9.5		Perimeter walls of evaporation pond sump	m³	20	1964.10	39282	00
G2.9.6		Perimeter wall of evaporation pond access ramp	m³	10	1964.10	19 641	00
G2.10	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
G2.10.1		To upper surfaces of concealed work and surfaces to receive benching or screed	m²	10	25.82	258	30
G2.11	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
G2.11.1		Top of walls	m²	23	41.33	950	59
TOTAL CARRIED FORWARD						154 930	36

BASIN 6 - SCHEDULE 1G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						754 930	36
G2.12	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
G2.12.1		Floor slab of evaporation pond	m²	310	51.66	16 014	60
G2.12.2		Floor slab of evaporation pond sump	m²	13	51.66	671	58
G2.13	PS G 8.4.4(d)	BROOMED FINISH TO UPPER SURFACES OF:					
G2.13.1		Floor slabs of access ramp	m²	30	62.00	1860	00
	PS G 8.5	**JOINTS: NOTE THAT FORMWORK IS INCLUDED IN THE COST OF THE JOINT**					
G2.14		EXPANSION JOINTS					
G2.14.1		Joint type 1: Between evaporation pond perimeter walls and access ramp walls	m	3	417.80	1253	40
G2.14.2		Joint type 2: Between evaporation pond floor slab and access ramp floor slab	m	6	486.55	2919	30
G2.14.3		Joint type 3: Between evaporation pond perimeter wall and evaporation pond sump walls	m	6	417.80	2506	80
G2.14.4		Joint type 4: Between evaporation pond floor slab and evaporation pond sump walls	m	6	486.55	2919	30
G2.15	PS G 8.11	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
G2.15.1		160mm diameter	No	5	216.00	1080	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
G2.16	PS HA 8.3.7	Handrails	m	90	1435.91	129232	80
G2.17	PS HA 8.3.13	Step irons for Concrete Structures	No	5	162.00	810	00
TOTAL CARRIED FORWARD						914 198	12

BASIN 6 - SCHEDULE 1G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						914 198	12
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
	8.3.3	Treatment of road-bed					
G3.1	8.3.3	a) Road-bed preparation and compaction of material below the evaporation pond floor					
G3.1.1		1) 150mm Rip and re-compacted in situ material compacted to 93% of MOD AASHTO density (100% for sand)	m^3	60	40.78	2446	80
	SANS 1200 ME	**SECTION : SUBBASE**					
G3.2	8.3.3	Construct gravel subbase course with material from commercial sources or designated borrow areas					
G3.2.1		i) 150mm layer C4 (G5 material stabilized with 3% Portland Cement per maximum dry density of the G5 material) compacted to 95% Modified AASHTO density below evaporation pond	m^3	60	452.90	27 174	00
G3.3	8.3.5	Process subbase material by the following processes, as relevant, and use in the subbase					
G3.3.1		d) Stabilization	m^3	60	33.42	2005.20	
G3.4	8.3.6	Stabilizing agent					
G3.4.1		b) Portland Cement	t	3.4	1839.79	6255	29
TOTAL CARRIED FORWARD TO SUMMARY						952079	41

BASIN 6 - SCHEDULE 1H - ACCESS ROADS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 C	**SITE CLEARANCE**					
H1.1	8.2.1	Clear and grub					
H1.1.1		i) Clear and grub for Sand Mine access road	ha	0.3	13 616.72	4085	02
H1.1.2		ii) Clear and grub for Basin 6 access road	ha	0.2	13 616.72	2723	34
H1.2	8.2.2	Remove and grub large trees and tree stumps of girth					
H1.2.1		i) Over 1 m and up to and including 2 m	No	5	1620.00	8100	00
H1.2.2		ii) Over 2 m and up to and including 3 m	No	1	2 160.00	2 160	00
H1.2.3		iii) Over 3 m	No	1	2 700.00	2700	00
H1.3	PS C 8.2.9	Transport materials and debris to dumping / spoil / compost facility and dump (Provisional)					
H1.3.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (40 km)	t.km	800	2.52	2016	00
H1.4	PS C 8.2.18	Co-disposal charges					
H1.4.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (R160/t)	Prov Sum	1	3,200.00	3,200	00
H1.5	PS C 8.2.19	Mark-up / Overhead costs, surcharge and profit on PS C 8.2.18					
H1.5.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (R160/t)	%	3200		128	00
TOTAL CARRIED FORWARD						25 112	36

BASIN 6 - SCHEDULE 1H - ACCESS ROADS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						25 112	36
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
H2.1	8.3.3	Treatment of road-bed					
	8.3.3	a) Road-bed preparation and compaction of material below the stabilised embankment core					
		2) Minimum of 93% of modified AASHTO maximum density					
H2.1.1		i) Sand Mine access road	m³	440	40.78	17 943	20
H2.1.2		ii) Basin 6 access road	m³	210	40.78	8563	80
H2.2	8.3.4	Cut to fill, borrow to fill					
	8.3.4	a) Compact to 90% of modified AASHTO maximum density					
H2.2.1		i) Sand Mine access road	m³	55	83.00	4565	00
H2.2.2		ii) Basin 6 access road	m³	50	83.00	4 150	00
H2.3	8.3.7	Cut to spoil or stockpile					
	8.3.7	a) Soft excavation					
H2.3.1		i) for Sand Mine access road to spoil at Apollo Brick Quarry	m³	1,250	42.23	52 787.	50
H2.3.2		ii) for Basin 6 access road to spoil at Apollo Brick Quarry	m³	700	41.23	29 561	00
H2.4	8.3.12	Overhaul					
H2.4.1		i) Sand Mine access road to Apollo Brick Quarry (4 km)	m³.km	5,000	6.55	32 750	00
H2.4.2		ii) Basin 6 access road to Apollo Brick Quarry (4 km)	m³.km	2,800	6.55	18 340	00
	SANS 1200 ME	**SECTION : SUBBASE**					
H2.5	8.3.3	Construct the subbase course / shoulders / gravel wearing course with material from commercial sources					
H2.5.1		i) Sand Mine access road 150mm wearing course G6 (Ferricrete) compacted to 95% of modified AASHTO density	m³	420	447.72	188 042	40
TOTAL CARRIED FORWARD						381 815	26

BASIN 6 - SCHEDULE 1H - ACCESS ROADS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						381 915	26
H2.5.2		ii) Basin 6 access road 110mm G6 (Ferricrete) compacted to 95% of modified AASHTO density	m³	160	447.72	71635	20
	SANS 1200 MJ	**SECTION : SEGMENTED PAVING**					
H2.6	PS MJ 8.2.2	Construction of Paving Complete					
H2.6.1		i) Basin 6 Access Road Armorflex HLP Paving (or equivalent)	m²	1,150	291.57	335 305	50
H2.6.2		ii) Basin 6 Access Road Armorflex HLP Paving (or equivalent) V-shaped Side Drain	m²	240	291.57	69 976	80
H2.7	8.2.3	Cutting Units to Fit Edge Restraints					
H2.7.1		i) Straight	m	210	37.80	7934	00
	SANS 1200 MK	**SECTION : KERBING AND CHANNELING**					
H2.8	8.2.1	Concrete Kerbing					
H2.8.1		i) Type E1 precast Edging along Basin 6 access road	m	400	135.70	54 280	00
H2.8.2		ii) 300mm x 300mm Class 30/20 in situ concrete edge beam at the intersection of the Basin 6 and Sand Mine access roads	m	24	238.06	5713	44
	SANS 1200 D	**SECTION : EARTHWORKS**					
H2.9	PS D 8.3.11	Grassing Or Other Vegetation Cover					
H2.9.1		i) Grass Hydroseeding of openings in paving	m²	1,390	4.63	6435.	70
TOTAL CARRIED FORWARD TO SUMMARY						933 099	90

BASIN 6 - SCHEDULE 1I - DOMESTIC EFFLUENT BYPASS PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
		SITE CLEARANCE					
I1.1	8.3.1(a)	Clear vegetation and trees of girth up to 1 m	m	330	5.12	1,689.	60
	PS DB 8.3.2	Excavation					
I1.2	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 125mm and up to 700 mm diam. for total trench depth:					
I1.2.1		Exceeding 0,0 m but not exceeding 1,0 m	m	20	151.75	3,035.	00
I1.2.2		Exceeding 1,0 m but not exceeding 2,0 m	m	270	227.63	61,460.	10
I1.2.3		Exceeding 2,0 m but not exceeding 3,0 m	m	125	476.80	59,600.	00
I1.2.4		Exceeding 3,0 m but not exceeding 4,0 m	m	5	920.81	4,604.	05
I1.3	8.3.2	b) Extra-over items listed in I1.2 above for:					
I1.3.1		Intermediate excavation	m^3	40	21.11	844.	40
I1.3.2		Hard rock excavation	m^3	5	450.07	2,250.	35
I1.4	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m^3	10	42.23	422.	30
I1.5	PS DB 8.3.2	d) Hand excavation and backfill	m^3	2	255.11	510.	22
I1.6	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m^3	2	132.85	265.	70
I1.7	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m^3	40	42.23	1,689.	20
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
I1.8	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
I1.8.1		a) from other necessary excavations on site	m^3	5	42.23	211.	15
I1.8.2		b) by importation from designated borrow pits	m^3	———	42.23	Rate Only	
I1.8.3		c) by importation from commercial or off-site sources selected by the Contractor	m^3	———	702.00	Rate Only	
I1.8.4		d) stockpile	m^3	10	42.23	422.	30
I1.9	PS DB 8.3.3.3	Compaction in road reserves	m^3	———	122.26	Rate Only	
TOTAL CARRIED FORWARD						137,044.	37

BASIN 6 - SCHEDULE 1I - DOMESTIC EFFLUENT BYPASS PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						137,004.	37
I1.10	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	1	230.93	230.	93
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
I1.11	PS DB 8.3.4	1) Shoring on one side					
I1.11.1		i) 0 to 1m deep	m	—	81.00	Rate Only	
I1.11.2		ii) 1 to 2m deep	m	20	81.00	1,620.	00
I1.11.3		iii) 2 to 3m deep	m	20	108.00	2,160.	00
I1.11.4		iv) 3 to 4m deep	m	—	378.00	Rate Only	
I1.12		2) Shoring on both sides					
I1.12.1		i) 0 to 1m deep	m	—	162.00	Rate Only	
I1.12.2		ii) 1 to 2m deep	m	100	162.00	16,200.	00
I1.12.3		iii) 2 to 3m deep	m	50	216.00	10,800.	00
I1.12.4		iv) 3 to 4m deep	m	5	324.00	1,620.	00
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
I1.13		1) In trenches					
I1.13.1		i) Class SN8 HDPE 400mm Ø	m	150	772.54	115,881.	00
		EXISTING SERVICES					
I1.14	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
I1.14.1	PS DB 8.3.5	a) Existing services that intersect a trench	No	—	1,080.00	Rate Only	
I1.14.2	PS DB 8.3.5	b) Existing services that adjoin a trench	m	—	108.00	Rate Only	
TOTAL CARRIED FORWARD						285,516.	30

BASIN 6 - SCHEDULE 1I - DOMESTIC EFFLUENT BYPASS PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						285,516.	30
	SANS 1200 LB	**BEDDING (PIPES)**					
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
I2.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
I2.1.1		c) Bedding for wet conditions	m³	10	378.00	3,780.	00
I2.2	PS LB 8.2.2.4	From stockpile (Provisional)					
I2.2.1		a) Selected granular material	m³	10	42.23	422.	30
I2.2.2		b) Selected fill material	m³	20	42.23	844.	60
I2.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
I2.3.1		a) Limited overhaul	m³		6.55	Rate Only	
I2.3.2		b) Long overhaul	m³.km		6.55	Rate Only	
TOTAL CARRIED FORWARD						290,563.	90

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BASIN 6 - SCHEDULE 1I - DOMESTIC EFFLUENT BYPASS PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						290,563.	20
	SANS 1200 LE	**STORMWATER DRAINAGE**					
	PS LE 8.2.20	Supply And Lay HDPE Pipes					
I3.1		Supply, handle and lay on Class C bedding HDPE double layer pipe with smooth bore and corrugated externally					
I3.1.1		i) Class SN8 400 mm inside diameter	m	420	772.64	324,466.	80
I3.2	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
I3.2.1		i) Manhole BP1, Dwg No C00686-ZF-DRD-0008-001, 1.5m deep	No.	1	18,334.80	18,334.	80
I3.2.2		ii) Manhole BP2, Dwg No C00686-ZF-DRD-0006-001, 1.5m deep	No.	1	22,919.01	22,919.	01
I3.2.3		iii) Manhole BP6, Dwg No C00686-ZF-DRD-0006-001, 2.6m deep	No.	1	29,529.98	29,529.	98
I3.2.4		iv) Manhole BP7, Dwg No C00686-ZF-DRD-0006-001, 2.2m deep	No.	1	26,974.63	26,974.	63
I3.2.5		v) Manhole BP8, Dwg No C00686-ZF-DRD-0006-002, 2.0m deep	No.	1	28,364.93	28,364.	93
I3.2.6		vi) Manhole BP9, Dwg No C00686-ZF-DRD-0006-002, 2.1m deep	No.	1	25,882.72	25,882.	72
TOTAL CARRIED FORWARD						767,036.	07

BASIN 6 - SCHEDULE 1I - DOMESTIC EFFLUENT BYPASS PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						767,036.	07
		BP3: OPEN CONCRETE MANHOLE STRUCTURE, Dwg No C00686-ZF-DRD-0006-001					
	SANS 1200D	**EARTHWORKS**					
	8.3.3	**Restricted Excavation**					
I3.3	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose					
I3.3.1		i) 0 m up to 2 m	m³	11	298.11	2,806.	21
I3.4	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	10	36.68	366.	80
I3.5	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	7	6.48	45.	36
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
I3.6		PLANE VERTICAL					
I3.6.1		All faces of floor slab	m²	3.0	539.12	1,665.	36
I3.6.2		All external faces of walls	m²	13.5	535.12	7,224.	12
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
I3.7		PLANE VERTICAL					
I3.7.1		All external faces of walls	m²	2.0	535.12	1,070.	24
I3.8		PLANE CURVING/CYLINDRICAL					
I3.8.1		Internal face of manhole opening	m²	0.5	638.16	319.	08
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
I3.9		PLANE VERTICAL					
I3.9.1		All internal faces of walls	m²	12.5	626.49	7,831.	13
TOTAL CARRIED FORWARD						788,304.	37

BASIN 6 - SCHEDULE 1I - DOMESTIC EFFLUENT BYPASS PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						788,304.	37
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
I3.10	8.3.1	HIGH TENSILE STEEL BARS					
I3.10.1		i) Y25 mm dia. : basic price	t	0.69	16,502.60	11,386.	66
I3.11		EXTRA OVER ITEM I3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
I3.11.1		i) Y10 mm	t	0.07		included	
I3.11.2		ii) Y12 mm	t	0.35		included	
I3.11.3		ii) Y16 mm	t	0.21		included	
I3.11.4		vi) Y20 mm	t	0.07		included	
I3.12	8.3.1	MILD STEEL BARS					
I3.12.1		i) R25 mm dia. : basic price	t	0.17	16,502.60	2,805.	41
I3.13		EXTRA OVER ITEM I3.12.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
I3.13.1		i) R8 mm	t	0.02		included	
I3.13.2		ii) R10 mm	t	0.02		included	
I3.13.3		ii) R12 mm	t	0.09		included	
I3.13.4		vi) R16 mm	t	0.05		included	
I3.13.5		v) R20 mm	t	0.02		included	
	8.4	**SCHEDULED CONCRETE ITEMS**					
I3.14	8.4.3	STRENGTH CONCRETE 25/19					
I3.14.1		i) Mass concrete where instructed by the engineer	m³	2.00	1,738.38	3,476.	76
I3.15	8.4.3	STRENGTH CONCRETE 25/10					
I3.15.1		I) Benching in manhole	m³	2.00	1,738.38	3,476.	76
I3.16	8.4.3	STRENGTH CONCRETE 35/19					
I3.16.1		I) Floor slab	m³	2.00	1,964.10	3,928.	20
I3.16.2		ii) Walls	m³	3.75	1,964.10	7,365.	38
TOTAL CARRIED FORWARD						820,743.	94

BASIN 6 - SCHEDULE 1I - DOMESTIC EFFLUENT BYPASS PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						820,743.	54
I3.17	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
I3.17.1		i) To upper surfaces of concealed work and surfaces to receive benching or screed	m²	0.75	25.83	19.	37
I3.18	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
I3.18.1		i) Top of walls	m²	2.50	41.33	103.	33
I3.19	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
I3.19.1		i) Benching	m²	5.50	51.66	284.	13
I3.20	PS G 8.10	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
I3.20.1		i) 400mm diameter	No	3.00	216.00	648.	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
I3.21	PS HA 8.3.13	Step irons for Concrete Structures	No	4	162.00	648.	00
		TEMPORARY DIVERSION OF DOMESTIC EFFLUENT FLOW (PROVISIONAL IF REQUIRED)					
	1200 LD	SEWERS					
I3.22	PS LD 8.2.13	Deviation Of Sewage Through Temporary Pipeline	Sum	1	16,200.00	16,200.	00
I3.23	PS LD 8.2.14	Supply And Lay Temporary Sewer pipeline	m	120	525.53	63,063.	60
TOTAL CARRIED FORWARD TO SUMMARY						901,709.	97

BASIN 6 - SCHEDULE 1J - RECHARGE PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
		SITE CLEARANCE					
J1.1	8.3.1(a)	Clear vegetation and trees of girth up to 1 m	m	10	5.12	51.	20
	PS DB 8.3.2	**Excavation**					
J1.2	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 1000mm and up to 2000 mm diam. for total trench depth:					
J1.2.1		Exceeding 0,0 m but not exceeding 1,0 m	m		314.74	Rate Only	
J1.2.2		Exceeding 1,0 m but not exceeding 2,0 m	m		472.11	Rate Only	
J1.2.3		Exceeding 2,0 m but not exceeding 3,0 m	m	25	884.28	22,107.	00
J1.2.4		Exceeding 3,0 m but not exceeding 4,0 m	m	10	1,491.28	14,912.	80
J1.3	8.3.2	b) Extra-over items listed in J1.2 above for:					
J1.3.1		Intermediate excavation	m³	2	21.11	42.	22
J1.3.2		Hard rock excavation	m³		450.07	Rate Only	
J1.4	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m³	2	42.23	84.	46
J1.5	PS DB 8.3.2	d) Hand excavation and backfill	m³	2	295.11	510.	22
J1.6	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m³	2	132.85	265.	70
J1.7	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m³	40	42.23	1,689.	20
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
J1.8	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
J1.8.1		a) from other necessary excavations on site	m³	5	42.23	211.	15
J1.8.2		b) by importation from designated borrow pits	m³		42.23	Rate Only	
J1.8.3		c) by importation from commercial or off-site sources selected by the Contractor	m³		702.00	Rate Only	
J1.8.4		d) stockpile	m³	15	42.23	633.	45
J1.9	PS DB 8.3.3.3	Compaction in road reserves	m³		122.26	Rate Only	
TOTAL CARRIED FORWARD						40,507.	40

BASIN 6 - SCHEDULE 1J - RECHARGE PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						40,507.	40
J1.10	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	1	230.93	230.	93
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
J1.11	PS DB 8.3.4	1) Shoring on one side					
J1.11.1		i) 0 to 1m deep	m		81.00	Rate Only	
J1.11.2		ii) 1 to 2m deep	m		81.00	Rate Only	
J1.11.3		iii) 2 to 3m deep	m		108.00	Rate Only	
J1.11.4		iv) 3 to 4m deep	m		378.00	Rate Only	
J1.12		2) Shoring on both sides					
J1.12.1		i) 0 to 1m deep	m		162.00	Rate Only	
J1.12.2		ii) 1 to 2m deep	m		162.00	Rate Only	
J1.12.3		iii) 2 to 3m deep	m	10	216.00	2,160.	00
J1.12.4		iv) 3 to 4m deep	m	5	324.00	1,620.	00
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
J1.13		1) In trenches					
J1.13.1		i) Class 75D Concrete 1200mm Ø	m		3,726.68	74,529.	60
		EXISTING SERVICES					
J1.14	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
J1.14.1	PS DB 8.3.5	a) Existing services that intersect a trench	No		1,080.00	Rate Only	
J1.14.2	PS DB 8.3.5	b) Existing services that adjoin a trench	m		108.00	Rate Only	
TOTAL CARRIED FORWARD						~~119,047.93~~ 44,818.53	

BASIN 6 - SCHEDULE 1J - RECHARGE PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						~~119,947.93~~	
	SANS 1200 LB	**BEDDING (PIPES)**				44,118	33
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
J2.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
J2.1.1		c) Bedding for wet conditions	m³	10	378.00	3,780.	00
J2.2	PS LB 8.2.2.4	From stockpile (Provisional)					
J2.2.1		a) Selected granular material	m³	5	42.23	211.	15
J2.2.2		b) Selected fill material	m³	20	42.23	844.	60
J2.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
J2.3.1		a) Limited overhaul	m³	——	6.55	Rate Only	
J2.3.2		b) Long overhaul	m³.km	——	6.55	Rate Only	
TOTAL CARRIED FORWARD						~~123,883.68~~ 49,354.08	

BASIN 6 - SCHEDULE 1J - RECHARGE PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						123,883.	68
	SANS 1200 LE	**STORMWATER DRAINAGE**				49,354	08
J3.1	PS LE 8.2.1	Supply And Lay Concrete Pipe Culverts					
J3.1.1		a) Class 75D Concrete 1200mm diameter on Class C bedding	m	35	3,726.48	130,426.	80
J3.2	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
J3.2.1		i) Manhole ROut2, Dwg No C00686-ZF-DRD-0006-002, 3.0m deep	No.	1	37,256.54	37,256.	54
J3.2.2		ii) Manhole ROut3, Dwg No C00686-ZF-DRD-0006-002, 3.1m deep	No.	1	37,992.59	37,992.	59
TOTAL CARRIED FORWARD TO SUMMARY						329 559.	61
						255,030.	01

BASIN 6 - SCHEDULE 1K - DONKERGAT DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
		SITE CLEARANCE					
K1.1	8.3.1(a)	Clear vegetation and trees of girth up to 1 m	m	450	5.12.	2,304.	80
	PS DB 8.3.2	**Excavation**					
K1.2	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 125mm and up to 700 mm diam. for total trench depth:					
K1.2.1		Exceeding 0,0 m but not exceeding 1,0 m	m	——	181.75	Rate Only	
K1.2.2		Exceeding 1,0 m but not exceeding 2,0 m	m	300	227.63	68,289.	80
K1.2.3		Exceeding 2,0 m but not exceeding 3,0 m	m	125	476.80	59,600.	80
K1.2.4		Exceeding 3,0 m but not exceeding 4,0 m	m	55	920.81	50,644.	55
K1.3	8.3.2	b) Extra-over items listed in K1.2 above for:					
K1.3.1		Intermediate excavation	m³	50	21.11	1,055.	50
K1.3.2		Hard rock excavation	m³	5	450.07	2,250.	35
K1.4	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m³	20	42.23	844.	60
K1.5	PS DB 8.3.2	d) Hand excavation and backfill	m³	2	255.11	510.	22
K1.6	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m³	2	132.85	265.	70
K1.7	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m³	80	42.23	3,378.	40
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
K1.8	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
K1.8.1		a) from other necessary excavations on site	m³	10	42.23	422.	30
K1.8.2		b) by importation from designated borrow pits	m³	——	42.23	Rate Only	
K1.8.3		c) by importation from commercial or off-site sources selected by the Contractor	m³	——	702.00	Rate Only	
K1.8.4		d) stockpile	m³	50	42.23	2,111.	50
K1.9	PS DB 8.3.3.3	Compaction in road reserves	m³	——	122.26	Rate Only	
TOTAL CARRIED FORWARD						91,676.	12

BASIN 6 - SCHEDULE 1K - DONKERGAT DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						191,676.	12
K1.10	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	1	230.93	230.	93
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
K1.11	PS DB 8.3.4	1) Shoring on one side					
K1.11.1		i) 0 to 1m deep	m		81.00	Rate Only	
K1.11.2		ii) 1 to 2m deep	m	50	81.00	4,050.	00
K1.11.3		iii) 2 to 3m deep	m	15	108.00	1,620.	00
K1.11.4		iv) 3 to 4m deep	m	5	378.00	1,890.	00
K1.12		2) Shoring on both sides					
K1.12.1		i) 0 to 1m deep	m		162.00	Rate Only	
K1.12.2		ii) 1 to 2m deep	m	20	162.00	3,240.	00
K1.12.3		iii) 2 to 3m deep	m	100	216.00	21,600.	00
K1.12.4		iv) 3 to 4m deep	m	50	324.00	16,200.	00
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
K1.13		1) In trenches					
K1.13.1		i) Class 75D Concrete 450mm Ø	m		888.37	128,365.	30
		EXISTING SERVICES					
K1.14	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
K1.14.1	PS DB 8.3.5	a) Existing services that intersect a trench	No		1,080.00	Rate Only	
K1.14.2	PS DB 8.3.5	b) Existing services that adjoin a trench	m		108.00	Rate Only	
TOTAL CARRIED FORWARD						368,812.	55
						240,507.	05

BASIN 6 - SCHEDULE 1K - DONKERGAT DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						~~368,812.~~ 240,507	~~55~~ 65
	SANS 1200 LB	**BEDDING (PIPES)**					
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
K2.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
K2.1.1		c) Bedding for wet conditions	m³	10	378.00	3,780.	00
K2.2	PS LB 8.2.2.4	From stockpile (Provisional)					
K2.2.1		a) Selected granular material	m³	10	42.23	422.	30
K2.2.2		b) Selected fill material	m³	20	42.23	844.	60
K2.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
K2.3.1		a) Limited overhaul	m³		6.55	Rate Only	
K2.3.2		b) Long overhaul	m³.km		6.55	Rate Only	
TOTAL CARRIED FORWARD						~~373 859.45~~ 245,173.95	

BASIN 6 - SCHEDULE 1K - DONKERGAT DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						~~373,859.~~ 245,913	~~45~~ 91
	SANS 1200 LE	**STORMWATER DRAINAGE**					
K3.1	PS LE 8.2.1	Supply And Lay Concrete Pipe Culverts					
K3.1.1		i) Class 75D Concrete 600mm diameter on Class C bedding	m	23	1066.64	24,486.	72
K3.1.1		ii) Class 75D Concrete 450mm diameter on Class C bedding	m	457	855.37	390,904.	09
K3.2	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
K3.2.1		i) Manhole DG2, Dwg No C00686-ZF-DRD-0006-004, 2.8m deep	No.	1	33,966.85	33,966.	85
K3.2.2		ii) Manhole DG3, Dwg No C00686-ZF-DRD-0006-004, 2.8m deep	No.	1	33,966.85	33,966.	85
K3.2.3		iii) Manhole DG4, Dwg No C00686-ZF-DRD-0006-004, 3.1m deep	No.	1	36,067.57	36,067.	57
K3.2.4		iv) Manhole DG5, Dwg No C00686-ZF-DRD-0006-004, 2.1m deep	No.	1	29,065.17	29,065.	17
K3.2.5		v) Manhole DG6, Dwg No C00686-ZF-DRD-0006-004, 2.3m deep	No.	1	28,777.73	28,777.	73
K3.2.6		vi) Manhole DG7, Dwg No C00686-ZF-DRD-0006-004, 1.7m deep	No.	1	24,793.47	24,793.	47
K3.2.7		vii) Manhole DG8, Dwg No C00686-ZF-DRD-0006-004, 1.6m deep	No.	1	24,129.43	24,129.	43
K3.2.8		viii) Manhole DG9, Dwg No C00686-ZF-DRD-0006-005, 1.8m deep	No.	1	25,457.52	25,457.	52
K3.2.9		ix) Manhole DG10, Dwg No C00686-ZF-DRD-0006-005, 1.9m deep	No.	1	26,121.56	26,121.	56
TOTAL CARRIED FORWARD TO SUMMARY						~~1,051,596.41~~ 923,290.41	

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
		SITE CLEARANCE					
L1.1	8.3.1(a)	Clear vegetation and trees of girth up to 1 m	m	360	5.12	1,843.	20
	PS DB 8.3.2	**Excavation**					
L1.2	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 125mm and up to 700 mm diam. for total trench depth:					
L1.2.1		Exceeding 0,0 m but not exceeding 1,0 m	m	10	151.75	1,517.	50
L1.2.2		Exceeding 1,0 m but not exceeding 2,0 m	m	20	227.63	4,552.	60
L1.2.3		Exceeding 2,0 m but not exceeding 3,0 m	m	25	476.80	11,920.	00
L1.2.4		Exceeding 3,0 m but not exceeding 4,0 m	m	——	920.81	Rate Only	
		Over 1000mm and up to 2000 mm diam. for total trench depth:					
L1.2.5		Exceeding 0,0 m but not exceeding 1,0 m	m	——	314.74	Rate Only	
L1.2.6		Exceeding 1,0 m but not exceeding 2,0 m	m	30	472.11	14,163.	30
L1.2.7		Exceeding 2,0 m but not exceeding 3,0 m	m	150	884.28	132,642.	00
L1.2.8		Exceeding 3,0 m but not exceeding 4,0 m	m	70	1,491.28	104,389.	60
L1.2.9		Exceeding 4,0 m but not exceeding 5,0 m	m	45	2,293.12	103,190.	40
L1.3	8.3.2	b) Extra-over items listed in L1.2 above for:					
L1.3.1		Intermediate excavation	m³	50	21.11	1,055.	50
L1.3.2		Hard rock excavation	m³	10	450.07	4,500.	70
L1.4	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m³	20	42.23	844.	60
L1.5	PS DB 8.3.2	d) Hand excavation and backfill	m³	10	255.11	2,551.	10
L1.6	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m³	10	132.85	1,328.	50
L1.7	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m³	200	42.23	8,446.	00
TOTAL CARRIED FORWARD						392,945.	00

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						392,945.	00
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
L1.8	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
L1.8.1		a) from other necessary excavations on site	m³		42.23	Rate Only	
L1.8.2		b) by importation from designated borrow pits	m³		42.23	Rate Only	
L1.8.3		c) by importation from commercial or off-site sources selected by the Contractor	m³		702.00	Rate Only	
L1.8.4		d) stockpile	m³	160	42.23	6,756.	80
L1.9	PS DB 8.3.3.3	Compaction in road reserves	m³		122.26	Rate Only	
L1.10	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	5	230.93	1,154.	65
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
L1.11	PS DB 8.3.4	1) Shoring on one side					
L1.11.1		i) 0 to 1m deep	m		81.00	Rate Only	
L1.11.2		ii) 1 to 2m deep	m	10	81.00	810.	00
L1.11.3		iii) 2 to 3m deep	m	50	108.00	5,400.	00
L1.11.4		iv) 3 to 4m deep	m	20	378.00	7,560.	00
L1.11.5		v) 4 to 5m deep	m	10	486.00	4,860.	00
L1.12		2) Shoring on both sides					
L1.12.1		i) 0 to 1m deep	m		162.00	Rate Only	
L1.12.2		ii) 1 to 2m deep	m	10	162.00	1,620.	00
L1.12.3		iii) 2 to 3m deep	m	50	216.00	10,800.	00
L1.12.4		iv) 3 to 4m deep	m	20	324.00	6,480.	00
L1.12.5		v) 4 to 5m deep	m	10	864.00	8,640.	00
TOTAL CARRIED FORWARD						447,026.	45

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						447,026.	45
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
L1.13		1) In trenches					
L1.13.1		i) Class SN8 HDPE 400mm Ø	m	30	772.54	23,176.	20
L1.13.2		ii) Class 75D Concrete 1200mm Ø	m	200	3,726.48	745,296.	00
		EXISTING SERVICES					
L1.14	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
L1.14.1	PS DB 8.3.5	a) Existing services that intersect a trench	No	3	1,080.00	3,240.	00
L1.14.2	PS DB 8.3.5	b) Existing services that adjoin a trench	m		108.00	Rate Only	
TOTAL CARRIED FORWARD						1,218,738.	65

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1,218,738.	65
		GABIONS AND PITCHING					
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
L2.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
L2.1.1		i) Gabion and Reno mattresses to stockpile	m³	35	42.23	1,478.	05
	SABS 1200 DK	**GABIONS AND PITCHING**					
L2.2	8.2.1	Surface preparation for bedding of gabions					
L2.2.1		a) Cavities filled with approved excavated material or rock	m³	115	23.25	2,673.	75
L2.3	8.2.2	Gabions Refer to the drawings for the Gabion Specification for the following box sizes:					
L2.3.1		i) 3m x 1m x 1m (No = 3)	m³	12	2,038.21	24,458.	52
L2.4	8.2.2	Reno Mattresses Refer to the drawings for the Reno Mattress Specification for the following mattress sizes:					
L2.4.1		i) 3m x 1m x 0.3m (No = 3)	m³	10.8	2,313.40	24,984.	72
L2.4.2		ii) 6m x 2m x 0.3m (No = 6)	m³	21.6	2,313.40	49,969.	44
L2.5	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
L2.5.1		i) Grade 1, Kaytech Grade A6 or equivalent for Gabions and Reno Mattresses	m²	160	24.75	3,960.	00
TOTAL CARRIED FORWARD						1,326,263.	13

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1,326,263.	13
	SANS 1200 LB	**BEDDING (PIPES)**					
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
L3.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
L3.1.1		c) Bedding for wet conditions	m³	20	378.00	7,560.	00
L3.2	PS LB 8.2.2.4	From stockpile (Provisional)					
L3.2.1		a) Selected granular material	m³	20	42.23	844.	60
L3.2.2		b) Selected fill material	m³	20	42.23	844.	60
L3.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
L3.3.1		a) Limited overhaul	m³		6.55	Rate Only	
L3.3.2		b) Long overhaul	m³.km		6.55	Rate Only	
TOTAL CARRIED FORWARD						1,335,812.	33

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1,339,512.	33
	SANS 1200 LE	**STORMWATER DRAINAGE**					
L4.1	PS LE 8.2.1	Supply And Lay Concrete Pipe Culverts					
L4.1.1		i) Class 75D Concrete 1200mm diameter on Class C bedding	m	295	3,726.48	1,099,311.	60
	PS LE 8.2.20	Supply And Lay HDPE Pipes					
L4.2		Supply, handle and lay on Class C bedding HDPE double layer pipe with smooth bore and corrugated externally					
L4.2.1		i) Class SN8 400 mm inside diameter	m	55	772.54	42,489.	70
L4.3	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
L4.3.1		i) Manhole DIV2, Dwg No C00686-ZF-DRD-0006-003, 4.0m deep	No.	1	60,060.20	60,060.	20
L4.3.2		ii) Manhole DIV3, Dwg No C00686-ZF-DRD-0006-003, 3.1m deep	No.	1	47,116.26	47,116.	26
L4.3.3		iii) Manhole DIV4, Dwg No C00686-ZF-DRD-0006-003, 2.1m deep	No.	1	32,417.73	32,417.	73
L4.3.4		iv) Manhole DIV8, Dwg No C00686-ZF-DRD-0006-003, 1.2m deep	No.	1	16,765.40	16,765.	40
L4.3.5		v) Manhole TDIV3, Dwg No C00686-ZF-DRD-0006-007, 3.9m deep	No.	1	33,804.17	33,804.	17
TOTAL CARRIED FORWARD						2,667,477.	39

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						2,667,477.	39
		DIV1: OPEN CONCRETE MANHOLE STRUCTURE, Dwg No C00686-ZF-DRD-0006-002					
	SANS 1200D	**EARTHWORKS**					
	8.3.3	**Restricted Excavation**					
L4.4	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose					
L4.4.1		i) 2 m up to 4 m	m³	55.0	255.11	14,031.	05
L4.5	8.3.3	b) Extra-over for:					
L4.5.1		1) intermediate excavation	m³	5	21.11	105.	55
L4.5.2		2) hard rock excavation	m³		450.01	Rate Only	
L4.6	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	5	42.23	211.	15
L4.7	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	50	36.68	1,834.	00
L4.8	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m³	16	6.48	103.	68
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
L4.9		PLANE VERTICAL					
L4.9.1		All faces of floor slab	m²	7.0	535.12	3,745.	84
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
L4.10		PLANE VERTICAL					
L4.10.1		All external faces of walls	m²	55.0	535.12	29,431.	60
TOTAL CARRIED FORWARD						2,716,960.	26

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						2,716,960.	26
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
L4.11		PLANE VERTICAL					
L4.11.1		All internal faces of walls	m²	45.0	626.49	28,192.	05
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
L4.12	8.3.1	HIGH TENSILE STEEL BARS					
L4.12.1		i) Y25 mm dia. : basic price	t	1.87	16,552.40	30,859.	49
L4.13		EXTRA OVER ITEM L4.12.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
L4.13.1		i) Y10 mm	t	0.19		included	
L4.13.2		ii) Y12 mm	t	0.94		included	
L4.13.3		iii) Y16 mm	t	0.56		included	
L4.13.4		iv) Y20 mm	t	0.19		included	
L4.14	8.3.1	MILD STEEL BARS					
L4.14.1		i) R25 mm dia. : basic price	t	0.47	16,502.40	7,756.	13
L4.15		EXTRA OVER ITEM L4.14.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
L4.15.1		i) R8 mm	t	0.05		included	
L4.15.2		ii) R10 mm	t	0.05		included	
L4.15.3		iii) R12 mm	t	0.23		included	
L4.15.4		iv) R16 mm	t	0.14		included	
L4.15.5		v) R20 mm	t	0.05		included	
	8.4	**SCHEDULED CONCRETE ITEMS**					
L4.16	8.4.3	STRENGTH CONCRETE 25/19					
L4.16.1		i) Mass concrete where instructed by the engineer	m³	2.00	1,738.38	3,476.	76
L4.17	8.4.3	STRENGTH CONCRETE 25/10					
L4.17.1		i) Benching in manhole	m³	3.20	1,738.38	5,562.	82
L4.18	8.4.3	STRENGTH CONCRETE 35/19					
L4.18.1		i) Floor slab	m³	6.00	1,964.10	11,784.	60
L4.18.2		ii) Walls	m³	13.50	1,964.10	26,515.	35
TOTAL CARRIED FORWARD						2,831,087.	46

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						2,831,087.	46
L4.19	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
L4.19.1		i) To upper surfaces of concealed work and surfaces to receive benching or screed	m²	12.00	25.83	309.	96
L4.20	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
L4.20.1		i) Top of walls	m²	5.00	41.33	206.	65
L4.21	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
L4.21.1		i) Benching	m²	15.00	51.66	774.	90
L4.22	PS G 8.10	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
L4.22.1		i) 1200mm diameter	No	1.00	1,080.00	1,080.	00
L4.22.2		ii) 1500mm diameter	No	2.00	1,080.00	2,160.	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
L4.23	PS HA 8.3.13	Step irons for Concrete Structures	No	9	162.00	1458.	00
TOTAL CARRIED FORWARD						2,837,076.	97

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						2,837,076.	97
		DIV5: CONCRETE OUTLET STRUCTURE. Dwg No C00686-ZF-DRD-0006-003					
	8.3.3	**Restricted Excavation**					
L4.24	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose					
L4.24.1		i) 0 m up to 2 m	m³	40.0	255.11	10,204.	40
L4.25	8.3.3	b) Extra-over for:					
L4.25.1		1) intermediate excavation	m³	2	21.11	42.22	
L4.25.2		2) hard rock excavation	m³		450.07	Rate Only	
L4.26	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	2	42.23	84.	46
L4.27	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	30	36.68	1,100.	40
L4.28	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	20	6.48	129.	60
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
L4.29		PLANE VERTICAL					
L4.29.1		All faces of floor slab and key	m²	54.0	535.12	28,896.	48
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
L4.30		PLANE VERTICAL					
L4.30.1		All external faces of walls	m²	126.0	535.12	67,425.	12
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
L4.31		PLANE VERTICAL					
L4.31.1		All internal faces of walls and baffle blocks	m²	135.0	626.49	84,576.	15
TOTAL CARRIED FORWARD						3,029,535.	80

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						3,029,535	80
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
L4.32	8.3.1	HIGH TENSILE STEEL BARS					
L4.32.1		i) Y25 mm dia. : basic price	t	8.06	16,502.60	133,009.	34
L4.33		EXTRA OVER ITEM L4.32.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
L4.33.1		i) Y10 mm	t	0.81		included	
L4.33.2		ii) Y12 mm	t	4.03		included	
L4.33.3		ii) Y16 mm	t	2.42		included	
L4.33.4		iv) Y20 mm	t	0.81		included	
L4.34	8.3.1	MILD STEEL BARS					
L4.34.1		i) R25 mm dia. : basic price	t	2.02	16,502.60	33,334.	85
L4.35		EXTRA OVER ITEM L4.34.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
L4.35.1		i) R8 mm	t	0.20		included	
L4.35.2		ii) R10 mm	t	0.20		included	
L4.35.3		iii) R12 mm	t	1.01		included	
L4.35.4		iv) R16 mm	t	0.60		included	
L4.35.5		v) R20 mm	t	0.20		included	
	8.4	**SCHEDULED CONCRETE ITEMS**					
L4.36	8.4.3	STRENGTH CONCRETE 25/19					
L4.36.1		i) Mass concrete where instructed by the engineer	m³	6.00	1,738.38	10,430.	28
L4.37	8.4.3	STRENGTH CONCRETE 35/19					
L4.37.1		i) Floor slab an key	m³	51.00	1,966.10	100,169.	10
L4.37.2		ii) Walls and baffle blocks	m³	33.00	1,966.10	64,815.	30
L4.38	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
L4.38.1		i) To upper surfaces of concealed work and surfaces to receive benching or screed	m²	15.00	25.83	387.	45
L4.39	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
L4.39.1		i) Top of walls	m²	27.00	41.33	1,115.	91
TOTAL CARRIED FORWARD						3,372,798	03

BASIN 6 - SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						3,372,798	03
L4.40	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
L4.40.1		i) Floor slab and baffle blocks	m²	165.00	51.66	8,523.	90
L4.41	PS G 8.10	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
L4.41.1		i) 1200mm diameter	No	1.00	1,080.00	1,080.	00
		DIV6 - 7: TEMPORARY TRAPEZOIDAL CANAL, 6m BOTTOM WIDTH, 0.5m DEEP WITH 1:3 SIDE SLOPES AND LINED WITH 500micron DPM					
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
L4.42	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
L4.42.1		i) Temporary trapezoidal canal to canal embankment fill compacted to 90% (100% for sand) of MOD AASHTO density	m³	150	164.49	24,673.	50
L4.43	PS D 8.4.4	Supply and place DPM on Diversion Canal Floor and Side Slopes	m²	440	27.00	11,880.	00
TOTAL CARRIED FORWARD TO SUMMARY						3,418,955	43

BASIN 6 - SCHEDULE 1M - STORMWATER INFLOW TEMPORARY DIVERSION PIPELINE AND CANAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
		SITE CLEARANCE					
M1.1	8.3.1(a)	Clear vegetation and trees of girth up to 1 m	m	240	5.12	1228.	80
	PS DB 8.3.2	Excavation					
M1.2	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 1000mm and up to 2000 mm diam. for total trench depth:					
M1.2.1		Exceeding 0,0 m but not exceeding 1,0 m	m		314.74	Rate Only	
M1.2.2		Exceeding 1,0 m but not exceeding 2,0 m	m		472.11	Rate Only	
M1.2.3		Exceeding 2,0 m but not exceeding 3,0 m	m		884.28	Rate Only	
M1.2.4		Exceeding 3,0 m but not exceeding 4,0 m	m	80	1491.28	119302.	40
M1.3	8.3.2	b) Extra-over items listed in L1.2 above for:					
M1.3.1		Intermediate excavation	m³	30	21.11	633.	30
M1.3.2		Hard rock excavation	m³	3	450.07	1350.	21
M1.4	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m³	10	42.23	422.	30
M1.5	PS DB 8.3.2	d) Hand excavation and backfill	m³	10	255.11	2551.	10
M1.6	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m³	20	132.85	2657.	—
M1.7	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m³	120	42.23	5067.	60
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
M1.8	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
M1.8.1		a) from other necessary excavations on site	m³		42.23	Rate Only	
M1.8.2		b) by importation from designated borrow pits	m³		42.23	Rate Only	
M1.8.3		c) by importation from commercial or off-site sources selected by the Contractor	m³		702.-	Rate Only	
M1.8.4		d) stockpile	m³	50	42.23	2111.	50
M1.9	PS DB 8.3.3.3	Compaction in road reserves	m³		122.26	Rate Only	
TOTAL CARRIED FORWARD						135324.	21

BASIN 6 - SCHEDULE 1M - STORMWATER INFLOW TEMPORARY DIVERSION PIPELINE AND CANAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						135324.	21
M1.10	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m^3	5	230.93	1154.	65
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
M1.11	PS DB 8.3.4	1) Shoring on one side					
M1.11.1		iv) 3 to 4m deep	m		378.-	Rate Only	
M1.12		2) Shoring on both sides					
M1.12.1		iv) 3 to 4m deep	m	10	324.-	3240.	-
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
M1.13		1) In trenches					
M1.13.1		i) Class 75D Concrete 1200mm Ø	m	80	3726.48	298 118.	40
		EXISTING SERVICES					
M1.14	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
M1.14.1	PS DB 8.3.5	a) Existing services that intersect a trench	No	1	1080.-	1080.	-
M1.14.2	PS DB 8.3.5	b) Existing services that adjoin a trench	m	10	108.-	1080.	-
TOTAL CARRIED FORWARD						439997.	21

BASIN 6 - SCHEDULE 1M - STORMWATER INFLOW TEMPORARY DIVERSION PIPELINE AND CANAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						439 997.	26
		GABIONS AND PITCHING					
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
M2.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
M2.1.1		i) Gabion and Reno mattresses to stockpile	m³	20	42.23	844.	60
	SABS 1200 DK	**GABIONS AND PITCHING**					
M2.2	8.2.1	Surface preparation for bedding of gabions					
M2.2.1		a) Cavities filled with approved excavated material or rock	m²	20	23.25	465	-
M2.3	8.2.2	Reno Mattresses					
		Refer to the drawings for the Reno Mattress Specification for the following mattress sizes:					
M2.3.1		i) 6m x 2m x 0.3m (No = 6)	m³	7.2	2313.40	16 656.	48
M2.4	8.2.4	Geotextile					
		Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
M2.4.1		i) Grade 1, Kaytech Grade A6 or equivalent for Gabions and Reno Mattresses	m²	30	24.75	742.	50
TOTAL CARRIED FORWARD						458 705.	84

BASIN 6 - SCHEDULE 1M - STORMWATER INFLOW TEMPORARY DIVERSION PIPELINE AND CANAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						458705.	84
	SANS 1200 LB	**BEDDING (PIPES)**					
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
M3.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
M3.1.1		c) Bedding for wet conditions	m³	15	378.-	5670.	-
M3.2	PS LB 8.2.2.4	From stockpile (Provisional)					
M3.2.1		a) Selected granular material	m³	20	42.23	844.	60
M3.2.2		b) Selected fill material	m³	50	42.23	2111.	50
M3.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
M3.3.1		a) Limited overhaul	m³		6.55	Rate Only	
M3.3.2		b) Long overhaul	m³.km		6.55	Rate Only	
TOTAL CARRIED FORWARD						467331.	94

BASIN 6 - SCHEDULE 1M - STORMWATER INFLOW TEMPORARY DIVERSION PIPELINE AND CANAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						467331.	94
	SANS 1200 LE	**STORMWATER DRAINAGE**					
M4.1	PS LE 8.2.1	Supply And Lay Concrete Pipe Culverts					
M4.1.1		i) Class 75D Concrete 1200mm diameter on Class C bedding	m	80	3726.48	298 118.	40
M4.2	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
M4.2.1		i) Manhole TDIV1, Dwg No C00686-ZF-DRD-0006-006, 3.6m deep	No.	1	41781.69	41 781.	69
M4.2.2		ii) Manhole TDIV2, Dwg No C00686-ZF-DRD-0006-006, 2.6m deep	No.	1	48758.15	48758.	15
		TDIV1 - 9: TEMPORARY TRAPEZOIDAL CANAL, 1m BOTTOM WIDTH, 0.75m DEEP WITH 1:2 SIDE SLOPES AND LINED WITH 500micron DPM, Dwg No C00686-ZF-DRD-0006-008					
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
M4.3	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
M4.3.1		i) Temporary trapezoidal canal to canal embankment fill compacted to 90% (100% for sand) of MOD AASHTO density	m³	700	164.49	115 143.	-
M4.4	PS D 8.4.4	Supply and place DPM on Diversion Canal Floor and Side Slopes	m²	440	27.-	11880.	-
TOTAL CARRIED FORWARD TO SUMMARY						983813.	18

BASIN 6 - SCHEDULE 1N - INDUSTRIAL EFFLUENT DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
		SITE CLEARANCE					
N1.1	8.3.1(a)	Clear vegetation and trees of girth up to 1 m	m	60	5.12	307.	20
	PS DB 8.3.2	**Excavation**					
N1.2	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 125mm and up to 700 mm diam. for total trench depth:					
N1.2.1		Exceeding 0,0 m but not exceeding 1,0 m	m	60	151.75	9105.	-
N1.2.2		Exceeding 1,0 m but not exceeding 2,0 m	m	26	227.63	5918.	38
N1.2.3		Exceeding 2,0 m but not exceeding 3,0 m	m		476.80	Rate Only	
N1.2.4		Exceeding 3,0 m but not exceeding 4,0 m	m		920.81	Rate Only	
N1.3	8.3.2	b) Extra-over items listed in N1.2 above for:					
N1.3.1		Intermediate excavation	m³		21.11	Rate Only	
N1.3.2		Hard rock excavation	m³		450.07	Rate Only	
N1.4	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m³	2	42.23	84.	46
N1.5	PS DB 8.3.2	d) Hand excavation and backfill	m³	5	255.11	1275.	55
N1.6	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m³	10	132.85	1328.	50
N1.7	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m³	10	42.23	422.	30
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
N1.8	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
N1.8.1		a) from other necessary excavations on site	m³		42.23	Rate Only	
N1.8.2		b) by importation from designated borrow pits	m³		42.23	Rate Only	
N1.8.3		c) by importation from commercial or off-site sources selected by the Contractor	m³		702. -	Rate Only	
N1.8.4		d) stockpile	m³	5	42.23	211.	15
N1.9	PS DB 8.3.3.3	Compaction in road reserves	m³		122.26	Rate Only	
TOTAL CARRIED FORWARD						18652.	54

BASIN 6 - SCHEDULE 1N - INDUSTRIAL EFFLUENT DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						18652.	54
N1.10	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	5	230.93	1154.	65
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
N1.11	PS DB 8.3.4	1) Shoring on one side					
N1.11.1		i) 0 to 1m deep	m		81.-	Rate Only	
N1.11.2		ii) 1 to 2m deep	m	5	81.-	405.	-
N1.12		2) Shoring on both sides					
N1.12.1		i) 0 to 1m deep	m		162.-	Rate Only	
N1.12.2		ii) 1 to 2m deep	m	5	162.-	810.	-
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
N1.13		1) In trenches					
N1.13.1		i) Class 75D Concrete 375mm Ø	m	20	743.29	14 865.	80
		EXISTING SERVICES					
N1.14	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
N1.14.1	PS DB 8.3.5	a) Existing services that intersect a trench	No	3	1080.-	3240.	-
N1.14.2	PS DB 8.3.5	b) Existing services that adjoin a trench	m		108.-	Rate Only	
TOTAL CARRIED FORWARD						39 127.	99

BASIN 6 - SCHEDULE 1N - INDUSTRIAL EFFLUENT DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						39 127.	99
	SANS 1200 LB	**BEDDING (PIPES)**					
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
N2.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
N2.1.1		c) Bedding for wet conditions	m³	2	378.-	756.	-
N2.2	PS LB 8.2.2.4	From stockpile (Provisional)					
N2.2.1		a) Selected granular material	m³	2	42.23	84.	46
N2.2.2		b) Selected fill material	m³	3	42.23	126.	69
N2.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
N2.3.1		a) Limited overhaul	m³		6.55	Rate Only	
N2.3.2		b) Long overhaul	m³.km		6.95	Rate Only	
TOTAL CARRIED FORWARD						40095.	14

BASIN 6 - SCHEDULE 1N - INDUSTRIAL EFFLUENT DIVERSION PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						40 095.	14
	1200 LD	**SEWERS**					
N3.1	8.2.1	Supply, Lay, Joint, Bed (Class C) and Test Pipeline					
N3.1.1		i) 375 mm Ø, Class 75D Concrete Spigot and Socket Pipes	m	86	743.29	63 922.	94
N3.2	PS LD 8.2.3	MANHOLES					
		Supply And Install Manholes					
N3.2.1		i) Manhole IND DIV 1, Dwg No C00686-ZF-DRD-0006-005, 1.1m deep	No.	1	20809.22	20809.	22
N3.2.2		ii) Manhole IND DIV 2, Dwg No C00686-ZF-DRD-0006-005, 1.0m deep	No.	1	20145.18	20145.	18
N3.2.3		iii) Manhole IND DIV 3, Dwg No C00686-ZF-DRD-0006-005, 1.2m deep	No.	1	21473.26	21473.	26
N3.3	PS LD 8.2.11	Connection To Existing 375mm Ø Sewer Pipeline	No	2	1620.-	3240.	-
TOTAL CARRIED FORWARD TO SUMMARY						169685.	74

BASIN 6 - SCHEDULE 1O - SUBSOIL DRAINS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 C	**SITE CLEARANCE**					
O1.1	8.2.1	Clear and grub					
O1.1.1		i) Clear and grub for subsoil drain	ha	0.7	13616.72	9531.	70
O1.2	8.2.2	Remove and grub large trees and tree stumps of girth					
O1.2.1		i) Over 1 m and up to and including 2 m	No	100	1620.-	162000.	-
O1.2.2		ii) Over 2 m and up to and including 3 m	No	10	2160.-	21600.	-
O1.2.3		iii) Over 3 m	No		2700.-	Rate Only	
O1.3	PS C 8.2.9	Transport materials and debris to dumping / spoil / compost facility and dump (Provisional)					
O1.3.1		i) Organic material from general clearing and grubbing operation (for subsoil drain) to spoil at compost facility (40 km)	t.km	2,240	2.52	5644.	80
O1.4	PS C 8.2.18	Co-disposal charges					
O1.4.1		i) Organic material from general clearing and grubbing operation (for subsoil drain) to spoil at compost facility (R160/t)	Prov Sum	1	8,960.00	8,960	00
O1.5	PS C 8.2.19	Mark-up / Overhead costs, surcharge and profit on PS C 8.2.18					
O1.5.1		i) Organic material from general clearing and grubbing operation (for subsoil drain) to spoil at compost facility (R160/t)	%		48	358.	40
TOTAL CARRIED FORWARD						208094.	90

BASIN 6 - SCHEDULE 1O - SUBSOIL DRAINS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						208094.	90
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
O2.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
O2.1.1		i) Subsoil drain to stockpile	m³	6,500	42.23	274495.	-
O2.1.2		ii) Subsoil drain to backfill compacted to 90% (100% for sand) of MOD AASHTO density	m³	10,500	83.-	871 500.	-
O2.2	8.3.2	b) Extra-over for:					
O2.2.1		1) intermediate excavation	m³	400	21.11	8444.	-
O2.2.2		2) hard rock excavation	m³	50	450.07	22503.	50
O2.2.3		3) boulder excavation, Class A	m³		162.-	Rate Only	
O2.2.4		4) boulder excavation, Class B	m³		162.-	Rate Only	
O2.3	PS D 8.3.2	c) Hand excavation in all materials and use for embankment or backfill or dispose, as ordered					
O2.3.1		i) Subsoil drain to stockpile	m³	10	191.08	1910.	80
O2.4	PS D 8.3.2	d) Extra-over for hand excavation in					
O2.4.1		1) intermediate excavation	m³		162.-	Rate Only	
O2.4.2		2) hard rock excavation	m³		702.-	Rate Only	
O2.4.3		3) boulder excavation, Class A	m³		270.-	Rate Only	
O2.4.4		4) boulder excavation, Class B	m³		270.-	Rate Only	
O2.5	PS D 8.3.2	e) Fill from stockpile to					
O2.5.1		i) Backfill compacted to 90% (100% for sand) of Mod AASHTO	m³	5,000	83.-	415000.	-
O2.5.2		ii) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	1,500	83.-	124500.	-
O2.6	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	50	42.23	2111.	50
TOTAL CARRIED FORWARD						1928559.	70

BASIN 6 - SCHEDULE 1O - SUBSOIL DRAINS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1928559.	70
	8.3.3	**Restricted Excavation**					
O2.7	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose					
O2.7.1		i) 0m up to 2m : Bottom trapezoidal section excavation of subsoil drain to stockpile	m³	1,600	255.11	408176	-
O2.8	8.3.3	b) Extra-over for:					
O2.8.1		1) intermediate excavation	m³	100	21.11	2111.	-
O2.8.2		2) hard rock excavation	m³		450.07	Rate Only	
O2.8.3		3) boulder excavation, Class A	m³		162.-	Rate Only	
O2.8.4		4) boulder excavation, Class B	m³		162.-	Rate Only	
O2.9	8.3.8	**Existing Services**					
O2.9.1	PS D 8.3.8.1	c) Excavate by hand in soft material to expose service	m³	10	132.85	1328.	50
	PS D 8.3.8.1	d) Extra-over PS D 8.3.8.1(c) for excavation in					
O2.9.2		1) intermediate excavation	m³		21.11	Rate Only	
O2.10	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	650	6.48	4212.	-
TOTAL CARRIED FORWARD						2344387.	20

BASIN 6 - SCHEDULE 1O - SUBSOIL DRAINS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						2344387.	20
	D 8.4	**SUBSOIL DRAINS ADJACENT TO BASIN 6**					
O2.11	PS D 8.4.1	Pipes in Subsoil Drains					
		a) Slotted polyethylene drainage pipes complete with couplings with at least 8 kN/m2 ring stiffness (BIG-DREN drainage pipes from SPC- southern pipe contractors or equivalent)					
O2.11.1		i) 350mm internal diameter (ID)	m	560	951.67	532935.	20
O2.12		b) Polyethylene fitting					
O2.12.1		i) 350mm ID Preformed End Cap	No	2	1328.24	2656.	48
O2.12.2		ii) 350mm ID 45° Tee Fitting	No	1	3907.44	3907.	44
O2.12.3		iii) 350mm ID 45° Elbow Bend	No	1	3599.25	3599.	25
O2.12.4		iv) 350mm ID 30° Elbow Bend	No	2	2084.94	4169.	88
O2.13	PS D 8.4.2	Crushed Stone In Subsoil Drains	m³	1,600	686.99	1099184.	-
O2.14	PS D 8.4.3	Supply and place geofabric (Kaytech Grade A6 or equivalent) in Subsoil Drains	m²	6,000	17.98	107880.	-
TOTAL CARRIED FORWARD TO SUMMARY						4098719.	45

BASIN 6 - SCHEDULE 1P - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
		PAVING					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
P1.1	8.3.3	Treatment of road-bed					
	8.3.3	a) Road-bed preparation and compaction of material below paving (150mm deep) to					
		2) Minimum of 93% of modified AASHTO maximum density					
P1.1.1		i) Inlet Works and Evaporation Pond Platform	m³	430	40·78	17 535	40
	SANS 1200 ME	**SECTION : SUBBASE**					
P1.2	8.3.3	Construct the subbase course / shoulders / gravel wearing course with material from commercial sources					
		110mm G6 (Ferricrete) compacted to 95% of modified AASHTO density					
P1.2.1		i) Inlet Works and Evaporation Pond Platform	m³	320	447·72	143 270	40
P1.2.2		ii) Basin 6 Embankment	m³	65	447·72	29 101	80
	SANS 1200 MJ	**SECTION : SEGMENTED PAVING**					
P1.3	PS MJ 8.2.2	Construction of Paving Complete - Armorflex HLP Paving (or equivalent)					
P1.3.1		i) Inlet Works and Evaporation Pond Platform	m²	2,800	291·57	816 396	00
P1.3.2		ii) Basin 6 Embankment	m²	580	291·57	169 110	60
P1.4	8.2.3	Cutting Units to Fit Edge Restraints					
P1.4.1		i) Straight	m	630	37·80	23814	00
	SANS 1200 MK	**SECTION : KERBING AND CHANNELING**					
P1.5	8.2.1	Concrete Kerbing					
P1.5.1		i) Type E1 precast Edging along Inlet Works and Evaporation Pond Platform	m	210	135·70	28 497	00
P1.5.2		ii) Type E1 precast Edging along Basin 6 Embankment	m	225	135·70	30532	50
TOTAL CARRIED FORWARD						1258257	70

BASIN 6 - SCHEDULE 1P - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT ¢
BROUGHT FORWARD						1258257	70
	SANS 1200 D	**SECTION : EARTHWORKS**					
P1.6	PS D 8.3.11	Grassing Or Other Vegetation Cover					
P1.6.1		i) Grass Hydroseeding of openings in paving at Inlet Works and Evaporation Pond Platform	m²	2,800	4·63	12964	00
P1.6.2		ii) Grass Hydroseeding of openings in paving on Basin 6 Embankment	m²	580	4·63	2685	40
TOTAL CARRIED FORWARD						1273907	10

BASIN 6 - SCHEDULE 1P - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1,273,907	10
		FENCING AND SLUICES					
	SANS 1200 C	**SITE CLEARANCE**					
P2.1	8.2.1	Clear and grub					
P2.1.1		i) Clear and grub for Concrete Palisade Fencing (3m wide strip)	m	435	15.35	6 677	25
P2.1.2		ii) Clear and grub for Galvanised Steel Razor 6 – Coil Stack Security Fencing (5m wide strip)	m	760	25.59	17448	40
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
P2.2	PS G 8.10	SUPPLY AND INSTALLATION OF 2,4 m HIGH INDUSTRIAL TYPE CONCRETE PALISADE FENCING	m	435	1782.00	775 170	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
P2.3	PS HA 8.3.9	Pre-Fabricated Stainless Steel Sluice Gates					
P2.3.1		i) 1500 x 1500mm, Off seat, 2500mm Max. operating head	No	1	113426.96	113 426	96
P2.3.2		ii) 1200 x 1200mm, On seat, 3500mm Max. operating head	No	1	97455.05	97 455	05
P2.3.3		iii) 1200 x 1200mm, On seat, 3000mm Max. operating head	No	1	97455.05	97 455	05
P2.3.4		iv) 600 x 600mm, On seat, 3000mm Max. operating head	No	1	57980.97	57 980	97
P2.3.5		v) 400 x 400mm, On seat (shaped to benching), 2000mm Max. operating head	No	1	53 638.85	53 638	85
P2.4	PS HA 8.3.10	Pre-Fabricated Galvanised Steel Security Gates	No	1	29700.00	29 700	00
P2.5	PS HA 8.3.11	Galvanised Steel Razor 6 – Coil Stack Security Fencing	m	760	367.20	279 072	00
P2.6	PS HA 8.3.12	Security Cages for protection of Sluice Gates and Monitoring equipment					
P2.6.1		i) Inlet to litter trap & manhole for monitoring equipment, cage size is 5500 x 4500mm with 3000mm height	No	1	92880.00	92 880	00
P2.6.2		ii) Diversion Manhole DIV 1, cage size is 5000 x 4500mm with 3000mm height	No	1	72360.00	72 360	00
TOTAL CARRIED FORWARD						~~1695264.53~~ 2,969,171.63	uf

BASIN 6 - SCHEDULE 1P - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						~~1695264~~ 2,969,01.	~~53~~ 63
P2.6.3		iii) BP 3 Domestic effluent bypass manhole, cage size is 3500 x 2500mm with 2000mm height	No	1	75600.00	75 600	00
P2.6.4		iv) Outlet structure of Basin 6, cage size is 4250 x 2500mm with 3000mm height	No	1	10800.00	10 800	00
TOTAL CARRIED FORWARD						~~1781664~~ 3,055,571.	~~53~~ 63

BASIN 6 - SCHEDULE 1P - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						3,055,571	63
		VALVES					
	1200 L	**MEDIUM PRESSURE PIPELINES**					
P3.1	8.2.5	Supply and Installation of Pipes, Valves and Fittings					
P3.1.1		Supply and installation of 350mm dia Flanged wedge gate valve (PN 16) with handwheel clockwise opening (AVK or equivalent) complete with VJ Flange adaptor, hot dipped galvanized bolts and nuts to suit existing pipework. Valve size to be validated on site and Flange drilling table to suit existing pipework. All Flanges and VJ Flange adaptor to be Denso pate and wrapped.	No	2	74,250 -	148,500	-
P3.2	PS L 8.2.8	Recover Old pipeline fittings					
P3.2.1		Removal of existing 350mm dia flanged wedge gate valve and deliver to City of Cape Town store at Witzand Water Treatment Works.	No	2	918.00	1836	00
TOTAL CARRIED FORWARD						3,205,907	63

BASIN 6 - SCHEDULE 1P - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						3,205,907	63
		SIGNS					
	SANS 1200 MM	**SECTION : ANCILLARY ROADWORKS**					
P4.1	PS MM 8.3.8	Road Signs					
P4.1.1		W411 Sign, 4.32m length	No	2	6741.79	13 483	58
P4.1.2		W411 Sign, 2.40m length	No	2	2853.79	5 707	58
P4.1.3		Health and Safety Signs (1.5mx1.5m)	No	2	4912.27	9824	54
TOTAL CARRIED FORWARD TO SUMMARY						~~29 015~~ 3,236,927	~~70~~ 33

BASIN 6

	SUMMARY OF BILL NO. 1	Page No.	Amount R	c
1	SCHEDULE 1A - PRELIMINARY AND GENERAL	45	9 966 626	64
2	SCHEDULE 1B - DAYWORK (HOURLY RATES)	50	0	00
3	SCHEDULE 1C - DETENTION AND CONDITIONING PONDS	62	19 173 876	21
4	SCHEDULE 1D - INLET WORKS	77	10 019 202	30
5	SCHEDULE 1E - OUTLET STRUCTURE	83	249 905	54
6	SCHEDULE 1F - OVERFLOW SPILLWAY STRUCTURE	90	909 605	30
7	SCHEDULE 1G - EVAPORATION POND	97	952 079	41
8	SCHEDULE 1H - ACCESS ROADS	100	933 099	90
9	SCHEDULE 1I - DOMESTIC EFFLUENT BYPASS PIPELINE	107	901 709	97
10	SCHEDULE 1J - RECHARGE PIPELINE	111	255 030	01
11	SCHEDULE 1K - DONKERGAT DIVERSION PIPELINE	115	423 290	91
12	SCHEDULE 1L - STORMWATER INFLOW DIVERSION PIPELINE	127	3 418 955	43
13	SCHEDULE 1M - STORMWATER INFLOW TEMPORARY DIVERSION PIPELINE AND CANAL	132	983 013	18
14	SCHEDULE 1N - INDUSTRIAL EFFLUENT DIVERSION PIPELINE	136	169 685	76
15	SCHEDULE 1O - SUBSOIL DRAINS	140	4 098 719	45
16	SCHEDULE 1P - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)	146	3 234 923	33
	SUB-TOTAL CARRIED FORWORD TO SUMMARY OF BILLS	218	56 189 723	32

BILL NO. 2: UPGRADE OF BASIN 9

BASIN 9 - SCHEDULE 2A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
A1	SANS 1200 A	**PRELIMINARY AND GENERAL**					
A1.1	8.3	**FIXED-CHARGE AND VALUE-RELATED ITEMS**					
A1.1.1	8.3.1	Contractual requirements (Performance guarantee, insurances, financing costs, general expenses incurred in complying with the GCC, SCC and all other expenses incurred in complying with the requirements of the Conditions of Tender and Contract)	Sum	1	287 421.92	287 421	92
	8.3.2	**Establishment of Facilities on the Site**					
	8.3.2.1	Facilities for Engineer					
A1.1.2		Office buildings with the inclusion of air conditioning, car ports, ablution and latrine facilities, communications equipment for the duration of the contract (2 cell phones), IT equipment, site instruction book, protective clothing and safety equipment, project nameboards (2 No), survey equipment, internet connectivity, colour printer / copier / scanner machine, steel plan cabinets to accommodate at least 40 A0 plans, an electric refrigerator of at least 200 litre capacity, etc.	Sum	1		Included	
	8.3.2.2	Facilities for the Contractor					
A1.1.3		Facilities for the Contractor, including offices, storage sheds, workshops, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, dealing with water, survey, access and accommodation of traffic, plant, etc.	Sum	1		Included	
A1.1.4	8.3.3	Other fixed-charge obligations (Specify)	Sum	1		N/A	
A1.1.5	8.3.4	Removal of Contractor's site establishment infrastructure and reinstatement of site on completion of construction phase.	Sum	1		Included	
TOTAL CARRIED FORWARD						287 421	92

BASIN 9 - SCHEDULE 2A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						5891 325	92
A1.3	SANS 1200 A	**SETTING OUT OF THE WORKS**					
		Setting out of the Works and the preservation and replacement of beacons and reference pegs.					
A1.3.1	8.3.3	Fixed-charged obligations for Item A1.3	Sum	1		Included	
A1.3.2	8.4.5	Time-related obligations for Item A1.3	Sum	1		Included	
A1.4	8.5	**SUMS STATED PROVISIONIALLY BY ENGINEER**					
	8.5 b)	1) For work to be executed by the Employer or a nominated subcontractor	Sum	1		PROV	
A1.4.1		i) Material testing by commercial laboratories	Prov Sum	1	50,000.00	50,000	00
A1.4.2		ii) Overheads, charges and profit on item A1.4.1	%		50 000	2 000	00
A1.4.3	PS A 8.5.1	Additional survey for the provision of as-built information	Sum	1		Included	
A1.5	PS A 8.7	**DAYWORK**	Prov			PROV	
A1.6	8.8	**TEMPORARY WORKS**					
A1.6.1	PS A 8.8.2	Accommodation of traffic	Sum	1		Included	
A1.6.2	PS A 8.8.5	Cost of survey in terms of the Land Survey Act	Sum	1		Included	
A1.7	A 8.9	**OCCUPATIONAL HEALTH AND SAFETY**					
A1.7.1	PS A 8.9.1	Health And Safety Measures	Sum	1		Included	
A1.7.2	PS A 8.9.2	Health And Safety Plan	Sum	1		Included	
A1.7.3	PS A 8.9.3	Health And Safety File	Sum	1		Included	
	PS A 8.9.4	OCCUPATIONAL HEALTH AND SAFETY OFFICER					
A1.7.4		a) Employment of Occupational Health and Safety Officer	Sum	1	216 000	216 000	00
A1.7.5		b) Contractor's overheads, charges and profit on employment of Occupational Health and Safety Officer	%			Included	
TOTAL CARRIED FORWARD						6 159 325	92

BASIN 9 - SCHEDULE 2A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						281 421	92
A1.2	8.4	**TIME-RELATED ITEMS**					
A1.2.1	8.4.1	Contractual requirements (Performance security, insurances, financing costs, general expenses incurred in complying with the GCC, SCC and all other expenses incurred in complying with the requirements of the Conditions of Tender and Contract)	Sum	1	544 904	544 904	00
	8.4.2	Operate and maintain facilities on site for duration of construction phase except where otherwise stated					
A1.2.2	8.4.2.1	Facilities for the Engineer	Sum	1	162 000	162 000	00
A1.2.3	8.4.2.2	Facilities for the Contractor	Sum	1		Included	
A1.2.4	8.4.3	Supervision for duration of construction	Sum	1		Included	
A1.2.5	8.4.4	Company and Head Office overhead costs for duration of Contract	Sum	1		Included	
A1.2.6	8.4.5	Other time-related obligations (Specify)	Sum	1		N/A	
TOTAL CARRIED FORWARD						891 325	92

BASIN 9 - SCHEDULE 2A: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						6159 325	92
A1.8	PS A 8.10	**COMMUNITY LIAISON OFFICER (CLO)**					
A1.8.1		a) Employment of CLO	Sum per working day	264	360.00	95,040	00
A1.8.2		b) Contractor's overheads, charges and profit on employment of CLO	%		95 040	3 801	60
A1.9	PS A 8.11	**ENVIRONMENTAL MANAGEMENT PLAN**					
A1.9.1	PS A 8.11.1	Cost Of Environmental Management Plan	Sum	1	1 nc	Included nc 1	00
A1.9.2	PS A 8.11.2	Complying With The Environmental Management Plan (EMP)	Sum	1		Included	
	PS A 8.11.3	**ENVIRONMENTAL CONTROL OFFICER (ECO)**					
A1.9.3		a) Employment of ECO	Sum	1	1.00	1.	00
A1.9.4		b) Contractor's overheads, charges and profit on employment of ECO	%			Rate Only	
	PS A 8.11.4	Horticulturist					
A1.9.5		a) Employment of Horticulturist	Prov Sum	1	75,000.00	75,000	00
A1.9.6		b) Contractor's overheads, charges and profit on employment of Horticulturist	%		75 000	3 000	00
A1.10	PS A 8.12	Re-siting of Services	Prov Sum	1	20,000.00	20,000	00
A1.11	PS A 8.13	Re-vegetation of Conditioning Ponds	Prov Sum	1	180,000.00	180,000	00
A1.12	PS A 8.14	Re-vegetation of Fill Embankment and Cut Slopes	Prov Sum	1	20,000.00	20,000	00
TOTAL CARRIED FORWARD TO SUMMARY						6 556 168	52

BASIN 9 - SCHEDULE 2B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
B1	SANS 1200 PS A 8.7	**DAYWORK**					
B1.1		**Personnel during working hours**					
B1.1.1		a) Unskilled labour	h		51.66	Rate Only	
B1.1.2		b) Semi skilled labour	h		67.16	Rate Only	
B1.1.3		c) Skilled labour	h		82.66	Rate Only	
B1.1.4		d) Ganger	h		82.66	Rate Only	
B1.1.5		e) Foreman / Section leader	h		129.60	Rate Only	
B1.2		**Personnel outside working hours**					
B1.2.1		a) Unskilled labour	h		77.49	Rate Only	
B1.2.2		b) Semi skilled labour	h		100.74	Rate Only	
B1.2.3		c) Skilled labour	h		123.99	Rate Only	
B1.2.4		d) Ganger	h		123.99	Rate Only	
B1.2.5		e) Foreman / Section leader	h		194.40	Rate Only	
B1.3		**Personnel during special non-working hours**					
B1.3.1		a) Unskilled labour	h		103.33	Rate Only	
B1.3.2		b) Semi skilled labour	h		134.32	Rate Only	
B1.3.3		c) Skilled labour	h		165.32	Rate Only	
B1.3.4		d) Ganger	h		165.32	Rate Only	
B1.3.5		e) Foreman / Section leader	h		259.20	Rate Only	
TOTAL CARRIED FORWARD						0	00

BASIN 9 - SCHEDULE 2B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						0	00
B2		**Equipment**					
B2.1		Excavators					
B2.1.1		6 ton – 10 ton (40 – 55 kW)	h		739.80	Rate Only	
B2.1.2		10 ton – 14 ton (55 – 70 kW)	h		756	Rate Only	
B2.1.3		18 ton – 22 ton (70 – 105 kW)	h		783	Rate Only	
B2.1.4		22 ton – 26 ton (105 – 125 kW)	h		810	Rate Only	
B2.1.5		26 ton – 30 ton (120 – 150 kW)	h		855.36	Rate Only	
B2.1.6		30 ton – 35 ton (150 – 180 kW)	h		1080	Rate Only	
B2.1.7		35 ton – 40 ton (150 – 180 kW)	h		1296	Rate Only	
B2.2		Bulldozers					
B2.2.1		13 ton – 17 ton (90 – 135 kW)	h		970.92	Rate Only	
B2.2.2		17 ton – 20 ton (125 – 135 kW)	h		1179.36	Rate Only	
B2.2.3		25 ton – 30 ton (160 – 175 kW)	h		1415.23	Rate Only	
B2.2.4		35 ton – 45 ton (215 – 315 kW)	h		1651.10	Rate Only	
B2.3		Graders					
B2.3.1		101 – 130 kW	h		956.88	Rate Only	
B2.3.2		131 – 150 kW	h		1148.26	Rate Only	
B2.3.3		171 – 190 kW	h		1339.63	Rate Only	
B2.4		Concrete Batching Plant (m³/h)					
B2.4.1		8 m³/hr	h		–	Rate Only	
B2.4.2		12 m³/hr	h		–	Rate Only	
B2.5		Front-end loaders					
B2.5.1		5 – 8 ton	h		648	Rate Only	
B2.5.2		9 – 10 ton	h		702	Rate Only	
B2.5.3		14 – 18 ton	h		756	Rate Only	
B2.5.4		19 – 22 ton	h		838.08	Rate Only	
TOTAL CARRIED FORWARD						0	00

BASIN 9 - SCHEDULE 2B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						0	00
B2.6		Rollers					
B2.6.1		1,5 – 2,5 ton	h		486	Rate Only	
B2.6.2		4 - 7 ton	h		540	Rate Only	
B2.6.3		8 - 12 ton	h		594	Rate Only	
B2.6.4		12 - 15 ton	h		637.20	Rate Only	
B2.7		Small Rollers					
B2.7.1		500 – 550 kg	h		86.40	Rate Only	
B2.7.2		650 – 700 kg	h		86.40	Rate Only	
B2.7.3		900 – 1000 kg	h		108	Rate Only	
B2.7.4		1000 – 1500 kg	h		129.60	Rate Only	
B2.8		Trucks (m³ specified)					
B2.8.1		3 m³	h		541.08	Rate Only	
B2.8.2		5 m³	h		541.08	Rate Only	
B2.8.3		10 m³	h		573.48	Rate Only	
B2.8.4		15 m³	h		1 112.40	Rate Only	
B2.9		Water trucks (litres specified)					
B2.9.1		4000 – 6000 l	h		412.99	Rate Only	
B2.9.2		6000 – 10 000 l	h		516.24	Rate Only	
B2.9.3		10 000 – 15 000 l	h		516.24	Rate Only	
B2.9.4			h		-	Rate Only	
B2.10		Tractor and trailer					
B2.10.1		4 – 6 ton	h		486	Rate Only	
B2.10.2		8 – 12 ton	h		702	Rate Only	
B2.10.3		12 – 15 ton	h		918	Rate Only	
B2.10.4		15 – 20 ton	h		1 080	Rate Only	
TOTAL CARRIED FORWARD						0	00

BASIN 9 - SCHEDULE 2B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT C
BROUGHT FORWARD						0	00
B2.11		Backhoe loaders (TLB)					
B2.11.1		6 – 7 ton	h		486	Rate Only	
B2.11.2		7 – 8 ton	h		532.44	Rate Only	
B2.11.3		8 – 9 ton	h		702	Rate Only	
B2.11.4			h		–	Rate Only	
B2.12		Crane truck (tons specified)					
B2.12.1		2 – 4 ton	h		503.28	Rate Only	
B2.12.2		4 – 6 ton	h		540	Rate Only	
B2.12.3		6 – 8 ton	h		702	Rate Only	
B2.12.4			h		–	Rate Only	
B2.13		Compressor					
B2.13.1		74 cfm	h		108	Rate Only	
B2.13.2		250 cfm	h		216	Rate Only	
B2.13.3		600 cfm	h		432	Rate Only	
B2.13.4		750 cfm	h		540	Rate Only	
B2.14		Concrete mixer (litres specified)					
B2.14.1		150L	h		150	Rate Only	
B2.14.2			h		-	Rate Only	
B2.14.3			h		-	Rate Only	
B2.14.4			h		-	Rate Only	
B2.15		"Dumper" (m³ specified)					
B2.15.1		11 – 13 m³	h		143.10	Rate Only	
B2.15.2		14 – 16 m³	h		162	Rate Only	
B2.15.3		17 – 20 m³	h		216	Rate Only	
B2.15.4		21 – 25 m³	h		378	Rate Only	
TOTAL CARRIED FORWARD						0	00

BASIN 9 - SCHEDULE 2B: DAYWORK (HOURLY RATES)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						0	00
B2.16		Water pumps (mm specified)					
B2.16.1		225 m³/hr	h		378	Rate Only	
B2.16.2		680 m³/hr	h		702	Rate Only	
B2.16.3		1 135 m³/hr	h		1 080	Rate Only	
B2.16.4		2 265 m³/hr	h		1 296	Rate Only	
B2.17		Compactors (Plate)					
B2.17.1			h		100	Rate Only	
B2.17.2			h		-	Rate Only	
B2.17.3			h		-	Rate Only	
B2.17.4			h		-	Rate Only	
B2.18		Other equipment					
B2.18.1			h		-	Rate Only	
B2.18.2			h		-	Rate Only	
B2.18.3			h		-	Rate Only	
B2.18.4			h		-	Rate Only	
TOTAL CARRIED FORWARD TO SUMMARY						0	00

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 C	**SITE CLEARANCE**					
C1.1	8.2.1	Clear and grub					
C1.1.1		i) Clear and grub for detention and conditioning ponds, inlet works, outlet structure, overflow spillway structure, evaporation pond and platforms.	ha	3.2	13 616.72	43 573	50
C1.1.2		ii) Clear and grub for stockpile and spoil areas as requested by the Engineer	ha	1	13 616.72	13 616	72
C1.2	8.2.2	Remove and grub large trees and tree stumps of girth					
C1.2.1		i) Over 1 m and up to and including 2 m	No	10	1620	16 200	00
C1.2.2		ii) Over 2 m and up to and including 3 m	No	5	2 160	10 800	00
C1.2.3		iii) Over 3 m	No	2	2 700	5 400	00
C1.3	PS C 8.2.7	Dismantle And Remove Pipelines					
C1.3.1		i) Basin 9 inlet pipeline (1350mm Ø concrete)	m	13	285.09	3 706	17
C1.3.2		ii) Sewer Pump Station sump overflow pipeline (225mm Ø concrete)	m	40	178.18	7 127	20
C1.3.3		iii) Basin 9 outlet pipeline (825mm Ø concrete)	m	80	285.09	22 807	20
C1.4	PS C 8.2.8	Demolish And Remove Structures/Buildings And Dismantle Steelwork, Etc					
C1.4.1		i) Basin 9 concrete inlet structure from 1350mm Ø pipeline (10 m² in size and up to 300mm thick concrete)	Sum	1	2 106	2 106	00
C1.4.2		ii) Basin 9 concrete outlet structure to 825mm Ø pipeline (9 m³ in size and up to 300mm thick concrete)	Sum	1	1 895.40	1 895	40
C1.4.3		iii) Existing 4m deep brick manhole on the existing 825mm Ø outflow pipeline where the new BP9 OUT2 manhole will be constructed.	Sum	1	3 064.33	3 064	33
C1.5	PS C 8.2.9	Transport materials and debris to dumping / spoil / compost facility and dump (Provisional)					
C1.5.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (40 km)	t.km	6,200	2.52	13 104	00
TOTAL CARRIED FORWARD						143 400	52

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						143 400	52
C1.5.2		ii) Demolished material from items listed under PS C 8.2.7 to spoil at landfill or other approved spoil site (30 km)	t.km	1,110	2·52	2 797	20
C1.5.3		iii) Demolished material from items listed under PS C 8.2.8 to spoil at landfill or other approved spoil site (30 km)	t.km	1,500	2·52	3 780	00
C1.5.4		iv) Reeds and vegetation removed from within Basin 9 and spoiled at compost facility (40 km)	t.km	2,480	2·52	6 249	60
C1.5.5		v) Reed root-stock removed below ground from within Basin 9 and spoiled at compost facility (40 km)	t.km	9,240	2·52	23 284	80
C1.5.6		vi) Contaminated reed root-stock removed below ground from within Basin 9 and spoiled at landfill facility (30 km)	t.km	1,305	2·52	3 288	60
C1.5.7		vii) Rubbish and debris removed from the levelled waste stockpile next to the Basin 9 inlet and spoiled at landfill facility (30 km)	t.km	450	2·52	1 134	00
C1.5.8		viii) Soil material screened out from the Reed root-stock removed from within Basin 9 and spoiled at Apollo brick quarry or other approved spoil site (6 km)	m³.km	10,950	6·55	71 722	50
C1.5.9		ix) Soil material screened out from the contaminated reed root-stock removed from within Basin 9 and spoiled at Apollo brick quarry or other approved spoil site (6 km)	m³.km	1,170	6·55	7 663	50
C1.5.10		x) Soil material screened out from the levelled waste stockpile adjacent to the Basin 9 inlet and spoiled at Apollo brick quarry or other approved spoil site (6 km)	m³.km	210	6·55	1 375	50
C1.6	PS C 8.2.10	Remove and Replace Topsoil	m²	740	101·68	75 243	20
C1.7	PS C 8.2.12	Remove And Re-erect Existing Fences					
C1.7.1		i) Stock-proof fences (1,4m high)	m		162	Rate Only	
C1.8	PS C 8.2.14	Clearance and removal of reed beds and other water plants within the basins					
C1.8.1		i) Reeds and vegetation removed from within Basin 9	ha	1.2	13 616·72	16 340	06
C1.8.2		ii) Reed root-stock removed below ground from within Basin 9	ha	1.1	13 616·72	14 978	39
C1.8.3		iii) Contaminated reed root-stock removed below ground from within Basin 9	ha	0.1	13 616·72	1 361	67
TOTAL CARRIED FORWARD						372 619	54

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						372 619,	54
C1.9	PS C 8.2.15	Extra over items PS C 8.2.13 and PS C 8.2.14 for screening of soil / sediment material from root-stock (rhizomes) / plant material					
C1.9.2		i) Reed root-stock removed below ground from within Basin 9	m³	6,500	67.56	439 149	00
C1.9.3		ii) Contaminated reed root-stock removed below ground from within Basin 9	m³	720	67.56	48 643,	20
C1.10	PS C 8.2.16	Removal and spoil of existing levelled waste dump material adjacent to the Basins	m³	50	42.23	2 111,	50
C1.11	PS C 8.2.17	Extra over items PS C 8.2.16 for screening of rubbish / debris from existing levelled waste dump adjacent to the Basins	m³	50	67.56	3 378,	00
C1.12	PS C 8.2.18	Co-disposal charges					
C1.12.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (R160/t)	Prov Sum	1	20,800.00	20,800	00
C1.12.2		ii) Demolished material from items listed under PS C 8.2.7 to spoil at landfill or other approved spoil site (R710/t)	Prov Sum	1	26,270.00	26,270	00
C1.12.3		iii) Demolished material from items listed under PS C 8.2.8 to spoil at landfill or other approved spoil site (R710/t)	Prov Sum	1	35,500.00	35,500	00
C1.12.4		iv) Reeds and vegetation removed from within Basin 9 and spoiled at compost facility (R160/t)	Prov Sum	1	9,920.00	9,920	00
C1.12.5		v) Reed root-stock removed below ground from within Basin 9 and spoiled at compost facility (R160/t)	Prov Sum	1	36,960.00	36,960	00
C1.12.6		vi) Contaminated reed root-stock removed below ground from within Basin 9 and spoiled at landfill facility (R710/t)	Prov Sum	1	30,885.00	30,885	00
C1.12.7		vii) Rubbish and debris removed from the levelled waste stockpile next to the Basin 9 inlet and spoiled at landfill facility (R710/t)	Prov Sum	1	10,650.00	10,650	00
C1.13	PS C 8.2.19	Mark-up / Overhead costs, surcharge and profit on PS C 8.2.18					
C1.13.1		i) Organic material from general clearing and grubbing operation to spoil at compost facility (R160/t)	%	20,800	0.04	832,	00
C1.13.2		ii) Demolished material from items listed under PS C 8.2.7 to spoil at landfill or other approved spoil site (R710/t)	%	26,270	0.04	1 050,	80
TOTAL CARRIED FORWARD						1 038 760,	04

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD							
C1.13.3		iii) Demolished material from items listed under PS C 8.2.8 to spoil at landfill or other approved spoil site (R710/t)	%	35,500	0·04	1 420,	00
C1.13.4		iv) Reeds and vegetation removed from within Basin 9 and spoiled at compost facility (R160/t)	%	9,920	0·04	396,	80
C1.13.5		v) Reed root-stock removed below ground from within Basin 9 and spoiled at compost facility (R160/t)	%	36,960	0·04	1 478,	40
C1.13.6		vi) Contaminated reed root-stock removed below ground from within Basin 9 and spoiled at landfill facility (R710/t)	%	30,885	0·04	1 235,	40
C1.13.7		vii) Rubbish and debris removed from the levelled waste stockpile next to the Basin 9 inlet and spoiled at landfill facility (R710/t)	%	10,650	0·04	426,	00
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
	PS DB 8.3.2	Excavation for items listed under C1.3					
C1.14	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 125mm and up to 700 mm diam. for total trench depth:					
C1.14.1		Exceeding 0,0 m but not exceeding 1,0 m	m	——	151.75	Rate Only	
C1.14.2		Exceeding 1,0 m but not exceeding 2,0 m	m	20	227.63	4 552,	60
C1.14.3		Exceeding 2,0 m but not exceeding 3,0 m	m	20	476.80	9 536,	00
C1.14.4		Exceeding 3,0 m but not exceeding 4,0 m	m	——	920.81	Rate Only	
		Over 700mm and up to 1000 mm diam. for total trench depth:					
C1.14.5		Exceeding 0,0 m but not exceeding 1,0 m	m	——	217.32	Rate Only	
C1.14.6		Exceeding 1,0 m but not exceeding 2,0 m	m	10	325.98	3 259,	80
C1.14.7		Exceeding 2,0 m but not exceeding 3,0 m	m	10	640.72	6 407,	20
C1.14.8		Exceeding 3,0 m but not exceeding 4,0 m	m	60	1150.31	69 018,	60
TOTAL CARRIED FORWARD						1136 490,	84

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1 136 499	84
		Over 1000mm and up to 2000 mm diam. for total trench depth:					
C1.14.9		Exceeding 0,0 m but not exceeding 1,0 m	m		314.74	Rate Only	
C1.14.10		Exceeding 1,0 m but not exceeding 2,0 m	m		472.11	Rate Only	
C1.14.11		Exceeding 2,0 m but not exceeding 3,0 m	m	3	884.28	2 652	84
C1.14.12		Exceeding 3,0 m but not exceeding 4,0 m	m	10	1471.28	14 912	80
C1.15	8.3.2	b) Extra-over items listed in C1.14 above for:					
C1.15.1		Intermediate excavation	m³	10	21.11	211	10
C1.15.2		Hard rock excavation	m³	1	450.07	450	07
	SANS 1200 LE	**STORMWATER DRAINAGE**					
C1.16	PS LE 8.2.21	Brick up of pipe ends					
C1.16.1		i) Sewer pump station sump overflow pipeline (230mm brick wall in 225mm Ø pipe x 2)	m²	0.1	918.00	91	80
C1.16.2		ii) Temporary stormwater diversion pipeline (345mm brick wall in 825mm Ø pipe x 2)	m²	1.7	918.00	1 560	60
TOTAL CARRIED FORWARD						1 [illegible] 370	05

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1156370	05
	SANS1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
C2.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
C2.1.1		i) Detention and conditioning basin to stockpile	m³	7,900	42·23	333617	00
C2.1.2		ii) Detention and conditioning basin to embankment and platform fill compacted to 90% (100% for sand) of MOD AASHTO density	m³	850	83·00	70 550	00
C2.1.3		iii) Detention and conditioning basin to spoil at Atlantis Sand Mine (No compaction)	m³	64,000	42·23	2702720	00
C2.1.4		iv) Detention and conditioning basin to spoil at Apollo Bricks Atlantis (No compaction)	m³	27,300	42·23	1152879	00
C2.2	8.3.2	b) Extra-over for:					
C2.2.1		1) intermediate excavation	m³	1,500	21·11	31665	00
C2.2.2		2) hard rock excavation	m³		450·07	Rate Only	
C2.2.3		3) boulder excavation, Class A	m³		162·00 ~~450·07~~ #f	Rate Only	
C2.2.4		4) boulder excavation, Class B	m³		162·00 ~~450~~ #f	Rate Only	
C2.3	PS D 8.3.2	c) Hand excavation in all materials and use for embankment or backfill or dispose, as ordered					
C2.3.1		i) Detention and conditioning basin to stockpile	m³	10	191·08	1910	80
C2.4	PS D 8.3.2	d) Extra-over for hand excavation in					
C2.4.1		1) intermediate excavation	m³	1	162·00	162	00
C2.4.2		2) hard rock excavation	m³		702·00	Rate Only	
C2.4.3		3) boulder excavation, Class A	m³		270·00	Rate Only	
C2.4.4		4) boulder excavation, Class B	m³		270·00	Rate Only	
C2.5	PS D 8.3.2	e) Fill from stockpile to					
C2.5.1		i) Embankment fill compacted to 90% (100% for sand) of MOD AASHTO density	m³	3,000	83·00	249000	00
C2.5.2		ii) Conditioning Basin clean sand layer (No compaction)	m³	2,950	62·24	183608	00
TOTAL CARRIED FORWARD						5882481	85

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						588248	85
C2.5.3		iii) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	210	83.00	17430	00
C2.5.4		iv) Spoil (No compaction) at Atlantis Sand Mine	m³	1,000	42.23	42230	00
C2.6	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement)	m³	10	284.44	2844	40
C2.7	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	100	42.23	4223	00
C2.8	PS D 8.3.2	h) Preparation of exposed excavated surfaces					
C2.8.1		i) Detention Pond floor	m²	6,700	6.12	41004	00
C2.8.2		ii) Conditioning Pond floor	m²	9,200	6.12	56304	00
C2.8.3		iii) Rip Rap Rock Berm base	m²	1,600	6.12	9792	00
C2.8.4		iv) Fill embankment base	m²	2,400	6.12	14688	00
C2.8.5		v) Detention and Conditioning Pond cut embankments	m²	9,300	6.12	56916	00
C2.8.6		vi) Rip Rap Rock Berm cut embankments	m²	1,400	6.12	8568	00
C2.9	8.3.6	Overhaul					
C2.9.1		a) Limited overhaul	m³	93,020	6.55	609281	00
C2.9.2		b) Long overhaul	m³.km	248,730	6.55	1629181	50
C2.10	8.3.8	**Existing Services**					
C2.10.1	PS D 8.3.8.1	c) Excavate by hand in soft material to expose service	m³	20	132.85	2657	00
	PS D 8.3.8.1	d) Extra-over PS D 8.3.8.1(c) for excavation in					
C2.10.2		1) intermediate excavation	m³	1	21.11	21	11
C2.11	PS D 8.3.11	Grassing Or Other Vegetation Cover					
C2.11.1		i) Wetland Vegetation	m²	8,800	8.61	75768	00
C2.11.2		ii) Dry bed vegetation	m²	2,500	4.63	11575	00
C2.12	PS D 8.3.14	Shaping and Trimming of Earthworks	m²	14,200	2.58	36636	00
C2.13	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	15,000	6.48	97200	00
TOTAL CARRIED FORWARD						899880	86

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						8978 800	86
C2.14	PS D 8.3.16	Filter Stone					
C2.14.1		i) 19mm single sized stone	m³	10	686.99	6 869	90
C2.15	PS D 8.3.19	Removal And Reinstatement Of Existing Grass Areas	m²	100	4.63	463	00
C2.16	PS D 8.3.20	Reinstatement OF Shrubs	No	100	112.54	11 254	00
C2.17	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls in Dam	m³	100	298.36	29836	00
C2.18	PS D 8.3.22	Placing of Protection Layer on Geotextile for Rip Rap	m³	175	75.49	13210	75
C2.19	PS D 8.5	Clay Layers in Detention and Conditioning Ponds					
C2.19.1	PS D 8.5.1	Clay Layer on Pond Floors and Horizontal Sections	m³	4,800	225.57	1082736	00
C2.19.2	PS D 8.5.2	Clay Layer on Pond Side Slopes	m³	1,950	225.57	439861	50
TOTAL CARRIED FORWARD						10183032	01

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						10183032	01
	SABS 1200 DK	**GABIONS AND PITCHING**					
C3.1	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
C3.1.1		i) Grade 1, Kaytech Grade A10 or equivalent below Rip Rap	m²	1,700	56·94	96798	00
C3.2	PS DK 8.2.8	Rip rap rock sourced from commercial sources	m³	1,650	826·48	1363692	00
TOTAL CARRIED FORWARD						11643522	01

BASIN 9 - SCHEDULE 2C - DETENTION AND CONDITIONING PONDS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1164352	01
		ROADS (GENERAL)					
	SANS 1200 ME	**SECTION : SUBBASE**					
C4.1	8.3.3	Construct gravel subbase course with material from commercial sources or designated borrow areas					
C4.1.1		i) 200mm Thick G6 on embankment side slopes compacted with plate compactor (5 passes)	m³	1,400	447.72	626808	00
C4.1.2		ii) 200mm Thick G6 on embankment crest compacted to at least 95% of MOD AASHTO density	m³	390	447.72	174610	80
TOTAL CARRIED FORWARD TO SUMMARY						1244940	81

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
D1.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
D1.1.1		i) Inlet woks to spoil at Apollo Bricks Atlantis	m³	4,500	42,23	190035	00
D1.2	8.3.2	b) Extra-over for:					
D1.2.1		1) intermediate excavation	m³	40	21,11	844	40
D1.2.2		2) hard rock excavation	m³	——	450,07	Rate Only	
D1.2.3		3) boulder excavation, Class A	m³	——	162,00	Rate Only	
D1.2.4		4) boulder excavation, Class B	m³	——	162,00	Rate Only	
D1.3	PS D 8.3.2	c) Hand excavation in all materials and use for embankment or backfill or dispose, as ordered					
D1.3.1		i) Inlet woks to spoil at Apollo Bricks Atlantis	m³	10	191,08	1910	80
D1.4	PS D 8.3.2	d) Extra-over for hand excavation in					
D1.4.1		1) intermediate excavation	m³	1	162,00	162	00
D1.4.2		2) hard rock excavation	m³	——	702,00	Rate Only	
D1.4.3		3) boulder excavation, Class A	m³	——	270,00	Rate Only	
D1.4.4		4) boulder excavation, Class B	m³	——	270,00	Rate Only	
D1.5	PS D 8.3.2	e) Fill from stockpile to					
D1.5.1		i) Fill low lying areas as indicated by the engineer, compacted to 98% (100% for sand) of Mod AASHTO	m³	35	83,00	2905	00
D1.6	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction	m³	20	284,44	5688	80
D1.7	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	20	42,23	844	60
TOTAL CARRIED FORWARD						202390	60

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						202396	60
	8.3.3	**Restricted Excavation**					
D1.8	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and spoil at Apollo Bricks Atlantis					
D1.8.1		i) 0 m up to 2 m	m³	500	255,11	127555	00
D1.8.2		ii) Exceeding 2 m up to 4 m	m³	25	255,11	6377	75
D1.9	8.3.3	b) Extra-over for:					
D1.9.1		1) intermediate excavation	m³	5	21,11	105	55
D1.9.2		2) hard rock excavation	m³		460,07	Rate Only	
D1.9.3		3) boulder excavation, Class A	m³		162,00	Rate Only	
D1.9.4		4) boulder excavation, Class B	m³		162,00	Rate Only	
D1.10	8.3.6	Overhaul					
D1.10.1		a) Limited overhaul	m³	5,055	6,55	33110	25
D1.10.2		b) Long overhaul	m³.km	27,800	6,55	182090	00
D1.11	8.3.8	**Existing Services**					
D1.11.1	PS D 8.3.8.1	c) Excavate by hand in soft material to expose service	m³	10	132,85	1328	50
	PS D 8.3.8.1	d) Extra-over PS D 8.3.8.1(c) for excavation in					
D1.11.2		1) intermediate excavation	m³	1	21,11	21	11
	PS D 8.3.8.2	d) Services crossing excavations					
D1.11.3		i) Sewer Rising Main	No	1	1080,00	1080	00
	PS D 8.3.8.2	e) Services that adjoin excavations					
D1.11.4		i) Sewer Rising Main	m	25	108,00	2700	00
D1.12	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	420	36,63	15405	60
D1.13	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	1,400	6,48	9072	00
D1.14	PS D 8.3.16	Filter Stone					
D1.14.1		i) 19mm single sized stone	m³	100	686,99	68699	00
TOTAL CARRIED FORWARD						649985	36

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						649965	36
D1.15	PS D 8.3.17	Shore Excavation Opposite Structure Or Service					
D1.15.1		i) 0 m up to 1m deep	m	10	108,00	1080	00
D1.15.2		ii) 1 m up to 2m deep	m	10	216,00	2160	00
D1.15.3		iii) 2 m up to 3m deep	m	30	324,00	9720	00
D1.16	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls at Inlet Works	m³	50	298,36	14918	00
TOTAL CARRIED FORWARD						677813	36

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						677813	36
	SABS 1200 DK	**GABIONS AND PITCHING**					
D2.1	8.2.2	Gabions Refer to the drawings for the Gabion Specification for the following box sizes:					
D2.1.1		i) 2m x 1m x 0.5m (No = 2)	m³	4	2038,21	8152	84
D2.1.2		ii) 4m x 1m x 0.5m (No = 4)	m³	48	2038,21	97854	08
D2.2	8.2.2	Reno Mattresses Refer to the drawings for the Reno Mattress Specification for the following mattress sizes:					
D2.2.1		i) 2m x 1m x 0.3m (No = 2)	m³	7.2	2313.40	16656	48
D2.2.2		ii) 6m x 2m x 0.3m (No = 6)	m³	219.6	2313.40	508022	64
D2.3	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
D2.3.1		i) Grade 1, Kaytech Grade A6 or equivalent for Gabions and Reno Mattresses	m²	900	24,75	22275	00
TOTAL CARRIED FORWARD						1330754	40

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1330754	40
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
D3.1		PLANE VERTICAL					
D3.1.1		All faces of shear wall	m²	280	535,12	149833	60
D3.1.2		All faces of 800mm thick contamination pond, slit trap and grit trap floor slab	m²	125	535,12	66890	00
D3.1.3		All faces of contamination pond's walkway access ramp walls	m²	20	535,12	10702	40
D3.1.4		All faces of contamination pond's walkway access ramp floor slab	m²	10	535,12	5351	20
D3.1.5		All faces contamination pond's walkway access ramp corbel	m²	1.5	535,12	802	68
D3.1.6		External faces of contamination pond and litter trap's access ramp floor slab (including DP RC thickening)	m²	25	535,12	13378	00
D3.1.7		External faces of contamination pond's access ramp walls	m²	90	535,12	48160	80
D3.1.8		External faces of silt trap's access ramp floor slab (including DP RC thickening)	m²	23	535,12	12307	76
D3.1.9		External faces of silt trap's access ramp walls	m²	78	535,12	41739	36
D3.1.10		All faces of the retaining floor slab	m²	60	535,12	32107	20
D3.1.11		Vertical faces of the retaining wall	m²	150	535,12	80268	00
D3.1.12		External faces of contamination ponds perimeter wall	m²	80	535,12	42809	60
D3.1.13		External faces of monitoring and inlet manholes floor slab	m²	10	535,12	5351	20
D3.1.14		External faces of monitoring and inlet manholes walls	m²	40	535,12	21404	80
D3.2		PLANE SLOPING					
D3.2.1		Sloping faces of retaining walls	m²	150	626,49	93973	50
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
D3.3		PLANE VERTICAL					
TOTAL CARRIED FORWARD						1955834	50

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1955834	50
D3.3.1		All internal faces of contamination pond's walkway access ramp walls (including full internal face)	m²	35	535,12	18729	20
D3.3.2		External faces of combined contamination pond and litter trap access ramp walls	m²	25	535,12	13378	00
D3.3.3		External faces of silt trap's access ramp walls	m²	25	535,12	13378	00
D3.3.4		Vertical faces of the retaining wall	m²	27	535,12	14448	24
D3.3.5		External faces of contamination ponds perimeter wall	m²	12	535,12	6421	44
D3.3.6		External faces of monitoring and inlet manholes	m²	8	535,12	4280	96
D3.3.7		External faces of contamination pond's two perimeter overflow weir walls	m²	85	535,12	45485	20
D3.4		PLANE SLOPING					
D3.4.1		Sloping faces of retaining walls	m²	29	626,49	18168	21
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
D3.5		PLANE VERTICAL					
D3.5.1		All internal faces of contamination pond perimeter overflow weir walls	m²	80	626,49	50119	20
D3.5.2		All faces of access walkway support columns	m²	100	626.49	62649	00
D3.5.3		All face of access walkway down stand walls	m²	250	626,49	156622	50
D3.5.4		All face of access walkway floor slab	m²	47	626,49	29445	03
D3.5.5		All face of access walkway upstand wall	m²	200	626,49	125298	00
D3.5.6		All faces of the low level overflow weir	m²	85	626.49	53251	65
D3.5.7		All faces of division wall between the silt trap and litter trap	m²	75	626,49	46986	75
D3.5.8		All faces of the vertical portion of litter trap cantilever wall	m²	38	626,49	23806	62
D3.5.9		All internal faces monitoring and inlet manhole 250mm thick walls	m²	60	626,49	37589	40
D3.6		PLANE SLOPING					
D3.6.1		All internal faces of contamination pond perimeter walls	m²	110	626,49	68913	90
TOTAL CARRIED FORWARD						2744805	80

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						2744805	80
D3.6.2		All internal faces of contamination pond main access ramp	m²	110	626.49	68913	90
D3.6.3		All internal faces of silt trap main access ramp	m²	110	626.49	68913	90
D3.6.4		All internal faces of litter trap main access ramp	m²	110	626.49	68915	90
D3.6.5		All internal faces of division wall between the contamination pond and the litter trap / silt trap	m²	370	626.49	231801	30
D3.6.6		Soffit of cantilever wall inside the litter trap	m²	30	626,49	18794	70
D3.7		PLANE HORIZONTAL					
D3.7.1		Soffit of access walkway floor slab	m²	130	574,65	74704	50
	PS G 8.2.6	**BOX OUT HOLES/ FORM VOIDS**					
D3.8	PS G 8.2.6 (b)	Cubical of volume:					
D3.8.1		ii) Over 0.01m³ and up to and including 0.05m³ (500 x 300mm Recess)	No	6	270,00	1620	00
D3.8.2		iii) Over 0.05m³ and up to and including 0.15m³ (1500 x 300mm Opening)	No	1	378,00	378	00
D3.8.3		iv) Over 0.15m³ (1000 x 3000mm Opening)	No	1	486,00	486	00
D3.9	PS G 8.2.7	Chamfers Exceeding 20 mm x 20 mm, Grooves And Rebates					
D3.9.1		75mm x 75mm Chamfer on both sides of division wall between the silt trap and litter trap (Refer to detail B)	m	15	27,00	405	00
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
D3.10	8.3.1	HIGH TENSILE STEEL BARS					
D3.10.1		i) Y25 mm dia. : basic price	t	207.14	16502,40	3418307	14
D3.11		EXTRA OVER ITEM D3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
D3.11.1		i) Y10 mm	t	10.56		Included	
D3.11.2		ii) Y12 mm	t	22.79		Included	
D3.11.3		iii) Y16 mm	t	127.81		Included	
D3.11.4		iv) Y20 mm	t	45.99		Included	
D3.12	8.3.1	MILD STEEL BARS					
TOTAL CARRIED FORWARD						6698044	14

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						6980 44	14
D3.12.1		i) R25 mm dia. : basic price	t	51.79	16502,40	854659	30
D3.13		EXTRA OVER ITEM D3.12.1(PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
D3.13.1		i) R8 mm	t	5.18		Included	
D3.13.2		ii) R10 mm	t	5.18		Included	
D3.13.3		iii) R12 mm	t	25.89		Included	
D3.13.4		iv) R16 mm	t	15.54		Included	
D3.13.5		v) R20 mm	t	5.18		Included	
	8.4	**SCHEDULED CONCRETE ITEMS**					
D3.14	8.4.2	BLINDING LAYER IN GRADE 20/19 CONCRETE 100 mm					
D3.14.1		i) Horizontal	m³	10	1659,00	16590	00
D3.15	8.4.3	NO-FINES CONCRETE STRENGTH: NF19 FOR FILLING OF DRAINAGE PIPES					
D3.15.1		i) For filling of 50mm diameter pipes in division wall between the silt and litter trap	m³	0.3	1659,00	497	70
D3.16	8.4.3	STRENGTH CONCRETE 25/19					
D3.16.1		i) Mass concrete for pipe supports	m³	2	1738,38	3476	76
D3.16.2		ii) Mass concrete where instructed by the engineer	m³	10	1738,38	17383	80
D3.16.3		iii) Mass concrete for underneath RC retaining wall footings	m³	3	1738,38	5215	14
D3.17	8.4.3	STRENGTH CONCRETE 25/10					
D3.17.1		i) Benching	m³	3	1738,38	5215	14
D3.18	8.4.3	STRENGTH CONCRETE 35/19					
D3.18.1		Floor slab and toe of contamination pond, litter and grit trap (Excluding Access ramps)	m³	1,150	1964,10	2258715	00
D3.18.2		3 x 300 x 1000mm DP RC shear key	m³	45	1964,10	88384	50
D3.18.3		Perimeter RC walls of contamination pond sloping from 250mm to 400mm thick	m³	59	1964,10	115881	90
D3.18.4		250mm thick RC front overflow weir walls on contamination pond's perimeter	m³	23	1964,10	45174	30
D3.18.5		250mm thick RC low overflow weir in contamination pond	m³	11	1964,10	21605	10
TOTAL CARRIED FORWARD						~~8800858~~ 10130842,78	38

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						10130842	78
D3.18.6		Contamination pond access walkway's 500 x 500mm RC columns	m³	13	1964,10	25533	30
D3.18.7		Contamination pond access walkway's 250mm thick RC wall in between RC columns	m³	33	1964,10	64815	30
D3.18.8		Contamination pond access walkway's 250mm thick RC floor slab	m³	33	1964,10	64815	30
D3.18.9		Contamination pond access walkway's 250mm thick RC wall	m³	25.0	1964,10	49102	50
D3.18.10		450mm DP RC retaining wall footings	m³	60.0	1964,10	117846	00
D3.18.11		DP RC retaining walls sloping 400mm to 250mm	m³	60.0	1964,10	117846	00
D3.18.12		Contamination Pond Access Walkway Ramp's 250mm thick RC floor slab	m³	7.5	1964,10	14730	75
D3.18.13		Contamination Pond Access Walkway Ramp's RC walls 250mm thick	m³	4.5	1964,10	8838	45
D3.18.14		Contamination Pond Access Walkway Ramp's 150 x 150mm DP RC corbel	m³	1.0	1964,10	1964	10
D3.18.15		Contamination pond and silt trap access ramp 300mm thick RC floor slab (including DP RC thickening)	m³	92.0	1964,10	180697	20
D3.18.16		Contamination pond and silt trap access ramp RC walls sloping from 300mm to 250mm	m³	47.0	1964,10	92312	70
D3.18.17		Litter trap access ramp 300mm thick RC floor slab (including DP RC thickening)	m³	46.0	1964,10	90348	60
D3.18.18		Litter trap access ramp RC walls sloping from 400mm to 250mm	m³	32.0	1964,10	62851	20
D3.18.19		Division wall between the contamination pond and silt/litter trap	m³	46.0	1964,10	90348	60
D3.18.20		Litter trap 250mm thick RC cantilever wall for fixing one side of litter grids	m³	11.0	1964,10	21605	10
D3.18.21		250mm thick RC division wall between litter trap and silt trap	m³	10.0	1964,10	19641	00
D3.18.22		250mm thick RC walls for monitoring manhole and inlet manhole	m³	11.0	1964,10	21605	10
D3.18.23		300mm thick RC floor slab for monitoring manhole, inlet manhole and false floor	m³	3.0	1964,10	5892	30
D3.19	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
TOTAL CARRIED FORWARD						11181836	28

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						1118636	28
D3.19.1		Upper surfaces of retaining wall footings 2000mm wide toe	m²	150	25,83	3874	50
D3.20	PS 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:				3926	35
D3.20.1		Top of walls (Excluding overflow weirs)	m²	95	41.33	~~3926~~	~~50~~
D3.20.2		Contamination pond's access walkway and two access ramps	m²	150	41,33	6199	50
D3.21	PS 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
D3.21.1		Floor slab of contamination pond, grit trap and silt trap	m²	1,350	51,66	69741	00
D3.21.2		Top of overflow weirs and division wall	m²	40	51,66	2066	40
D3.21.3		Top of litter trap inclined cantilever wall	m²	30	51,66	1549	80
D3.21.4		Floor slab of inlet and monitoring manhole	m²	15	51,66	774	90
D3.22	PS 8.4.4(d)	BROOMED FINISH TO UPPER SURFACES OF:					
D3.22.1		Floor slabs of access ramps	m²	380	62,00	23560	00
	PS G 8.5	**JOINTS: NOTE THAT FORMWORK IS INCLUDED IN THE COST OF THE JOINT**					
D3.23		EXPANSION JOINTS					
D3.23.1		Joint type 1: Between perimeter walls (sloping from 400mm to 250mm) of the contamination pond / grit trap / slit trap and access ramp walls sloping from 400mm to 250mm	m	30	417,80	12534	00
D3.23.2		Joint type 2: Between access ramp floor slabs (300mm thick) of the contamination pond / grit trap / slit trap	m	20	486,55	9731	00
D3.23.3		Joint type 3: Between perimeter walls (sloping from 400mm to 250mm) of the contamination pond and access walkway's ramp walls	m	10	417,80	4178	00
D3.23.4		Joint type 4: Between access walkway's ramp floor slabs (300mm thick) of the contamination pond	m	5	486,55	2432	75
D3.23.5		Joint type 5: Between perimeter walls (sloping from 400mm to 250mm) of the contamination and the retaining walls sloping from 400mm to 250mm	m	12	417,80	5013	60
TOTAL CARRIED FORWARD						1132 7218	08

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						11 327 745,	16
D3.23.6		Joint type 6: Between 2000mm wide toe (800mm thick) of the contamination pond and the retaining wall floor slab	m	10	587.93	5 879,	30
D3.24	PS G 8.9	TESTING STRUCTURES FOR WATERTIGHTNESS					
D3.24.1		Pond 9 Inlet Structure	Sum	1	43200.00	43 200,	00
D3.25	PS G 8.11	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
D3.25.1		50mm diameter	No	15	108.00	1 620,	00
D3.25.2		1350mm diameter	No	1	1080.00	1 080,	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
D3.26	PS HA 8.3.7	Handrails	m	295	1435.92	423 596,	40
D3.27	PS HA 8.3.8	Pre-Fabricated UHMWPE Grids at Litter Trap					
D3.27.1		i) Supply and installation of uHDPE litter grids complete with frames (1780 x 1478)	Sum	10	4374.00	43 740	00
D3.27.2		ii) Supply and installation of uHDPE litter grids complete with frames (500 x 300)	Sum	6	364.50	2 187,	00
D3.28	PS HA 8.3.13	Step irons for Concrete Structures	No	12	162.00	1 944,	00
	SANS 1200 LD	**SEWERS**					
D3.29	PS LD 8.2.15	Installation of oil absorbent boom	m	90	83.20	7 488,	00
TOTAL CARRIED FORWARD						~~14 510 527 198, 38~~ 11 861 952, 78	

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						11 857 952,	78
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
	8.3.3	Treatment of road-bed					
D4.1	8.3.3	a) Road-bed preparation and compaction of material below the inlet structure floor					
D4.1.1		1) 150mm G7 Material compacted to 98% of Modified AASHTO density (100% for sand)	m³	295	40-78	12 039	10
	SANS 1200 ME	**SECTION : SUBBASE**					
D4.2	8.3.3	Construct gravel subbase course with material from commercial sources or designated borrow areas					
D4.2.1		i) 150mm layer G5 material compacted to 98% Modified AASHTO density below inlet structure	m³	240	452-90	108 69[illegible],	00
TOTAL CARRIED FORWARD						11 978 68[illegible],	88

BASIN 9 - SCHEDULE 2D - INLET WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						11 978 678,	58
		STORMWATER DRAINAGE					
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
D5.1	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	10	230.93	2 309,	30
	SANS 1200 LE	**STORMWATER DRAINAGE**					
D5.2	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
D5.2.1		i) Monitoring Manhole, Dwg No C00686-ZF-DRD-0009-003, 1.7m deep	No.	1	23200,84	23 200,	84
D5.3	PS LE 8.2.14	Supply And Install Subsurface Drains According To Drawings	m	110	327.27	35 999,	70
TOTAL CARRIED FORWARD TO SUMMARY						12 040 188,	72

BASIN 9 - SCHEDULE 2E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
E1.1	PS D 8.3.2	e) Fill from stockpile to					
E1.1.1		i) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	1	83-00	83,	00
E1.2	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction	m³	1	284.44	284,	44
E1.3	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	1	42.23	42,	23
	8.3.3	**Restricted Excavation**					
E1.4	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials to stockpile					
E1.4.1		i) 0 m up to 2 m	m³	22	285.11	5 612,	42
E1.5	8.3.3	b) Extra-over for:					
E1.5.1		1) intermediate excavation	m³	1	21.11	21,	11
E1.5.2		2) hard rock excavation	m³		450.01	Rate Only	
E1.5.3		3) boulder excavation, Class A	m³		162.00	Rate Only	
E1.5.4		4) boulder excavation, Class B	m³		162.00	Rate Only	
E1.6	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	10	36.68	366,	80
E1.7	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	15	6.48	97,	20
E1.8	PS D 8.3.16	Filter Stone					
E1.8.1		i) 19mm single sized stone	m³	2	686.99	1 373,	98
E1.9	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls at Outlet Structure	m³	2	298.36	596,	72
TOTAL CARRIED FORWARD						8 477,	90

BASIN 9 - SCHEDULE 2E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						8 477,	90
	SABS 1200 DK	**GABIONS AND PITCHING**					
E2.1	8.2.2	Gabions Refer to the drawings for the Gabion Specification for the following box sizes:					
E2.1.1		i) 1m x 1m x 0.5m (No = 1)	m³	1	2038.24	2 038,	24
E2.1.2		ii) 1m x 1m x 1m (No = 1)	m³	2	2038.24	4 076,	42
E2.1.3		iii) 2m x 1m x 1m (No = 2)	m³	4	2038.24	8 152,	84
E2.1.4		iv) 3m x 1m x 1m (No = 3)	m³	6	2038.24	12 229,	26
E2.2	8.2.2	Reno Mattresses Refer to the drawings for the Reno Mattress Specification for the following mattress sizes:					
E2.2.1		i) 3m x 1m x 0.3m (No = 3)	m³	0.9	2313.40	2 082,	06
E2.3	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
E2.3.1		i) Grade 1, Kaytech Grade A6 or equivalent for Gabions and Reno Mattresses	m²	30	24.75	742,	50
TOTAL CARRIED FORWARD						37 799,	19

BASIN 9 - SCHEDULE 2E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						37 799,	19
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
E3.1		PLANE VERTICAL					
E3.1.1		All faces of outlet structure floor slab	m²	7	535-12	3 745,	84
E3.1.2		All faces of outlet structure key	m²	2.5	535-12	1 337,	80
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
E3.2		PLANE VERTICAL					
E3.2.1		All external faces of outlet structure	m²	36	535-12	19 264,	32
E3.2.2		All faces of precast concrete slabs (1700mm x 675mm)	m²	5	535-12	2 675 ~~2 669,~~	60
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
E3.3		PLANE VERTICAL					
E3.3.1		All internal faces of outlet structure	m²	28	626.49	17 54,	72
E3.4		PLANE HORIZONTAL					
E3.4.1		Soffit of outlet structure	m²	1.0	574.65	574,	65
	PS G 8.2.6	**BOX OUT HOLES/ FORM VOIDS**					
E3.5	PS G 8.2.6 (b)	CUBICAL OF VOLUME					
E3.5.1		i) Over 0.15m³ (2200 x 600mm Opening)	No	1	486.00	486,	00
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
E3.6	8.3.1	HIGH TENSILE STEEL BARS					
E3.6.1		i) Y25 mm dia. : basic price	t	1.65	16502.40	27 228,	96
		EXTRA OVER ITEM E3.6.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
E3.6.2		i) Y10 mm	t	0.06		Included	
E3.6.3		ii) Y12 mm	t	1.59		Included	
E3.6.4		iii) Y16 mm	t	0.00		Included	
E3.6.5		iv) Y20 mm	t	0.00		Included	
TOTAL CARRIED FORWARD						110 654,	08

BASIN 9 - SCHEDULE 2E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						110 654,	08
E3.7	8.3.1	MILD STEEL BARS					
E3.7.1		i) R25 mm dia. : basic price	t	0.41	16502.40	6 765,	98
		EXTRA OVER ITEM E3.7.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
E3.7.2		i) R8 mm	t	0.04		Incl.	
E3.7.3		ii) R10 mm	t	0.04		Incl.	
E3.7.4		iii) R12 mm	t	0.21		Incl.	
E3.7.5		iv) R16 mm	t	0.12		Incl.	
E3.7.6		v) R20 mm	t	0.04		Incl.	
	8.4	**SCHEDULED CONCRETE ITEMS**					
E3.8	8.4.3	STRENGTH CONCRETE 25/19					
E3.8.1		i) Mass concrete where instructed by the engineer	m³	5	1738.38	8 691,	90
E3.9	8.4.3	STRENGTH CONCRETE 35/19					
E3.9.1		Floor slab of outlet structure	m³	5.5	1964.10	10 802,	55
E3.9.2		Outlet structure key	m³	0.5	1964.10	982,	05
E3.9.3		Outlet structure walls	m³	9.0	1964.10	17 676,	90
E3.9.4		Precast concrete slabs (1700mm x 675mm)	m³	1.5	2946.14	4 419,	21
E3.10	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
E3.10.1		To upper surfaces of concealed work and surfaces to receive benching or screed	m²	1.2	25.83	31,	00
E3.11	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
E3.11.1		Top of walls	m²	2.5	41.33	103,	33
E3.11.2		Top and bottom of precast concrete slabs (1700mm x 500mm)	m²	11	41.33	454,	63
E3.12	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
E3.12.1		Floor slab of outlet structure	m²	18	51.66	929,	88
TOTAL CARRIED FORWARD						161 511,	51

BASIN 9 - SCHEDULE 2E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						161 151,	61
E3.13	PS G 8.11	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
E3.13.1		825mm diameter	No	1	216.00	216,	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
E3.14	PS HA 8.3.13	Step irons for Concrete Structures	No	5	162.00	810,	00
TOTAL CARRIED FORWARD						162 537,	61

BASIN 9 - SCHEDULE 2E - OUTLET STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						162 537,	91
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
E4.1	8.3.3	Treatment of road-bed					
	8.3.3	a) Road-bed preparation and compaction of material below the outlet structure floor					
E4.1.1		1) G7 Material compacted to 98% of Modified AASHTO density (100% for sand)	m³	2.5	40·78	101,	95
TOTAL CARRIED FORWARD TO SUMMARY						162 639,	86

BASIN 9 - SCHEDULE 2F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
F1.1	PS D 8.3.2	e) Fill from stockpile to					
F1.1.1		i) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	10	83.00	830,	00
F1.2	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction	m³	2	284.44	568,	88
F1.3	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	10	42.23	422	30
F1.4	PS D 8.3.2	h) Preparation of exposed excavated surfaces					
F1.4.1		i) Subgrade below Gabion and Reno Mattress erosion protection downstream of outlet	m²	270	23.25	6 277,	50
	8.3.3	**Restricted Excavation**					
F1.5	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials to stockpile					
F1.5.1		i) 0 m up to 2 m	m³	2	255.11	510,	22
F1.6	8.3.3	b) Extra-over for:					
F1.6.1		1) intermediate excavation	m³		21.4	Rate Only	
F1.6.2		2) hard rock excavation	m³		450.07	Rate Only	
F1.6.3		3) boulder excavation, Class A	m³		162.00	Rate Only	
F1.6.4		4) boulder excavation, Class B	m³		162.00	Rate Only	
F1.7	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	40	36.68	1467,	20
F1.8	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	10	6.48	64	80
F1.9	PS D 8.3.16	Filter Stone					
F1.9.1		i) 19mm single sized stone	m³	2	686.99	1 373	98
F1.10	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls at Outlet Structure	m³	2	298.36	596,	72
TOTAL CARRIED FORWARD						12 111,	60

BASIN 9 - SCHEDULE 2F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
BROUGHT FORWARD						12 111,	60
F1.11	PS D 8.3.23	Filling of Voids in Reno Mattresses	m^3	30	135.22	4 056,	60
TOTAL CARRIED FORWARD						16 168,	20

BASIN 9 - SCHEDULE 2F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	c
BROUGHT FORWARD						16 168,	20
	SABS 1200 DK	**GABIONS AND PITCHING**					
F2.1	8.2.2	Gabions Refer to the drawings for the Gabion Specification for the following box sizes:					
F2.1.1		i) 1m x 1m x 1m (No = 1)	m³	2	2038.24	4 076,	48
F2.1.2		ii) 4m x 1m x 1m (No = 4)	m³	24	2038.24	48 917,	04
F2.2	8.2.2	Reno Mattresses Refer to the drawings for the Reno Mattress Specification for the following mattress sizes:					
F2.2.1		i) 2m x 1m x 0.3m (No = 2)	m³	6.6	2313 40	15 268,	44
F2.2.2		ii) 6m x 2m x 0.3m (No = 6)	m³	79.2	2313 40	183 224,	28
F2.3	8.2.4	Geotextile Refer to PS DK 3.1.3 and the drawings for the Geotextile Specification					
F2.3.1		i) Grade 1, Kaytech Grade A6 or equivalent for Gabions and Reno Mattresses	m²	340	24.75	8 415,	00
TOTAL CARRIED FORWARD						276 066,	36

BASIN 9 - SCHEDULE 2F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						276 066,	38
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
F3.1		PLANE VERTICAL					
F3.1.1		All faces of floor slabs (including keys)	m²	110	535.12	58 863,	20
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
F3.2		PLANE VERTICAL					
F3.2.1		Faces of low concrete wall on overflow spillway	m²	40	626.49	25 059,	60
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
F3.3	PS G 8.3.2	High-Tensile Welded Mesh					
F3.3.1		i) Mesh Ref. 617 in concrete coping	t	1.7	2224.33	37 776,	26
	8.4	**SCHEDULED CONCRETE ITEMS**					
F3.4	8.4.3	STRENGTH CONCRETE 35/19					
F3.4.1		i) Mass concrete where instructed by the engineer	m³	2	1964.10	3 928,	20
F3.4.2		ii) Overflow spillway	m³	39	1964.10	76 599,	90
F3.4.3		iii) Ramps onto overflow spillway	m³	9	1964.10	17 676,	90
F3.4.4		iv) Cut-off walls	m³	10.5	1964.10	20 623	05
F3.4.5		v) Concrete walls	m³	6.5	1964.10	12 766,	65
	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
F3.5	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
F3.5.1		Top of walls	m²	7	41.33	289,	31
F3.6	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
F3.6.1		Horizontal face of concrete overflow spillway	m²	155	5166	8 007,	30
F3.7	PS 8.4.4(d)	BROOMED FINISH TO UPPER SURFACES OF:					
F3.7.1		Floor slabs of access ramps	m²	40	62.00	2 480,	00
TOTAL CARRIED FORWARD						540 136,	75

BASIN 9 - SCHEDULE 2F - OVERFLOW SPILLWAY STRUCTURE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
BROUGHT FORWARD						540 126,	75
	PS G 8.5	**JOINTS: NOTE THAT FORMWORK IS INCLUDED IN THE COST OF THE JOINT**					
F3.8		KEY JOINTS					
F3.8.1		Joint type 1: Key Joint on horizontal and vertical face of concrete overflow spillway	m	60	417.50	25 068,	00
TOTAL CARRIED FORWARD TO SUMMARY						565 194,	75

BASIN 9 - SCHEDULE 2G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200D	**EARTHWORKS**					
	8.3.2	**Bulk Excavation**					
G1.1	PS D 8.3.2	a) Excavate in all materials and use for embankment or backfill or dispose, as ordered					
G1.1.1		i) Evaporation Pond to spoil at Atlantis Sand Mine	m³	330	42.23	13 935	90
G1.2	8.3.2	b) Extra-over for:					
G1.2.1		1) intermediate excavation	m³	5	21.11	105	55
G1.2.2		2) hard rock excavation	m³		450.07	Rate Only	
G1.2.3		3) boulder excavation, Class A	m³		162.00	Rate Only	
G1.2.4		4) boulder excavation, Class B	m³		162.00	Rate Only	
G1.3	PS D 8.3.2	c) Hand excavation in all materials and use for embankment or backfill or dispose, as ordered					
G1.3.1		i) Evaporation Pond to spoil at Atlantis Sand Mine	m³	1	191.08	191	08
G1.4	PS D 8.3.2	d) Extra-over for hand excavation in					
G1.4.1		1) intermediate excavation	m³		162.00	Rate Only	
G1.4.2		2) hard rock excavation	m³		702.00	Rate Only	
G1.4.3		3) boulder excavation, Class A	m³		270.00	Rate Only	
G1.4.4		4) boulder excavation, Class B	m³		270.00	Rate Only	
G1.5	PS D 8.3.2	e) Fill from stockpile to					
G1.5.1		i) Fill low lying areas as indicated by the engineer, compacted to 90% (100% for sand) of Mod AASHTO	m³	5	83.00	415	00
G1.6	PS D 8.3.2	f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction	m³	2	284.44	568	88
G1.7	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	20	42.23	844	60
TOTAL CARRIED FORWARD						16 061	01

BASIN 9 - SCHEDULE 2G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT C
BROUGHT FORWARD						16 061	01
	8.3.3	**Restricted Excavation**					
G1.8	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and spoil at Atlantis Sand Mine					
G1.8.1		i) 0 m up to 2 m	m³	3	255.11	765	33
G1.9	8.3.3	b) Extra-over for:					
G1.9.1		1) intermediate excavation	m³		21.11	Rate Only	
G1.9.2		2) hard rock excavation	m³		450.07	Rate Only	
G1.9.3		3) boulder excavation, Class A	m³		162.00	Rate Only	
G1.9.4		4) boulder excavation, Class B	m³		162.00	Rate Only	
G1.10	8.3.6	Overhaul					
G1.10.1		a) Limited overhaul	m³	330	6.55	2 161	50
G1.10.2		b) Long overhaul	m³.km	495	6.55	3 242	25
G1.11	8.3.8	**Existing Services**					
G1.11.1	PS D 8.3.8.1	c) Excavate by hand in soft material to expose service	m³	2	132.85	265	70
	PS D 8.3.8.1	d) Extra-over PS D 8.3.8.1(c) for excavation in					
G1.11.2		1) intermediate excavation	m³		21.11	Rate Only	
G1.12	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	60	36.68	2 200	80
G1.13	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m²	100	6.48	648	00
G1.14	PS D 8.3.16	Filter Stone					
G1.14.1		i) 19mm single sized stone	m³	2	686.99	1373.	98
G1.15	PS D 8.3.17	Shore Excavation Opposite Structure Or Service					
G1.15.1		i) 0 m up to 1m deep	m	2	108.00	216	00
G1.15.2		ii) 1 m up to 2m deep	m	2	216.00	432	00
G1.16	PS D 8.3.21	Temporary Works: Sand Bags for Coffer Walls at Inlet Works	m²	5	298.36	1491	80
TOTAL CARRIED FORWARD						28 858	37

BASIN 9 - SCHEDULE 2G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						28 858	37
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
G2.1		PLANE VERTICAL					
G2.1.1		All faces of evaporation pond floor slab	m²	20	535.12	10 702	40
G2.1.2		All faces of evaporation pond sump floor slab	m²	2	535.12	1 070	24
G2.1.3		All faces of evaporation pond access ramp floor slab (including DP RC thickening)	m²	8	535.12	4 280	96
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
G2.2		PLANE VERTICAL					
G2.2.1		All external faces of evaporation pond walls	m²	70	535.12	37 458	40
G2.2.2		All external faces of evaporation pond sump walls	m²	7	535.12	3 745	84
G2.2.3		All external faces of evaporation pond access ramp walls	m²	8	535.12	4 280	96
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
G2.3		PLANE VERTICAL					
G2.3.1		All internal faces of evaporation pond walls	m²	70	626.69	43854	30
G2.3.2		All internal faces of evaporation pond sump walls	m²	7	626.69	4385	43
G2.3.3		All internal faces of evaporation pond access walls	m²	8	626.49	5011	92
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
G2.4	8.3.1	HIGH TENSILE STEEL BARS					
G2.4.1		i) Y25 mm dia. : basic price	t	13.63	16 502.66	224 927	71
G2.5		EXTRA OVER ITEM G2.4.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
G2.5.1		i) Y10 mm	t	0.67		included	
G2.5.2		ii) Y12 mm	t	12.96		included	
TOTAL CARRIED FORWARD						368 576	57

BASIN 9 - SCHEDULE 2G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						368 576	57
G2.5.3		iii) Y16 mm	t	0.00		included	
G2.5.4		iv) Y20 mm	t	0.00		included	
G2.6	8.3.1	MILD STEEL BARS					
G2.6.1		i) R25 mm dia. : basic price	t	3.41	16 502.40	56 273	18
G2.7		EXTRA OVER ITEM G2.6.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
G2.7.1		i) R8 mm	t	0.34		included	
G2.7.2		ii) R10 mm	t	0.34		included	
G2.7.3		iii) R12 mm	t	1.70		included	
G2.7.4		iv) R16 mm	t	1.02		included	
G2.7.5		v) R20 mm	t	0.34		included	
	8.4	**SCHEDULED CONCRETE ITEMS**					
G2.8	8.4.3	STRENGTH CONCRETE 25/19					
G2.8.1		i) Mass concrete where instructed by the engineer	m³	10	1738.58	17 383	80
G2.9	8.4.3	STRENGTH CONCRETE 35/19					
G2.9.1		Floor slab of evaporation pond	m³	22	1964.10	43 210	20
G2.9.2		Floor slab of evaporation pond sump	m³	1.0	1964.10	1964	10
G2.9.3		Floor slab of evaporation pond (including DP RC thickening)	m³	24	1964.10	47 138	40
G2.9.4		Perimeter walls of evaporation pond (excluding access ramp and sump walls)	m³	58	1964.10	113 917	80
G2.9.5		Perimeter walls of evaporation pond sump	m³	2	1964.10	3928	20
G2.9.6		Perimeter wall of evaporation pond access ramp	m³	10	1964.10	19 641	00
G2.10	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
G2.10.1		To upper surfaces of concealed work and surfaces to receive benching or screed	m²	10	25.83	258	30
G2.11	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
G2.11.1		Top of walls	m²	23	41.33	950	59
G2.12	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
TOTAL CARRIED FORWARD						673 742	10

BASIN 9 - SCHEDULE 2G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						673 242	10
G2.12.1		Floor slab of evaporation pond	m²	310	51.66	16 014	60
G2.12.2		Floor slab of evaporation pond sump	m²	2	51.66	103	32
G2.13	PS G 8.4.4(d)	BROOMED FINISH TO UPPER SURFACES OF:					
G2.13.1		Floor slabs of access ramp	m²	30	62.00	1 860	00
	PS G 8.5	**JOINTS: NOTE THAT FORMWORK IS INCLUDED IN THE COST OF THE JOINT**					
G2.14		EXPANSION JOINTS					
G2.14.1		Joint type 1: Between evaporation pond perimeter walls and access ramp walls	m	3	417.80	1253	40
G2.14.2		Joint type 2: Between evaporation pond floor slab and access ramp floor slab	m	6	486.55	2 919	30
G2.14.3		Joint type 3: Between evaporation pond perimeter wall and evaporation pond sump walls	m	6	417.80	2 506	80
G2.14.4		Joint type 4: Between evaporation pond floor slab and evaporation pond sump walls	m	6	486.55	2919	30
G2.15	PS G 8.11	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
G2.15.1		160mm diameter	No	3	216.00	648	00
G2.15.2		300mm diameter	No	1	216.00	216	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
G2.16	PS HA 8.3.7	Handrails	m	85	1 435.91	122 053	20
G2.17	PS HA 8.3.13	Step irons for Concrete Structures	No	3	162.00	486	00
TOTAL CARRIED FORWARD						824 222	01

BASIN 9 - SCHEDULE 2G - EVAPORATION POND

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						824 222	02
		ROADS (GENERAL)					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
	8.3.3	Treatment of road-bed					
G3.1	8.3.3	a) Road-bed preparation and compaction of material below the evaporation pond floor					
G3.1.1		1) 150mm Rip and re-compacted in situ material compacted to 93% of MOD AASHTO density (100% for sand)	m³	56	40.78	2283	68
	SANS 1200 ME	**SECTION : SUBBASE**					
G3.2	8.3.3	Construct gravel subbase course with material from commercial sources or designated borrow areas					
G3.2.1		i) 150mm layer C4 (G5 material stabilized with 3% Portland Cement per maximum dry density of the G5 material) compacted to 95% Modified AASHTO density below evaporation pond	m³	56	452.90	25 362	40
G3.3	8.3.5	Process subbase material by the following processes, as relevant, and use in the subbase					
G3.3.1		d) Stabilization	m³	56	33.42	1 871	52
G3.4	8.3.8	Stabilizing agent					
G3.4.1		b) Portland Cement	t	3.4	1879.79	6253	29
TOTAL CARRIED FORWARD TO SUMMARY						859 994	91

BASIN 9 - SCHEDULE 2H - STORMWATER BYPASS AND TEMPORARY DIVERSION PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
		SITE CLEARANCE					
H1.1	8.3.1(a)	Clear vegetation and trees of girth up to 1 m	m	200	5.12	1026	00
	PS DB 8.3.2	**Excavation**					
H1.2	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 700mm and up to 1000 mm diam. for total trench depth:					
H1.2.1		Exceeding 0,0 m but not exceeding 1,0 m	m	——	217.32	Rate Only	
H1.2.2		Exceeding 1,0 m but not exceeding 2,0 m	m	75	325.98	24 448	50
H1.2.3		Exceeding 2,0 m but not exceeding 3,0 m	m	200	640.72	128 144	00
H1.2.4		Exceeding 3,0 m but not exceeding 4,0 m	m	110	1 150.31	126 534	10
H1.3	8.3.2	b) Extra-over items listed in H1.2 above for:					
H1.3.1		Intermediate excavation	m^3	50	21.11	1055	50
H1.3.2		Hard rock excavation	m^3	10	450.07	4 500	70
H1.4	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m^3	20	42.23	844	60
H1.5	PS DB 8.3.2	d) Hand excavation and backfill	m^3	10	255.11	2551	10
H1.6	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m^3	10	132.85	1328	50
H1.7	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m^3	200	42.23	8 446	00
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
H1.8	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
H1.8.1		a) from other necessary excavations on site	m^3	——	42.23	Rate Only	
H1.8.2		b) by importation from designated borrow pits	m^3	——	42.23	Rate Only	
H1.8.3		c) by importation from commercial or off-site sources selected by the Contractor	m^3	——	702.00	Rate Only	
H1.8.4		d) stockpile	m^3	100	42.23	4 223	00
H1.9	PS DB 8.3.3.3	Compaction in road reserves	m^3	5	122.26	611	30
TOTAL CARRIED FORWARD						303 711	30

BASIN 9 - SCHEDULE 2H - STORMWATER BYPASS AND TEMPORARY DIVERSION PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						303 711	30
H1.10	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m^3	5	230.93	1154	65
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
H1.11	PS DB 8.3.4	1) Shoring on one side					
H1.11.1		i) 0 to 1m deep	m	—	81.00	Rate Only	
H1.11.2		ii) 1 to 2m deep	m	10	81.00	810	00
H1.11.3		iii) 2 to 3m deep	m	20	108.00	2160	00
H1.11.4		iv) 3 to 4m deep	m	20	378.00	7560	00
H1.12		2) Shoring on both sides					
H1.12.1		i) 0 to 1m deep	m	—	162.00	Rate Only	
H1.12.2		ii) 1 to 2m deep	m	10	162.00	1620	00
H1.12.3		iii) 2 to 3m deep	m	20	216.00	4320	00
H1.12.4		iv) 3 to 4m deep	m	20	324.00	6480	00
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
H1.13		1) In trenches					
H1.13.1		i) Class 75D Concrete 825mm Ø	m	150	1960.86	294129	00
		EXISTING SERVICES					
H1.14	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
H1.14.1	PS DB 8.3.5	a) Existing services that intersect a trench	No	5	1080.00	5400	00
H1.14.2	PS DB 8.3.5	b) Existing services that adjoin a trench	m	100	108.00	10800	00
TOTAL CARRIED FORWARD						638 144	95

BASIN 9 - SCHEDULE 2H - STORMWATER BYPASS AND TEMPORARY DIVERSION PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						638 144	95
	PS DB 8.3.6	FINISHING					
H1.15	PS DB 8.3.6.1	Instatement of road layers	m²	14	162.00	2268	00
H1.15.1		i) Asphalt of thickness 40mm in roadway	m²	14	378.00	5 292	00
H1.16	PS DB 8.3.6.1	Extra-over DB 8.3.6.1 for imported material	m³	2	162.00	324	00
H1.17	PS DB 8.3.8	Cutting Of Existing Bituminous Surfacing	m	20	54.00	1080	00
TOTAL CARRIED FORWARD						647 108	95

BASIN 9 - SCHEDULE 2H - STORMWATER BYPASS AND TEMPORARY DIVERSION PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						647 108	95
	SANS 1200 LB	**BEDDING (PIPES)**					
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
H2.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
H2.1.1		c) Bedding for wet conditions	m³	20	378.00	7560	00
H2.2	PS LB 8.2.2.4	From stockpile (Provisional)					
H2.2.1		a) Selected granular material	m³	20	42.23	844	60
H2.2.2		b) Selected fill material	m³	80	42.23	3378	40
H2.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
H2.3.1		a) Limited overhaul	m³	———	6.55	Rate Only	
H2.3.2		b) Long overhaul	m³.km	———	6.55	Rate Only	
TOTAL CARRIED FORWARD						658 891	95

BASIN 9 - SCHEDULE 2H - STORMWATER BYPASS AND TEMPORARY DIVERSION PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						658 891	95
	SANS 1200 LE	**STORMWATER DRAINAGE**					
H3.1	PS LE 8.2.1	Supply And Lay Concrete Pipe Culverts					
H3.1.1		i) Class 75D Concrete 825mm diameter on Class C bedding	m	385	1960.80	754 931	10
H3.2	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
H3.2.1		i) Manhole BP2, Dwg No C00686-ZF-DRD-0009-001, 2.2m deep	No.	1	37798.33	37 798	33
H3.2.2		ii) Manhole BP3, Dwg No C00686-ZF-DRD-0009-001, 2.8m deep	No.	1	33 966.85	33 966	85
H3.2.3		iii) Manhole BP4, Dwg No C00686-ZF-DRD-0009-002, 1.9m deep	No.	1	32 685.39	32 685	39
H3.2.4		iv) Manhole BP5, Dwg No C00686-ZF-DRD-0009-002, 2.3m deep	No.	1	29 609.36	29 609	36
H3.2.5		v) Manhole BP6, Dwg No C00686-ZF-DRD-0009-001, 3.5m deep	No.	1	38 868 57	38 868	57
H3.2.6		vi) Manhole BP9OUT2, Dwg No C00686-ZF-DRD-0009-002, 4.0m deep	No.	1	65 618.44	65 618	44
H3.2.7		vii) Manhole TDIV 1, Dwg No C00686-ZF-DRD-0009-003, 1.7m deep	No.	1	24 793.47	24 793	47
TOTAL CARRIED FORWARD TO SUMMARY						1676 963	40

BASIN 9 - SCHEDULE 2I - STORMWATER INFLOW PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
	PS DB 8.3.2	**Excavation**					
I1.1	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material Over 1000mm and up to 2000 mm diam. for total trench depth:					
I1.1.1		Exceeding 0,0 m but not exceeding 1,0 m	m	9	314.74	2832.	66
I1.1.2		Exceeding 1,0 m but not exceeding 2,0 m	m	5	472.11	2360.	55
I1.1.3		Exceeding 2,0 m but not exceeding 3,0 m	m	10	884.28	8842.	80
I1.1.4		Exceeding 3,0 m but not exceeding 4,0 m	m	4	1491.28	5965.	12
I1.2	8.3.2	b) Extra-over items listed in I1.2 above for:					
I1.2.1		Intermediate excavation	m³	2	21.11	42.	22
I1.2.2		Hard rock excavation	m³	——	450.07	Rate Only	
I1.3	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m³	10	42.23	422.	30
I1.4	PS DB 8.3.2	d) Hand excavation and backfill	m³	5	255.11	1275.	55
I1.5	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m³	5	132.85	664.	25
I1.6	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m³	20	42.23	844.	60
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
I1.7	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
I1.7.1		a) from other necessary excavations on site	m³	——	42.23	Rate Only	
I1.7.2		b) by importation from designated borrow pits	m³	——	42.23	Rate Only	
I1.7.3		c) by importation from commercial or off-site sources selected by the Contractor	m³	——	702.-	Rate Only	
I1.7.4		d) stockpile	m³	10	42.23	422.	30
I1.8	PS DB 8.3.3.3	Compaction in road reserves	m³	——	122.26	Rate Only	
I1.9	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	5	230.93	1154.	65
TOTAL CARRIED FORWARD						24 827.	-

BASIN 9 - SCHEDULE 2I - STORMWATER INFLOW PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						24 827.	-
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
I1.10	PS DB 8.3.4	1) Shoring on one side					
I1.10.1		iv) 2 to 3m deep	m	10	108.-	1080.	-
I1.11		2) Shoring on both sides					
I1.11.1		iv) 2 to 3m deep	m	10	216.-	2160.	-
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
I1.12		1) In trenches					
I1.12.1		i) Class 75D Concrete 1350mm Ø	m	10	4381.09	43810.	90
		EXISTING SERVICES					
I1.13	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
I1.13.1	PS DB 8.3.5	a) Existing services that intersect a trench	No	1	1080.-	1080.	-
TOTAL CARRIED FORWARD						72 957.	90

BASIN 9 - SCHEDULE 2I - STORMWATER INFLOW PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						72 957.	90
	SANS 1200 LB	**BEDDING (PIPES)**					
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
I2.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
I2.1.1		c) Bedding for wet conditions	m³	10	378.-	3780.	-
I2.2	PS LB 8.2.2.4	From stockpile (Provisional)					
I2.2.1		a) Selected granular material	m³	5	42.23	211.	15
I2.2.2		b) Selected fill material	m³	5	42.23	211.	15
I2.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
I2.3.1		a) Limited overhaul	m³		6.55	Rate Only	
I2.3.2		b) Long overhaul	m³.km		6.55	Rate Only	
TOTAL CARRIED FORWARD						77 160.	20

BASIN 9 - SCHEDULE 2I - STORMWATER INFLOW PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						77160.	20
	SANS 1200 LE	**STORMWATER DRAINAGE**					
I3.1	PS LE 8.2.1	Supply And Lay Concrete Pipe Culverts					
I3.1.1		i) Class 75D Concrete 1350mm diameter on Class C bedding	m	28	4381.09	122 670.	52
		BP1: OPEN CONCRETE MANHOLE STRUCTURE, Dwg No C00686-ZF-DRD-0009-001					
	SANS 1200D	**EARTHWORKS**					
	8.3.3	**Restricted Excavation**					
I3.2	8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose					
I3.2.1		i) 2 m up to 4 m	m³	45.0	255.11	11479.	95
I3.3	8.3.3	b) Extra-over for:					
I3.3.1		1) intermediate excavation	m³	4	21.11	84.	44
I3.3.2		2) hard rock excavation	m³		450.07	Rate Only	
I3.4	PS D 8.3.2	g) Excavate and dispose of unsuitable material from excavation bottom	m³	5	42.23	211.	15
I3.5	PS D 8.3.9	Extra-over for Backfill or for Fill Material against Structures	m³	20	36.68	733.	60
I3.6	PS D 8.3.15	Temporary Works: Control Water Inflow And / Or Ground Water	m³	13	6.48	84.	24
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
	8.2	**SCHEDULED FORMWORK ITEMS**					
	8.2.1	ROUGH FORMWORK (MEASURED FROM 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
I3.7		PLANE VERTICAL					
I3.7.1		All faces of floor slab	m²	5.0	535.12	2675.	60
I3.7.2		All external faces of walls	m²	39.0	535.12	20869.	68
TOTAL CARRIED FORWARD						235969.	38

BASIN 9 - SCHEDULE 2I - STORMWATER INFLOW PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						235969.	38
	8.2.2	SMOOTH FORMWORK (MEASURED TO 150mm BELOW FINISHED GROUND LEVEL WHERE APPLICABLE)					
I3.8		PLANE VERTICAL					
I3.8.1		All external faces of walls	m²	3.0	535.12	1605.	36
	8.2.3	SPECIAL SMOOTH REPAIRED AND RUBBED FORMWORK					
I3.9		PLANE VERTICAL					
I3.9.1		All internal faces of walls	m²	36.0	626.49	22553.	64
	8.3	**SCHEDULED REINFORCEMENT ITEMS**					
I3.10	8.3.1	HIGH TENSILE STEEL BARS					
I3.10.1		i) Y25 mm dia. : basic price	t	1.80	16502.40	29 704.	32
I3.11		EXTRA OVER ITEM I3.10.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
I3.11.1		i) Y10 mm	t	0.18		Incl.	
I3.11.2		ii) Y12 mm	t	0.90		Incl.	
I3.11.3		iii) Y16 mm	t	0.54		Incl.	
I3.11.4		iv) Y20 mm	t	0.18		Incl.	
I3.12	8.3.1	MILD STEEL BARS					
I3.12.1		i) R25 mm dia. : basic price	t	0.45	16502.40	7426.	08
I3.13		EXTRA OVER ITEM I3.12.1 (PROVISIONAL QUANTITIES) FOR BARS OF DIAMETER:					
I3.13.1		i) R8 mm	t	0.05		Incl.	
I3.13.2		ii) R10 mm	t	0.05		Incl.	
I3.13.3		iii) R12 mm	t	0.23		Incl.	
I3.13.4		iv) R16 mm	t	0.14		Incl.	
I3.13.5		v) R20 mm	t	0.05		Incl.	
TOTAL CARRIED FORWARD						297258.	78

BASIN 9 - SCHEDULE 2I - STORMWATER INFLOW PIPELINE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						297258.	78
	8.4	**SCHEDULED CONCRETE ITEMS**					
I3.14	8.4.3	STRENGTH CONCRETE 25/19					
I3.14.1		i) Mass concrete where instructed by the engineer	m³	2.00	1738.38	3476.	76
I3.15	8.4.3	STRENGTH CONCRETE 25/10					
I3.15.1		i) Benching in manhole	m³	8.00	1738.38	13907.	04
I3.16	8.4.3	STRENGTH CONCRETE 35/19					
I3.16.1		i) Floor slab	m³	5.00	1964.10	9820.	50
I3.16.2		ii) Walls	m³	11.00	1964.10	21605.	10
I3.17	PS G 8.4.4	**UNFORMED SURFACE FINISHES**					
I3.17.1		i) To upper surfaces of concealed work and surfaces to receive benching or screed	m²	12.00	25.83	309.	96
I3.18	PS G 8.4.4(a)	WOOD FLOAT FINISH TO UPPER SURFACES OF:					
I3.18.1		i) Top of walls	m²	4.00	41.33	165.	32
I3.19	PS G 8.4.4(b)	STEEL FLOAT FINISH TO UPPER SURFACES OF:					
I3.19.1		i) Benching	m²	16.00	51.66	826.	56
I3.20	PS G 8.10	BUILDING PIPES INTO CONCRETE WORK (IRRESPECTIVE OF TYPE)					
I3.20.1		i) 1350mm diameter	No	2.00	1080.-	2160.	-
I3.20.2		ii) 825mm diameter	No	1.00	216.-	216.	-
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
I3.21	PS HA 8.3.13	Step irons for Concrete Structures	No	5	162.-	810.	-
TOTAL CARRIED FORWARD TO SUMMARY						350556.	62

BASIN 9 - SCHEDULE 2J - STORMWATER MAINTENANCE PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
	SANS 1200 DB	**SECTION : EARTHWORKS (PIPE TRENCHES)**					
		SITE CLEARANCE					
J1.1	8.3.1(a)	Clear vegetation and trees of girth up to 1 m	m	20	5.12	102.	40
	PS DB 8.3.2	**Excavation**					
J1.2	PS DB 8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material					
		Over 125mm and up to 700 mm diam. for total trench depth:					
J1.2.1		Exceeding 0,0 m but not exceeding 1,0 m	m	15	151.75	2276.	25
J1.2.2		Exceeding 1,0 m but not exceeding 2,0 m	m	30	227.63	6828.	90
J1.2.3		Exceeding 2,0 m but not exceeding 3,0 m	m	75	476.80	35760.	-
J1.2.4		Exceeding 3,0 m but not exceeding 4,0 m	m	20	920.81	18 416.	20
J1.3	8.3.2	b) Extra-over items listed in J1.2 above for:					
J1.3.1		Intermediate excavation	m³	10	21.11	211.	10
J1.3.2		Hard rock excavation	m³	———	450.07	Rate Only	
J1.4	PS DB 8.3.2	c) Excavate unsuitable material from trench bottom (Provisional)	m³	2	42.23	84.	46
J1.5	PS DB 8.3.2	d) Hand excavation and backfill	m³	5	255.11	1275.	55
J1.6	PS DB 8.3.2	e) Excavate by hand in soft material to expose existing services	m³	10	132.85	1328.	50
J1.7	PS DB 8.3.2	f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material	m³	50	42.23	2111.	50
	DB 8.3.3	**EXCAVATION ANCILLARIES**					
J1.8	PS DB 8.3.3.1	Make up deficiency in backfill material (Provisional)					
J1.8.1		a) from other necessary excavations on site	m³	———	42.23	Rate Only	
J1.8.2		b) by importation from designated borrow pits	m³	———	42.23	Rate Only	
J1.8.3		c) by importation from commercial or off-site sources selected by the Contractor	m³	———	702.-	Rate Only	
J1.8.4		d) stockpile	m³	30	42.23	1266.	90
J1.9	PS DB 8.3.3.3	Compaction in road reserves	m³	———	122.26	Rate Only	
TOTAL CARRIED FORWARD						69661.	76

BASIN 9 - SCHEDULE 2J - STORMWATER MAINTENANCE PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						69661.	76
J1.10	PS DB 8.3.3.5	Backfilling of culverts with soil cement	m³	5	230.93	1154.	65
	8.3.4	Particular Items					
	PS DB 8.3.4	a) Shore trench opposite structure or service					
J1.11	PS DB 8.3.4	1) Shoring on one side					
J1.11.1		i) 0 to 1m deep	m		81.-	Rate Only	
J1.11.2		ii) 1 to 2m deep	m	5	81.-	405.	-
J1.11.3		iii) 2 to 3m deep	m	5	108.-	540.	-
J1.11.4		iv) 3 to 4m deep	m	5	378.-	1890.	-
J1.12		2) Shoring on both sides					
J1.12.1		i) 0 to 1m deep	m		162.-	Rate Only	
J1.12.2		ii) 1 to 2m deep	m	5	162.-	810.	-
J1.12.3		iii) 2 to 3m deep	m	10	216.-	2160.	-
J1.12.4		iv) 3 to 4m deep	m	10	324.-	3240.	-
	PS DB 8.3.4	b) Temporary works : Control water inflow and or groundwater					
J1.13		1) In trenches					
J1.13.1		i) Class SN8 HDPE 350mm Ø	m	30	734.56	22036.	80
		EXISTING SERVICES					
J1.14	PS DB 8.3.5	Existing Services That Intersect Or Adjoin A Pipe Trench					
J1.14.1	PS DB 8.3.5	a) Existing services that intersect a trench	No	2	1080.-	2160.	-
J1.14.2	PS DB 8.3.5	b) Existing services that adjoin a trench	m	70	108.-	7560.	-
TOTAL CARRIED FORWARD						111 618.	21

BASIN 9 - SCHEDULE 2J - STORMWATER MAINTENANCE PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						111 618.	21
	SANS 1200 LB	**BEDDING (PIPES)**					
	PS LB 8.2.2	Supply Only Of Bedding By Importation					
J2.1	PS LB 8.2.2.3	From Commercial sources (Provisional)					
J2.1.1		c) Bedding for wet conditions	m³	5	378.-	1890.	-
J2.2	PS LB 8.2.2.4	From stockpile (Provisional)					
J2.2.1		a) Selected granular material	m³	10	42.23	422.	30
J2.2.2		b) Selected fill material	m³	10	42.23	422.	30
J2.3	PS LB 8.2.5	Overhaul of Material for Bedding Cradle and Selected Fill Blanket					
J2.3.1		a) Limited overhaul	m³		6.59	Rate Only	
J2.3.2		b) Long overhaul	m³.km		6.59	Rate Only	
TOTAL CARRIED FORWARD						114352.	81

BASIN 9 - SCHEDULE 2J - STORMWATER MAINTENANCE PIPELINES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						114352.	81
	SANS 1200 LE	**STORMWATER DRAINAGE**					
J3.1	PS LE 8.2.20	Supply And Lay HDPE Pipes					
		Supply, handle and lay on Class C bedding HDPE double layer pipe with smooth bore and corrugated externally					
J3.1.1		i) Class SN8 300 mm inside diameter	m	25	548.33	13708.	25
J3.1.2		ii) Class SN8 350 mm inside diameter	m	115	734.56	84474.	40
J3.2	PS LE 8.2.8	Supply And Install Manholes, Catchpits, And The Like					
J3.2.1		i) Manhole MNT 1, Dwg No C00686-ZF-DRD-0009-002, 2.4m deep	No.	1	27767.42	27767.	42
J3.2.2		ii) Manhole MNT 2, Dwg No C00686-ZF-DRD-0009-003, 2.7m deep	No.	1	29652.12	29652.	12
J3.2.3		iii) Manhole MNT 3, Dwg No C00686-ZF-DRD-0009-003, 3.0m deep	No.	1	31536.81	31536.	81
J3.2.4		iv) Manhole MNT 4, Dwg No C00686-ZF-DRD-0009-003, 3.1m deep	No.	1	32165.05	32165.	05
J3.2.5		v) Manhole DP2, Dwg No C00686-ZF-DRD-0009-003, 3.4m deep	No.	1	34049.74	34049.	74
TOTAL CARRIED FORWARD TO SUMMARY						367706.	60

BASIN 9 - SCHEDULE 2K - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
		PAVING					
	SANS 1200 DM	**SECTION : EARTHWORKS (ROADS, SUBGRADE)**					
K1.1	8.3.3	Treatment of road-bed					
	8.3.3	a) Road-bed preparation and compaction of material below paving (150mm deep) to					
		2) Minimum of 93% of modified AASHTO maximum density (100% for sand)					
K1.1.1		i) Inlet Works Platform and Access Bellmouth	m³	175	40·78	7 136	50
K1.1.2		ii) Basin 9 Embankment	m³	55	40·78	2 242	90
K1.1.3		iii) Evaporation Pond Platform	m³	105	40·78	4 281	90
K1.1.4		iv) Basin 9 Embankment at Outlet Structure	m³	15	40·78	611	70
	SANS 1200 ME	**SECTION : SUBBASE**					
K1.2	8.3.3	Construct the subbase course / shoulders / gravel wearing course with material from commercial sources					
		110mm G6 (Ferricrete) compacted to 95% of modified AASHTO density					
K1.2.1		i) Inlet Works Platform and Access Bellmouth	m³	125	447·72	55 965	00
K1.2.2		ii) Basin 9 Embankment	m³	40	447·72	17 908	80
K1.2.3		iii) Evaporation Pond Platform	m³	80	447·72	35 817	60
K1.2.4		iv) Basin 9 Embankment at Outlet Structure	m³	11	447·72	4 924	92
	SANS 1200 MJ	**SECTION : SEGMENTED PAVING**					
K1.4	PS MJ 8.2.2	Construction of Paving Complete (Armorflex HLP Paving or equivalent)					
K1.4.1		i) Inlet Works Platform and Access Bellmouth	m²	1,150	291·57	335 305	50
K1.4.2		ii) Basin 9 Embankment	m²	330	291·57	96 218	10
K1.4.3		iii) Evaporation Pond Platform	m²	690	291·57	201 183	30
K1.4.4		iv) Basin 9 Embankment at Outlet Structure	m²	95	291·57	27 699	15
TOTAL CARRIED FORWARD						789 295	37

BASIN 9 - SCHEDULE 2K - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						789 295	37
K1.5	8.2.3	Cutting Units to Fit Edge Restraints					
K1.5.1		i) Straight	m	365	37·80	13 797	00
	SANS 1200 MK	**SECTION : KERBING AND CHANNELING**					
K1.6	8.2.1	Concrete Kerbing					
K1.6.1		i) Type E1 precast Edging along Inlet Works Platform and Access Bellmouth	m	60	135·70	8 142	00
K1.6.2		ii) Type E1 precast Edging along Basin 9 Embankment	m	170	135·70	23 069	00
K1.6.3		iii) Type E1 precast Edging along Evaporation Pond Platform	m	200	135·70	27 140	00
K1.6.4		iv) Type E1 precast Edging along Basin 9 Embankment at Outlet Structure	m	55	135·70	7463	50
	SANS 1200 D	**SECTION : EARTHWORKS**					
K1.7	PS D 8.3.11	Grassing Or Other Vegetation Cover					
K1.7.1		i) Grass Hydroseeding of openings in paving at Inlet Works Platform and Access Bellmouth	m²	1,150	4·63	5 324	50
K1.7.2		ii) Grass Hydroseeding of openings in paving on Basin 9 Embankment	m²	330	4·63	1 527	90
K1.7.3		iii) Grass Hydroseeding of openings in paving at Evaporation Pond Platform	m²	690	4·63	3 194	70
K1.7.4		iv) Grass Hydroseeding of openings in paving at Basin 9 Embankment at Outlet Structure	m²	95	4·63	439	85
TOTAL CARRIED FORWARD						879 393	82

BASIN 9 - SCHEDULE 2K - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						879 393	82
		FENCES AND SLUICES					
	SANS 1200 C	**SITE CLEARANCE**					
K2.1	8.2.1	Clear and grub					
K2.1.1		i) Clear and grub for Concrete Palisade Fencing (3m wide strip)	m	345	15·35	5 295	75
K2.1.2		ii) Clear and grub for Galvanised Steel Razor 6 – Coil Stack Security Fencing (5m wide strip)	m	540	25·59	13 818	60
	SANS 1200 G	**CONCRETE (STRUCTURAL)**					
K2.2	PS G 8.10	Supply and Installation of 2,4 m high industrial type Concrete Palisade Fencing	m	345	1782	614 790	00
	SANS 1200 HA	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**					
K2.3	PS HA 8.3.9	Pre-Fabricated Stainless Steel Sluice Gates					
K2.3.1		i) 1350 x 1350mm, Off seat, 3500mm Max. operating head	No	1	108 394·33 NF	108 394	33
K2.3.2		ii) 825 x 825mm, On seat, 2000mm Max. operating head	No	1	72 809·80	72 809	80
K2.3.3		iii) 825 x 825mm, On seat, 3000mm Max. operating head	No	1	72 809·80	72 809	80
K2.4	PS HA 8.3.10	Pre-Fabricated Galvanised Steel Security Gates	No	2	29 700	59 400	00
K2.5	PS HA 8.3.11	Galvanised Steel Razor 6 – Coil Stack Security Fencing	m	540	367·20	198 288	00
K2.6	PS HA 8.3.12	Security Cages for protection of Sluice Gates and Monitoring equipment					
K2.6.1		i) Structure BP1, cage size is 5500 x 4500mm with 2500mm height	No	1	92 880	92 880	00
K2.6.2		ii) Inlet to litter trap & manhole for monitoring equipment, cage size is 5500 x 4500mm with 3000mm height	No	1	92 880	92 880	00
K2.6.3		iii) Outlet structure of Basin 9, cage size is 2500 x 2450mm with 2500mm height	No	1	59 400	59 400	00
TOTAL CARRIED FORWARD						1 390 766	29

BASIN 9 - SCHEDULE 2K - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	AMOUNT c
BROUGHT FORWARD						2 270 160	10
		SIGNS					
	SANS 1200 MM	**SECTION : ANCILLARY ROADWORKS**					
K3.1	PS MM 8.3.8	Road Signs					
K3.1.1		Health and Safety Signs (1.5mx1.5m)	No	2	4 912·27	9 824	54 MC
TOTAL CARRIED FORWARD TO SUMMARY						2 279 984	64

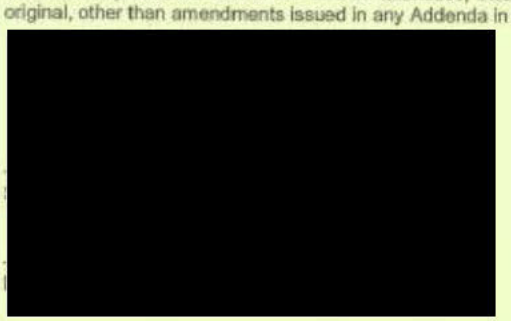
	SUMMARY OF BILL NO. 2	Page No.	Amount R	c
1	SCHEDULE 2A - PRELIMINARY AND GENERAL	152	6 556 168	52
2	SCHEDULE 2B - DAYWORK (HOURLY RATES)	157	0	00
3	SCHEDULE 2C - DETENTION AND CONDITIONING PONDS	167	12 444 940	81
4	SCHEDULE 2D - INLET WORKS	180	12 040 188	72
5	SCHEDULE 2E - OUTLET STRUCTURE	186	162 639	46
6	SCHEDULE 2F - OVERFLOW SPILLWAY STRUCTURE	191	565 204	75
7	SCHEDULE 2G - EVAPORATION POND	197	859 994	91
8	SCHEDULE 2H - STORMWATER BYPASS AND TEMPORARY DIVERSION PIPELINES	202	1 676 963	40
9	SCHEDULE 2I - STORMWATER INFLOW PIPELINE	208	350 556	02
10	SCHEDULE 2J - STORMWATER MAINTENANCE PIPELINES	212	367 706	60
11	SCHEDULE 2K - APPURTENANT WORKS (PAVING, FENCING, SLUICES, ETC.)	216	2 279 984	64
	SUB-TOTAL CARRIED FORWORD TO SUMMARY OF BILLS	**218**	37 304 347	83

	SUMMARY OF BILLS	Page No.	Amount R	c
1	TOTAL OF BILL NO. 1 – BASIN 6	148	56 189 723	32
2	TOTAL OF BILL NO. 2 – BASIN 9	216	37 304 347	83
	SUB-TOTAL	R	93 494 071	15
	CONTINGENCIES			
	Allow the sum of 10% (ten percent) of the above Sub-total for Contingencies to be spent as the Employer's Agent may direct and to be deducted in whole or in part if not required.	R	9 349 407	12
	TOTAL INCLUDING CONTINGENCIES	R	102 843 478	27
	VALUE ADDED TAX			
	ADD: VAT at the rate of 15%	R	15 426 521	74
	TENDERED TOTAL			
	Carried to part C1.1 Form of Offer and Acceptance	R	118 270 000	00

DECLARATION (In respect of completeness of Tender)

City of Cape Town
Tower Block, Civic Centre
12 Hertzog Boulevard
CAPE TOWN

I/we, the undersigned, do hereby declare that these are the properly priced Bills of Quantities forming Part C2.2 of this Contract Document containing 156 pages in consecutive order upon which my/our tender for **TENDER NO 97Q/2021/22..: CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9** has been based. If I/we have submitted a printed version of the Bills of Quantities, I/we warrant that no amendments have been made to it from the original, other than amendments issued in any Addenda in terms of Clause C.3.2 in Part T1.2 Tender Data.



PART C3: SCOPE OF WORK

C3.1 Description of the Works

C3.2 Engineering / Design

C3.3 Procurement

C3.4 Construction

C3.5 Management

C3.6 Annexes

Status

Should any requirement or provision in the parts of the Scope of Work conflict with any requirement of any Standardised Specification, particular specification or any drawings, the order of precedence, unless otherwise specified, is:

Drawings
Scope of Work (Parts C3.1, C3.4, C3.5 and C3.6)
Particular Specifications
SANS Standardised Specifications

Part C3.1: Description of the Works

CONTENTS

3.1.1 EMPLOYER'S OBJECTIVES
3.1.2 OVERVIEW OF THE WORKS
3.1.3 EXTENT OF THE WORKS
3.1.4 LOCATION OF THE WORKS
3.1.5 TEMPORARY WORKS

3.1.1 EMPLOYER'S OBJECTIVES

The City of Cape Town's objective is to augment the water supply to the City by means of recharging the Witzands Aquifer with treated stormwater run-offs originating from the Atlantis residential and industrial area. The purpose is to make use of as much as possible stormwater for this purpose and to upgrade the existing systems.

Phase 1 will entail the upgrade of Basins 6 and 9. The upgrade of Basin 6 shall take place first, followed by Basin 9 in a phased manner dictated by the capital project budget over the financial years of the contract.

3.1.2 OVERVIEW OF THE WORKS

Stormwater originating from the Atlantis development area can be divided in residential run-offs and industrial run-offs. The stormwater generated in the residential areas drains towards "dry" detention dams (Basins 1,2,3,and 4). The stormwater generated in the industrial area drain towards various "dry" and "wet" detention dams (Basins 5, 8, 9, 10 and 11).

Basins 8 and 11 form part of a separate drainage system in the northern industrial area. Currently the outflow from Basin 11 feeds the aquifer.

Basins 1,2,3,4,5 and 9 drain towards a collector system, which drain towards Basin 6, where these run-offs together with the treated residential waste water effluent from the WWTW are treated in an artificial wetland. From here the run-offs drain towards Dams 7 and 12 which are the identified areas where the outflow from dam 6 is discharged to feed the aquifer.

Outflows from Basin 10 is of a lower standard and is conveyed, together with the treated industrial effluent from the WWTW via a separate pipe system towards the coastal ponds.

This contract mainly entails work required to enhance the quality of flows to and from Basin 6.

3.1.3 EXTENT OF THE WORKS

The extent of the work proposed in Phase 1 to improve the quality of stormwater run-offs can be summarised as follows:

- Phase 1A: Basin 6

  This basin will also be provided with a proposed inlet works, consisting of a stilling basin / silt trap, litter trap and contamination pond, including an oil absorbent boom system, before entering the proposed detention pond. The proposed detention pond is provided with a formal spillway structure, while the fill embankments are provided with a sand / cement core. From the proposed detention pond water will be further treated in a proposed conditioning pond adjacent to the proposed detention pond before it will be released via the outlet structure towards Basins 7 and 12. The system between Basins 6 and 7 & 12 exists and minimal work is proposed.

- Phase 1B: Basin 9

  This basin will be provided with a proposed inlet works, consisting of a stilling basin / silt trap, litter trap and contamination pond, including an oil absorbent boom system, before entering the proposed detention pond. From the proposed detention pond water will be further treated in a proposed conditioning pond adjacent to the proposed detention pond before it will be released via the outlet structure towards Basin 6.

3.1.4 LOCATION OF THE WORKS

The proposed works are all proposed on the western side of the existing Atlantis development to the east of the R27 West Coast Road.

3.1.5 TEMPORARY WORKS

Temporary works include the accommodation and the diversion of stormwater flows during the construction of the detention ponds and conditioning ponds (artificial wetlands).

The temporary works foreseen during this project are as follows:

- Coffer wall structures by means of soil filled sand bags to divert stormwater flows for the purpose of constructing the detention ponds and conditioning ponds. These temporary structures have to be removed after completion of the construction of the detention ponds and wetlands, and

- Diversion pipelines and canal around Basins 9 and 6 to divert stormwater run-offs during construction of Basin 6. The subsoil drain will be retained, but the canal will be backfilled.

- Dewatering of excavations and / or control water flows by means of pumping and well points.

The Contractor shall be responsible for all other temporary works that might be required to deliver the final product.

Part C3.2 Engineering

CONTENTS

3.2.1 DESIGN SERVICES AND ACTIVITY MATRIX
3.2.2 EMPLOYER'S DESIGN
3.2.3 DESIGN BRIEF
3.2.4 DRAWINGS
3.2.5 AS-BUILT DRAWINGS

3.2.1 DESIGN SERVICES AND ACTIVITY MATRIX

(a) The Employer is responsible for the design of the permanent Works as reflected in the Contract Documents unless otherwise stated

(b) The Contractor shall supply all details necessary to assist the Employer's agent in the compilation of the as-built drawings.

3.2.2 EMPLOYER'S DESIGN

The permanent works included in this contract have been planned and designed by the Employer. The detail of the works is indicated on the drawings and in the specifications.

3.2.3 DESIGN BRIEF

This section shall be governed by the requirements of the Conditions of Contract as defined and amended in "Part C1: Agreement and Contract Data".

The Contractor shall be responsible for the design of the concrete mix to be used for construction as described in the standard project specifications under SANS 1200 G.

3.2.4 DRAWINGS

The following table contains a list of drawings (excluding structural reinforcement drawings). The full set of drawings are included on a flash drive as Volume 4.

Additional construction drawings will, in terms of Clause 5.9 of the General Conditions of Contract (2015), be issued to the Contractor by the Employer/Employer's Agent on the commencement date and from time to time as required. The Works shall be constructed in accordance with the issued design drawings.

Drawing No.	Title
BASIN 6	
C00686-ZF-DLP-0006-001	Locality Plan
C00686-ZF-DKP-0006-001	List of drawings
C00686-ZF-DAL-0006-001	Inlet Structure and Contamination Pond
C00686-ZF-DAL-0006-002	Inlet Structure and Contamination Pond - Handrails, Grids and Pavers
C00686-ZF-DAL-0006-003	Outlet Structure and Weir
C00686-ZF-DAL-0006-004	Spillway Layout
C00686-ZF-DAL-0006-005	Spillway: Proposed Construction Phases
C00686-ZF-DAL-0006-006	Evaporation Pond
C00686-ZF-DAL-0006-007	Bulk Earthworks Setting Out Data
C00686-ZF-DAL-0006-008	Basin Design Coordinates & Levels
C00686-ZF-DAL-0006-009	Access Road

Drawing No.	Title
C00686-ZF-DAL-0006-010	Three Dimensional Layout of Model of Inlet Works
C00686-ZF-DLL-0006-001	Domestic Effluent Bypass Pipeline
C00686-ZF-DLL-0006-002	Recharge Pipeline
C00686-ZF-DLL-0006-003	Donkergat Diversion Pipeline
C00686-ZF-DLL-0006-004	Stormwater Inflow Diversion Pipeline
C00686-ZF-DLL-0006-005	Stormwater Inflow Temporary Diversion Pipeline and Canal
C00686-ZF-DLL-0006-006	Industrial Effluent Diversion Pipeline
C00686-ZF-DLL-0006-007	Subsoil Pipeline
C00686-ZF-DLL-0006-008	Subsoil Pipeline
C00686-ZF-DSE-0006-001	Embankment Sections
C00686-ZF-DSE-0006-002	Inlet Structure Sections (Sheet 1)
C00686-ZF-DSE-0006-003	Inlet Structure Sections (Sheet 2)
C00686-ZF-DRD-0006-001	Domestic Effluent Bypass Pipeline Manholes
C00686-ZF-DRD-0006-002	Domestic Effluent Bypass, Recharge and Inflow Diversion Pipeline Manholes
C00686-ZF-DRD-0006-003	Stormwater Inflow Diversion Pipeline Manholes
C00686-ZF-DRD-0006-004	Donkergat Diversion Pipeline Manholes
C00686-ZF-DRD-0006-005	Donkergat and Industrial Effluent Diversion Pipeline Manholes
C00686-ZF-DRD-0006-006	Temporary Diversion Manholes TDIV 1 and TDIV 2 and Phasing
C00686-ZF-DRD-0006-007	Temporary Diversion Manhole TDIV 3 (Phasing 1 and 2)
C00686-ZF-DRD-0006-008	Typical Details of Temporary Diversion Canal, Road Sign Board, Subsoil Drain and Monitoring Manhole
C00686-ZF-DRD-0006-009	Typical Grid Details
C00686-ZF-DRD-0006-010	Precast Concrete Palisade Fencing
C00686-ZF-DRD-0006-011	Precast Concrete Palisade Fencing with Steel Gate
C00686-ZF-DRD-0006-012	6 Stack Razor Coil Fencing
C00686-ZF-DSS-0006-001	Layout Plan with Services
BASIN 9	
C00686-ZF-DLP-0009-001	Locality Plan
C00686-ZF-DKP-0009-001	List of Drawings
C00686-ZF-DAL-0009-001	Inlet Structure and Contamination Pond
C00686-ZF-DAL-0009-002	Inlet Structure and Contamination Pond – Handrails and Grids
C00686-ZF-DAL-0009-003	Layout of Outlet Structure
C00686-ZF-DAL-0009-004	Emergency Overflow Spillway Structure Layout
C00686-ZF-DAL-0009-005	Evaporation Pond

Drawing No.	Title
C00686-ZF-DAL-0009-006	Bulk Earthworks Setting Out Data
C00686-ZF-DAL-0009-007	Design Coordinates & Levels
C00686-ZF-DAL-0009-008	Access Roads
C00686-ZF-DAL-0009-009	Three Dimensional Layout of Model of Inlet works
C00686-ZF-DLL-0009-001	Stormwater Bypass and Temporary Diversion Pipeline
C00686-ZF-DLL-0009-002	Stormwater Maintenance and Inflow Pipeline
C00686-ZF-DSE-0009-001	Embankment Sections
C00686-ZF-DSE-0009-002	Inlet Structure Sections (Sheet 1)
C00686-ZF-DSE-0009-003	Inlet Structure Sections (Sheet 2)
C00686-ZF-DRD-0009-001	Bypass Pipeline Manholes
C00686-ZF-DRD-0009-002	Bypass and Outflow Pipeline Manholes
C00686-ZF-DRD-0009-003	Maintenance Pipeline and Monitoring Manholes
C00686-ZF-DSS-0009-001	Layout Plan with Services

3.2.5 AS-BUILT DRAWINGS

The Contractor shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the Contract. A marked-up set of drawings shall also be kept and updated by the Contractor.

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

Part C3.3 Procurement

CONTENTS

3.3.1 PREFERENTIAL PROCUREMENT
3.3.2 SUB-CONTRACTING PROCEDURES

3.3.1. PREFERENTIAL PROCUREMENT

The Works shall be executed in accordance with the conditions associated with the granting of preferences detailed in the **Preference Schedule** where preferences are granted in respect of B-BBEE contribution.

Financial penalties, as described in the **Preference Schedule**, shall be applied in the event that the Contractor is found to have breached and of the conditions contained in the **Preference Schedule** (unless proven to be beyond the control of the Contractor).

Notwithstanding the application of penalties, the Contractor's attention is drawn to other sanctions that may be applied by the Employer (listed in the **Preference Schedule**) with due consideration to the circumstances.

3.3.2. SUB-CONTRACTING PROCEDURES

3.3.2.1 Monitoring the use of sub-contractors

Notwithstanding the restriction on sub-contracting as described on the **Preference Schedule**, it is recognised that sub-contracting is an integral part of construction, which the conditions of contract make provision for.

In order, however, to comply with the requirements of the **Preference Schedule**, the Contractor shall submit to the Employer's Agent, on a monthly basis, a **B-BBEE Sub-contract Expenditure Report**. The format of this report is provided in Annex 2 attached.

The Contractor shall submit to the Employer's Agent documentary evidence in accordance with the applicable codes of good practise, , of the B-BBEE status level of every sub-contractor employed by the Contractor. Until such time as documentary evidence as described above has been submitted to the Employer's Agent, a sub-contractor shall be deemed to be a non-compliant contributor.

The Contractor shall furthermore, on the written request of the Employer's Agent, provide documentary evidence showing the value of work sub-contracted to any or all of the sub-contractors employed by the Contractor.

3.3.2.2 Procedure for the selection of sub-contractors/suppliers

Where monetary allowances for provisional sums or prime costs items have been provided in the Bills of Quantities, and where the work or items to which the allowances relate are to be executed/supplied by sub-contractors/suppliers, then the following selection process shall be followed in respect of the required sub-contractors/suppliers:

Where the monetary allowance is less than or equal to R300 000, the Contractor shall invite three quotations from suitably qualified sub-contractors/suppliers for the required work or items. The selection of the three sub-contractors/suppliers shall be in consultation with, and to the approval of the Employer's Agent. The evaluation of the quotations received must include a preference points system as described in C.3.11 of the Tender Data.

Where the monetary allowance is in excess of R300 000, an open competitive tender process shall be followed in respect of the selection of a sub-contractor/supplier for the required work or items. In such circumstances, tender documentation will be prepared by the Employer's Agent in consultation with and to the approval of the Contractor, invitations to tender will be advertised in the media by the Employer's Agent on behalf of the Contractor, and a sub-contractor/supplier will be selected from the responses received, by the Contractor and Employer's Agent in consultation. The evaluation of the offers received must include a preference points system as described in C.3.11 of the Tender Data. The Contractor must satisfy itself that the selected sub-contractor/supplier can meet the requirements of the sub-contract /supply agreement and may, on reasonable grounds, elect not to employ a particular sub-contractor/supplier.

In both instances above (less than or equal to R300 000 or in excess of R300 000), the contractual relationship between the Contractor and sub-contractor/supplier shall be as described in the conditions of contract.

Part C3.4 Construction

CONTENTS

3.4.1 TRADE NAMES OR PROPRIETARY PRODUCTS
3.4.2 APPLICABLE STANDARDISED SPECIFICATIONS
3.4.3 PARTICULAR / PROJECT SPECIFIC SPECIFICATIONS
3.4.3.1 PROJECT SPECIFICATIONS
3.4.3.1 CIVIL
3.4.3.2 PARTICULAR SPECIFICATIONS
3.4.3.2 CIVIL
3.4.4 WAYLEAVES, PERMISSIONS AND PERMITS
3.4.5 LOCAL PRODUCTION AND CONTENT
3.4.6 EMPLOYMENT OF SECURITY PERSONNEL
3.4.7 EXISTING SERVICES
3.4.8 SITE ESTABLISHMENT
3.4.9 SURVEY CONTROL AND SETTINGOUT OF THE WORKS
3.4.10 ALTERATIONS, ADDITIONS, EXTENSIONS AND MODIFICATIONS OF EXISTING WORKS
3.4.11 WATER FOR CONSTRUCTION PURPOSES
3.4.12 FEATURES REQUIRING SPECIAL ATTENTION
3.4.13 SITE INSTRUCTION BOOK
3.4.14 INTERRUPTION OF EXISTING SERVICES
3.4.15 CONSTRUCTION IN RESTRICTED AREAS
3.4.16 CONTRACTOR'S REPRESENTATIVE AND SUPERINTENDANCE
3.4.17 SITE MEETINGS
3.4.18 WORK CONSIDERED TO BE LABOUR BASED (LABOUR INTENSIVE)
3.4.19 UNIVERSAL ACCESS

3.4.1. TRADE NAMES OR PROPRIETARY PRODUCTS

Bid specifications may not make any reference to any particular trade mark, name, patent, design, type, specific origin or producer, unless there is no other sufficiently precise or intelligible way of describing the characteristics of the work, in which case such reference must be accompanied by the words "or equivalent".

TENDERERS MUST NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADE MARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS 'OR EQUIVALENT"

3.4.2 APPLICABLE STANDARDISED SPECIFICATIONS

a) For the purpose of this Contract the latest issues of the following Standard Specifications for Civil Engineering Construction, applicable at the date of tender advertisement, shall apply -

SANS (*previously SABS*) 1200 A	:	General
SANS (*previously SABS*) 1200 AB	:	Engineer's Office
SANS (*previously SABS*) 1200 C	:	Site Clearance (Amendment 1, 1982)
SANS (*previously SABS*) 1200 D	:	Earthworks (Amendment 1, 1990)
SANS (*previously SABS*) 1200 DB	:	Earthworks (Pipe Trenches)
SANS (*previously SABS*) 1200 DE	:	Small Earth Dams
SANS (*previously SABS*) 1200 DK	:	Gabions and Pitching
SANS (*previously SABS*) 1200 DM	:	Earthworks Roads (Roads, Subgrade)
SANS (*previously SABS*) 1200 G	:	Concrete (Structural)
SANS (*previously SABS*) 1200 HA	:	Structural Steelwork (Sundry Items)
SANS (*previously SABS*) 1200 L	:	Medium-Pressure Pipelines
SANS (*previously SABS*) 1200 LB	:	Bedding (Pipes)
SANS (*previously SABS*) 1200 LD	:	Sewers
SANS (*previously SABS*) 1200 LE	:	Storm water
SANS (*previously SABS*) 1200 M	:	Roads (General)
SANS (*previously SABS*) 1200 ME	-	Subbase
SANS (*previously SABS*) 1200 MF	-	Base
SANS (*previously SABS*) 1200 MG	-	Bituminous Surface Treatment
SANS (*previously SABS*) 1200 MJ	-	Segmented Paving

SANS (*previously SABS*) 1200 MK	-	Kerbing and Channelling
SANS (*previously SABS*) 1200 MM	-	Ancillary Roadworks

b) The term “project specifications” appearing in any of the SANS (*previously SABS*) 1200 standardised specifications must be replaced with the term “scope of work”.

3.4.3 PARTICULAR / PROJECT SPECIFIC SPECIFICATIONS

3.4.3.1 PROJECT SPECIFICATIONS

CIVIL

The following **Project Specifications** consist of variations and additions to the standard specifications listed in C3.4.1 are as follows:

PS A	:	General
PS AB	:	Engineer's Office
PS C	:	Site Clearance (Amendment 1, 1982)
PS D	:	Earthworks (Amendment 1, 1990)
PS DB	:	Earthworks (Pipe Trenches)
PS DE	:	Small Earth dams
PS DK	:	Gabions and Pitching
PS DM	:	Earthworks Roads (Roads, Subgrade)
PS G	:	Concrete (Structural)
PS HA	:	Structural Steelwork (Sundry Items)
PS LB	:	Bedding (Pipes)
PS LD	:	Sewers
PS LE	:	Storm water
PS M	:	Roads (General)
PS ME	:	Subbase
PS MK	:	Kerbing and Channelling

This project specification covers variations and additions to standardised or particular specifications that are applicable to the contract.

The numbering method of this project specification deviates as follows from the method suggested in the Code of Practice SABS 0120.

Each clause with the prefix PS shall refer to the congruent clause in the appropriate section of the standardised or particular specification. Such clause shall either substitute, or supplement, or amend the clause with the same number. Where there is no such congruent clause in the standardised or particular specification, the PS clause shall be a new clause in the project specification. Any clause that is referred to in the standardised specification will also include the appropriate project specification.

3.4.3.1 PROJECT SPECIFICATION : CIVIL

A : GENERAL

A 3 **MATERIALS**

PS A 3.1 **QUALITY**

Substitute the second sentence of the first paragraph of A 3.1 with the following:

Materials shall bear the official mark of the appropriate standard.

The Contractor is responsible for the cost of all testing to ascertain that the materials do comply with the specified minimum requirements of the relative materials and no additional payment will be made for such testing.

The Contractor shall inform the Employer's agent of any control testing to be done at least 48 hours before such tests are required and must allow in his program for the time necessary for the tests and the processing of the results thereof.

A 4 **PLANT**

PS A 4.2 **CONTRACTOR'S OFFICE, STORES AND SERVICES**

Add the following to A 4.2:

The Contractor's site agent or representative must be contactable at all times by phone. Should use be made of radio and/or cellular-phone, these must be operational at all times with sufficient back-up batteries or recharging facilities.

There exists no housing facilities for the Contractor's work force, and arrangements must be made by the Contractor to accomplish that as well as transport. The Contractor is solely responsible for all housing, or the arranging thereof, and no payment or extension of time will be allowed because of any delay and/or work damage that may arise.

PS A 4.4 **MEDICAL FACILITIES AND SAFETY EQUIPMENT**

Add new sub clause A 4.4:

The Contractor shall provide a First Aid cabinet fully equipped and maintained with the minimum contents as listed in the Annexure (Regulation 3) to the General Safety Regulations of the Occupational Health and Safety Act (Act 85 of 1993), to deal with accidents and ailments which are likely to occur during the construction period.

The Contractor shall provide personal safety equipment and facilities as required by Regulation 2 of the General Safety Regulations of the Occupational Health and Safety Act (Act 85 of 1993).

The Contractor shall designate his Safety Officer and Qualified First Aider. The Contractor shall give copies of the minutes of the site safety meetings to the Employer's agent .

A 5 CONSTRUCTION

A 5.1 SURVEY

PS A 5.1.1 Setting Out Of The Works

Substitute the first sentence of A5.1.1 with the following:

Setting out of the works is the sole responsibility of the Contractor and shall be done from fixed points as indicated on the drawings. The Contractor shall, within two (2) weeks after the site has been handed over to him, ascertain himself of the correctness of all points. Any discrepancy shall immediately be reported in writing to the Employer's agent. Any costs or subsequent costs arising from discrepancies that had not been reported to the Employer's agent within the aforementioned period shall be the sole responsibility of the Contractor.

Setting out of the works will not be measured and paid for directly, and compensation for the work involved in setting out shall be deemed to be covered by the tendered rates for the various items of work included under the contract.

PS A 5.2 WATCHING, BARRICADING, ELECTRIC LIGHTING AND TRAFFIC CROSSINGS

Add the following to A 5.2:

All excavations must be marked with drums, reflecting tape and warning signs to satisfaction of the Employer's agent .

PS A 5.4 PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES

Add the following to A 5.4:

The Contractor shall as soon as possible after handing over of the site, commence with the detection of existing services, continue with it without interruption and finalise it at least seven (7) days before excavation starts at the particular section.

Detected existing services shall also be indicated on the "Record" drawings.

Where the Contractor is responsible for the cost of repairs carried out by the Employer or others, the costs will be recovered by means of a deduction from the Contractor's monthly payment certificate.

PS A 5.5 DEALING WITH WATER ON WORKS

Add the following to A 5.5:

For the purposes of this contract, it must be assumed that the water table is approximately between 2m and 3m below natural ground level and that each structure shall require dedicated dewatering measures.

Special treatment of water on site shall, where necessary, be specified separately (refer PS D 5.2.6), and the cost shall be deemed to be covered by the tendered rates.

PS A 5.6 **POLLUTION**

The Contractor's attention is drawn specifically to dust disturbance (See PS D 5.1.4.1). Various parts of the construction terrain are situated within an existing industrial area or adjacent to it.

Dust mitigation shall continuously be applied by constant watering of gravel haul routes and the sites. The Contractor shall not be allowed to use potable water or river water for dust mitigation. Water for the purpose of dust mitigation shall be obtained from the Wesfleur WWTW in Atlantis. The cost shall be obtained from the Wesfleur WWTW. The cost thereof, as well as the watering of the haul routes and site shall be borne by the Contractor and shall provide for this in his tendered rates for Preliminary and General items.

PS A.5.7 **SAFETY**

Substitute A 5.7 with the following:

"Pursuant to the provisions of the Conditions of Contract, and without in any way limiting the Contractor's obligations there under, the Contractor shall at its own expense (except only where specific provision (if any) is made in the Contract for the reimbursement to the Contractor in respect of particular items):

(a) Provide to its Employees on the Site of Works, all safety materials, clothing and equipment necessary to ensure full compliance with the provisions of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) as amended and effective measures to ensure the proper usage of such safety materials, clothing and equipment at all times; and

(b) Provide, install and maintain of all barricades, safety signage and other measures to ensure the safety of workmen and all persons in, on and around the Site, as well as the general public; and

(c) Implement on the Site of Works, such procedures and systems and keep all records as may be required to ensure compliance with the requirements of the Act at all times; and

(d) Implement all necessary measures as to ensure compliance of the Act by all subcontractors engaged by the Contractor and their employees engaged on the Works; and

(e) Comply fully with all other requirements pertaining to safety as may be specified in the Contract.

The Employer, Employer's Agent and the Engineer shall be entitled, although not obliged, to make such inspections on the Site, as they shall deem appropriate, for the purpose of verifying the Contractor's compliance with the requirement of the Act. For this purpose, the Contractor shall grant full access to all parts of the Site and shall co-operate fully in such inspection and shall make available for inspection, all such documents and records as the Employer's and/or Employer's agent 's representative may reasonably require.

Where any such investigations reveal, or where it comes to the Employer's agent 's attention that the Contractor is in any way in breach of the requirements of the Act or is failing to comply with the provisions of this clause, the Employer's agent shall, in accordance with the provision of Clause 5.11 of the General Conditions of Contract, be entitled to suspend progress on the Works or any part thereof until such time as the Contractor has demonstrated to the satisfaction of the Employer's agent , the breach has been rectified.

The Contractor shall have no grounds for a claim against the Employer for extension of time and/or additional costs if the progress on the Works or any part thereof is suspended by the Employer's agent in terms of this clause and the Contractor shall remain fully liable in respect of the payment of penalties for late completion in accordance with the provisions of Clause 5.13.1 of the General Conditions of Contract should the Contractor fail to complete the Works on or before the specified Due Completion Date in consequence of the suspension.

Persistent and repeated breach by the Contractor of the requirements of the Act and/or this clause shall constitute ground for the Employer's agent to act in terms of Sub-Clause 9.2.1.3.6 of the

General Conditions of Contract and for the Employer to terminate the Contract in accordance with the further provisions of the said Clause 9.2.

PS A 5.10 **WORKMEN's COMPENSATION ACT**

It is a requirement of this contract that all labour employed on the site be covered by the Workmen's Compensation Act. The Contractor is to arrange a suitable method of complying with the Act including the payment of the necessary levies.

A 7 **TESTING**

PS A 7.4 **STATISTICAL ANALYSIS OF CONTROL TESTS**

Substitute A7.4 with the following:

Test results shall not be evaluated by statistical methods. All results shall comply with the specified minimum requirements of the materials concerned.

A 8 **MEASUREMENT AND PAYMENT**

PS A 8.2 **PAYMENT**

Add the following to A 8.2:

A8.4 **Scheduled Time-Related Items**

Add the following to A 8.4.2.2:

The Sum shall cover all time-related cost of all the Contractor's Construction Equipment (Plant) for the duration of the Contract. Production cost of Construction Equipment shall be included in the relevant rates operations.

A 8.5 **PROVISIONAL AMOUNTS DETERMINED BY THE EMPLOYER'S AGENT**

Add the following to A 8.5:

PS A 8.5.1 **Additional survey for the provision of as-built information .....Unit: Sum**

The provision of X, Y & Z as-built co-ordinates, or any other as-built information required by the Employer's agent.

PS A 8.7 **DAYWORK .....Unit : Prov**

Replace A 8.7 with the following:

For calculating the total remuneration the General Conditions of Contract for Construction Works, Third Edition (2015) shall apply, with the amendments as in the appropriate Special Conditions of Contract, which is bound into this document. A daywork schedule will be provided for filling in the necessary information.

A 8.8 **TEMPORARY WORKS**

PS A 8.8.2 **Accommodation Of Traffic ..... Unit : Sum**

Add the following to A 8.8.2:

The rate shall cover all costs pertaining to the provision, erection, moving, re-erection and maintenance of all temporary barricades, road signs, lights, flagmen, etc. as required, for the guarding and protection of the works, for the construction, gravelling and maintenance of access roads and detours to the site of the works, borrow pits or spoil sites, as well as for the later removal or the cleaning and tidying up thereof, for making the necessary traffic arrangements and arrangements with regard to the moving and/or re-erection of existing traffic signs, as well as all other costs to accommodate the traffic during construction.

PS A 8.8.4 **Existing Services**

Add the following to A 8.8.4:

Where the Contractor is responsible for the cost of repairs carried out by the Employer or others, the costs will be recovered by means of a deduction from the Contractor's monthly payment certificate. The Employer will attend to the payment of monies due to others.

PS A 8.8.5 **Cost Of Survey In Terms Of The Land Survey Act ..... Unit : Sum**

Substitute A 8.8.5 with the following:

The sum shall cover the cost of all labour, plant and material required for the searching and compilation of a list, all in accordance with the requirements as set out in clause A 5.1.2.

A 8.9 **OCCUPATIONAL HEALTH AND SAFETY**

PS A 8.9.1 **Health And Safety Measures ..... Unit : Sum**

The rate shall cover all costs pertaining to the provision and maintenance for the duration of the contract of the health and safety measures required in terms of Clause 5 (Principal Contractor and Contractor) of the Construction Regulations (2014) of the Occupational Health and Safety Act. No other sum shall be paid in this respect and Tenderers must therefore ensure that adequate provision has been allowed for. The Health and Safety Officer involved will certify part or total of the provisions allowed.

PS A 8.9.2 **Health And Safety Plan Unit : Sum**

The rate shall cover all costs pertaining to the provision and maintenance for the duration of the contract of the Health and Safety Plan as required in the Construction Regulations (2014). The rate shall include for all risk assessments required as well as for the development and implementation of safe work procedures and method statements. No other sum shall be paid in this respect and Tenderers must therefore ensure that adequate provision has been allowed for.

PS A 8.9.3 **Health And Safety File ..... Unit : Sum**

The rate shall cover all costs pertaining to the provision and/or collection of data (drawings, design, materials, operation and maintenance manuals etc.) to be contained in the file, co-operation with other parties, compilation and maintenance of the file during the duration of the contract and the handing over of the file to the Client on completion of the contract. No other sum shall be paid in this respect and Tenderers must therefore ensure that adequate provision has been allowed for.

PS A 8.9.4 **OCCUPATIONAL HEALTH AND SAFETY OFFICER**

a) Employment of Occupational Health and Safety Officer ..... Unit : Sum

See section C.3.5.6 for description of Occupational Health and Safety Officer's appointment and duties.

b) Contractor's overheads, charges and profit on employment of Occupational Health and Safety officer ..... Unit : %

Expenditure under this item shall be made in accordance with the General Conditions of Contract.

Sub item (b) shall be deemed to be full compensation for all costs incurred by the Contractor in connection with their employment.

PS A 8.10 **COMMUNITY LIAISON OFFICER**

a) Employment of CLO ..... Unit : Sum per working day

See section C.3.5.3 for description of CLO's appointment and duties.

b) Contractor's overheads, charges and profit on employment of CLO ..... Unit : %

Expenditure under this item shall be made shall be made in accordance with the General Conditions of Contract.

Sub item (b) shall be deemed to be full compensation for all costs incurred by the Contractor in connection with their employment.

A 8.11 **ENVIRONMENTAL MANAGEMENT PLAN**

PS A 8.11.1 **Cost of Environmental Management Plan .....Unit : Sum**

The sum shall cover the Contractor's initial cost of providing and demonstrate to the Employer's agent a suitable and sufficiently documented Method Statement based on the Client's documented Environmental Management Plan Specifications as set out under Part C3: Scope of Works (C3.7) of this document.

PS A.8.11.2 **Complying with the Environmental Management Plan (EMP) .....Unit : Sum**

The sum shall cover the time-related cost of whatever nature, for complying with the Environmental Management Plan (EMP) Specifications as set out under Part C3: Scope of Works (C3.7) of this document and that is not specifically covered in PS A.8.11.1

PS A 8.11.3 **ENVIRONMENTAL CONTROL OFFICER (ECO)**

a) Employment of ECO ..... Unit : Sum

See section C.3.5.5 for description of ECO's appointment and duties.

b) Contractor's overheads, charges and profit on employment of ECO ..... Unit : %

Expenditure under this item shall be made shall be made in accordance with the General Conditions of Contract.

Sub item (b) shall be deemed to be full compensation for all costs incurred by the Contractor in connection with their employment.

PS A 8.11.4 **Horticulturist**

a) Employment of Horticulturist ..... Unit : Provisional Sum

The Contractor shall employ a horticulturist to advise on the planting of the wetland vegetation in the conditioning ponds.

The amount is a provisional sum to be spent partially or fully with respect to the re-siting of existing services at the discretion of the Employer.

b) Contractor's overheads, charges and profit on employment of Horticulturist ..... Unit : %

Expenditure under this item shall be made shall be made in accordance with the General Conditions of Contract.

Sub item (b) shall be deemed to be full compensation for all costs incurred by the Contractor in connection with this employment.

PS A.8.12 **RE-SITING OF SERVICES.....Unit : Provisional Sum**

The amount is a provisional sum to be spent partially or fully with respect to the re-siting of existing services at the discretion of the Employer.

PS A.8.13 **RE-VEGETATION OF CONDITIONING PONDS .....Unit : Provisional Sum**

The amount is a provisional sum to be spent partially or fully with respect to purchasing and planting of vegetation and/or re-vegetation of the conditioning ponds at the discretion of the Employer.

PS A.8.14 **RE-VEGETATION OF FILL EMBANKMENT AND CUT SLOPES.....Unit : Provisional Sum**

The amount is a provisional sum to be spent partially or fully with respect to purchasing and planting of vegetation and/or re-vegetation of the fill embankment slopes and cut slopes at the discretion of the Employer.

AB : ENGINEER'S OFFICE

AB 3 **MATERIALS**

PS AB 3.1 **NAMEBOARDS**

Substitute "South African Institution of Civil Engineers" in the first paragraph of AB 3.1 with "South African Association of Consulting Engineers".

PS AB 3.2 **OFFICE BUILDINGS**

Add the following to AB 3.2:

The office must have an adjacent carport with minimum dimensions of 6 m x 3 m with a free draining, wearing course floor. The roof must be built in such a way that a vehicle will always be shielded against the sun throughout the day. An approved shade net may be used for the sides to comply with above-mentioned requirement.

PS AB 4 **PLANT**

PS AB 4.1 **TELEPHONE**

Add the following to AB 4.1:

No telephone or cell phone needs to be supplied to the Employer's agent . The Contractor shall be responsible for the payment of the monthly cell phone costs of calls in connection with the contract administration of the ARE and the RE. No payment to the Contractor shall be made for the cell phone costs of the ARE and the RE and all costs shall be deemed to be covered by the rates tendered for the Employer's Agent's facilities.

Add the following to AB4:

PS AB 4.2 **IT EQUIPMENT**

The Contractor shall provide the Employer's Agent's office with WIFI connection, as well as a combination colour printer / copier / scanner for A3 and A4 size documents. No computers for the ARE and the RE will be required, as they will use their own equipment.

AB 5 **CONSTRUCTION**

PS AB 5.1 **NAMEBOARDS**

Add the following to AB 5.1:

A drawing showing the typical details of the Nameboard / Project Notice Board is included in Annex 8.

The nameboards shall be erected within one month after receipt of the letter of acceptance and shall be placed at the position indicated by the Employer's agent and kept in good repair for the duration of the contract and the defects liability period. Any damage to these boards shall be repaired within fourteen days of a written instruction issued by the Employer's agent. No payment shall be made in terms of the contract prior to the erection of the nameboards.

The Contractor will be permitted to erect a maximum of two of his own nameboards, in positions approved by the Employer's agent. The Employer's agent reserves the right to order the removal of these boards if they are not kept in good repair.

PS AB 5.3 **KEY PERSONNEL**

Add the following to AB 5.3:

The Contractor shall inform the Employer's agent of the person to whom he has assigned duties with respect to the site in terms of the Occupational Health and Safety Act and the person(s) who are in possession of a valid certificate of competency in first aid. The Contractor shall give copies of the minutes of the site safety meeting to the Employer's agent .

PS AB 5.5 **SURVEY ASSISTANTS**

Substitute "two or more suitably educated survey labourers" in the first sentence of AB 5.5 with "two semi-skilled labourers."

PS AB 5.6 **SURVEY EQUIPMENT**

The Contractor shall provide the following tested and approved survey equipment on site for the duration of the contract and for the use of the Employer's agent whenever needed:

a) one tacheometer capable of reading to minimum 20 seconds and maximum 6 seconds of arc, plus tripod;

b) one automatic level plus tripod;

c) two tacheometer staffs and one level staff, all graduated metrically; and

d) one 5 m and one 100 m tape measure.

The above-mentioned equipment may by arrangement be shared between the Contractor and the Employer's agent 's representative.

The Contractor shall keep the equipment continuously insured against any loss, damage or breakage, and he shall indemnify the Employer's agent and the Employer against any claims in this regard.

The Contractor shall maintain the equipment in good working order and keep it clean throughout the contract period.

AB 8 **MEASUREMENT AND PAYMENT**

PS AB 8.2 **PAYMENT**

Add the following to AB 8:

PS AB 8.2.2 **Survey Assistants And Survey Equipment**

No payment shall be made for the survey assistants or survey equipment and all costs shall be deemed to be covered by the rates tendered for the Contractor's facilities.

C : SITE CLEARANCE

C 3 **MATERIAL**

PS C 3.1 **DISPOSAL OF MATERIAL**

Substitute the first sentence of C 3.1 with the following:

Material obtained from clearing and grubbing can be divided in 3 groups, namely:

- clearing of above-ground aquatic vegetation (reeds, etc.) to be cut off at ground level, as well as removal of the root- stock (rhizomes) up to a depth of 700mm below ground level;
- normal clearing and grubbing of vegetation (grass, shrubs, port Jackson trees, etc.);
- demolition of structures such as manholes, inlet / outlet structures, walls, concrete slabs, dismantling of concrete pipes, etc.

Material obtained from clearing and grubbing, demolition of structures and dismantling and removal of pipes shall be disposed of at approved dumping sites (including possible compost sites for organic material) or alternatively at the Vissershok Municipal Landfill site, approximately 30km from the site of works.

C 5 **CONSTRUCTION**

PS C 5.1 **AREAS TO BE CLEARED AND GRUBBED**

Substitute the first sentence of C 5.1 with the following:

Clearing and grubbing shall only be done in areas as instructed in writing by the Employer's agent. Clearing and grubbing of pipe and cable routes, shall be limited to a 3 m wide strip, for concrete palisade fencing limited to a 3 m wide strip, for 6- razor coil stack fencing to a 5 m wide strip, and for basins as indicated on the drawings or as required by the Employer's agent.

The Contractor may proceed with clearing and grubbing after hand-over of the site.

Measurement and payment for clearing and grubbing shall occur for areas as required by the Employer's agent .

Substitute the last paragraph with the following:

The Contractor shall program his work in such a manner that re-clearing will not be necessary. The cost of re-clearing shall be borne by the Contractor.

PS C 5.2 **CUTTING OF TREES**

Trees outside the area to be excavated for the new structures must be left standing and undamaged, except when otherwise ordered, in writing, by the Employer's agent .

A penalty of R5000-00 per tree for trees damaged and/or removed will be charged.

Add the following to C5:

PS C 5.9 **EXISTING FENCING**

The fences around the site shall be repaired immediately after any damage to them has occurred.

The Contractor is strongly advised to make sketches and, where applicable, take photographs of existing fences before they are removed so as to avoid, as far as possible, arguments that may arise between himself and the property owner as to the quality of the re-erected fences.

PS C 5.10 **TRANSPORT MATERIALS AND DEBRIS TO UNSPECIFIED SITES AND DUMP**

The Contractor shall make his own arrangements for suitable spoil areas. Separate payment shall be made for transport of demolished material and debris and the cost thereof shall be deemed to be covered by the tendered rates under PS C 8.2.9.

PS C 5.11 **SCREENING OF ROOT-STOCK (RHIZOMES) TO REMOVE EXCESS SAND / SEDIMENT MATERIAL**

Before the root-stock (rhizomes) of the reed beds be transported and disposed at the approved dumping site or compost facility, it shall be mechanically screened by means of a screening plant, with screens of required aperture to remove excess sand/ sediment material from the root-stock (rhizomes). The process will be paid as an extra over payment items PS C 8.2.13 and PS C 8.2.14. The screened out material shall be removed to an approved dumping site as directed (under PS D 1200) and levelled, but not compacted.

C 8 **MEASUREMENT AND PAYMENT**

C 8.2 **SCHEDULED ITEMS**

PS C 8.2.7 **Dismantle And Remove Pipelines……. Unit : m**

Add the following to C 8.2.7:

Existing pipelines, cables, etc shall only be dismantled subject to written instruction by the Employer's agent. Excavation and backfilling shall be measured in the appropriate items of SABS 1200 DB : Earthworks (pipe trenches). Separate payment for transport shall be made under PS C 8.2.9.

The rate shall also cover the cost of removing cleaning and handing over of all usable material to the Employer.

PS C 8.2.8 **Demolish And Remove Structures/Buildings And Dismantle Steelwork, Etc.....Unit : Sum**

Replace C 8.2.8 with the following:

Separate items will be scheduled.

The rate shall cover the cost of the removal of all structures on the site, channel- and/or sewer mainline routes, the disposal thereof at the dumping site, the levelling and shaping of the site and the backfilling of any holes with material of at least the same quality as that of the in situ material. The rate shall also cover the cost of removing cleaning and handing over of all usable material to the Employer. Separate payment for transport shall be made under PS C 8.2.9.

Payment for the removal of individual structures will be made pro rata in the relation of the area thereof to the total area of structures that has to be demolished and removed.

PS C 8.2.9 **Transport materials and debris to dumping / spoil / compost facility and dump (Provisional)..... ..... Unit : t.km or m^3.km**

Add the following to C 8.2.9:

Separate items will be scheduled for each type and to distinctive spoil / dumping sites / facilities.

Substitute the last sentence of C 8.2.9 with the following:

The rate shall cover the cost of loading, transporting, dumping, excluding any charges for the use of the dumping / spoil / compost facility. The latter costs will be measured separately under PS C 8.2.18 and PS C 8.2.19.

PS C 8.2.10 **Remove and Replace Topsoil ..... Unit : m^3**

Substitute C 8.2.10 with the following:

The rate shall include all labour, equipment and material necessary to remove, stockpile, maintaining replace and spread topsoil to a depth of 300 mm.

PS C 8.2.11 **Removal Of Existing Walls, Kerbs, Etc ..... Unit : m**

Separate items will be listed for each type. The rate shall cover the cost of excavation, removal, backfill and shaping of the site, loading, transport, spoil levelling and shaping thereof on the spoil site.

PS C 8.2.12 **Remove And Re-erect Existing Fences ..... Unit : m**

Separate items will be scheduled for each type and size.

The rate shall cover the cost of removal and stacking of existing fencing material, including all gates, as well as of the re-erection thereof with the existing material. No additional payment will be made for the replacement of fencing material that has been damaged by the Contractor.

Material that is unsuitable for re-erection must be viewed by the Employer's agent before it is removed after which the Employer's agent must give written approval for the replacement thereof and for payment therefore.

PS C 8.2.13 **Clearance and removal of reed beds downstream of Basin 6 ..... Unit : m² or ha**

Distinction will be made between plant material above ground level and the root-stock (rhizomes) under the ground level to a depth of 700mm below the ground level.

The rate shall cover the cost of all labour and equipment required for clearing and grubbing of the reed beds above ground level as well as the root- stock (rhizomes) up to a depth of 700mm below ground level and the disposal thereof at an approved dumping site or compost facility, exclusive of all gate fees/ royalties, etc., if applicable. The rate shall include the handling and temporary stockpiling, if required. Please note that the screening process must remove as much sand/sediment as possible to make the material suitable for composting. An extra-over payment will be made under PS C 8.2.15 for screening to remove soil or sediment from the rhizomes.

Haulage shall be measured and paid for separately.

Payment for the effective clearance and removal of the reed beds shall only be made if the area is cleared and grubbed to the satisfaction of the Employer's Agent.

PS C 8.2.14 **Clearance and removal of reed beds and other water plants within the basins**
.....
.....Unit : m² or ha

Separate items will be listed for each basin. Distinction will be made between plant material above ground level and the root-stock (rhizomes) under the ground level to a depth of 700mm below the ground level.

The rate shall cover the cost of all labour and equipment required for clearing and grubbing under water-logged (quagmire) conditions of the reed beds and other water plants above ground level as well as the root- stock (rhizomes) up to a depth of 700mm below ground level and the disposal thereof at an approved dumping site or compost facility, exclusive of all gate fees/ royalties, etc., if applicable. The rate shall include the handling and temporary stockpiling, if required. Please note that the screening process must remove as much sand/sediment as possible to make the material suitable for composting. Extra-over payments will be made under PS C 8.2.15 for screening to remove soil or sediment from the rhizomes.

Haulage shall be measured and paid for separately.

Payment for the effective clearance and removal of the reed beds shall only be made if the area is cleared and grubbed to the satisfaction of the Employer's Agent.

PS C 8.2.15 **Extra over items PS C 8.2.13 and PS C 8.2.14 for screening of soil / sediment material from root-stock (rhizomes) / plant material..... Unit : m^3**

Separate items will be listed for each basin.

The volume measured is the volume of root-stock (rhizome) material placed on the screening plant before removal of the soil / sediment material and shall be agreed between the Employer's Agent and the Contractor.

The rate shall cover the cost of the establishment and de-establishment of the screening plant, the screening process, which will only be paid for if the soil / sediment material is effectively removed from the root-stock (rhizomes).

PS C 8.2.16 **Removal and spoil of existing waste dump material adjacent to the Basins..... Unit : m^3**

The rate shall cover the cost of all labour and equipment required for the excavation and loading of the existing stock pile of waste dump adjacent to the Basins and the disposal thereof at an approved dumping site, exclusive of all gate fees/ royalties, etc., if applicable. The existing waste dump stockpile comprises sediment material and rubbish/ debris previously removed from the Basins. The rate shall include the handling and temporary stockpiling, if required. Please note that the screening process must remove as much rubbish / debris as possible to make the soil material suitable for spoiling. Extra-over payments will be made under PS C 8.2.17 for screening to remove the rubbish / debris from the waste material.

Haulage shall be measured and paid for separately.

Payment for the effective removal of the waste dump shall only be made if the area is cleared and removed to the satisfaction of the Employer's Agent..

PS C 8.2.17 **Extra over items PS C 8.2.16 for screening of rubbish / debris from existing waste dump adjacent to the Basins ..... Unit : m^3**

The volume measured is the volume of the existing waste dump material adjacent to the Basins placed on the screening plant before removal of the rubbish / debris material and shall be agreed between the Employer's Agent and the Contractor.

The rate shall cover the cost of the establishment and de-establishment of the screening plant, the of the screening process, which will only be paid for if the rubbish / debris is effectively removed from the waste dump.

PS C 8.2.18 **Co-disposal charges.....Unit : Provisional Sum**

Separate items will be listed for each facility / action.

Proof of coupons / payment made to submitted to the Employer's agent.

The amount is a provisional sum to be spent partially or fully with respect to the disposal fees/ gate fees / dumping charges at the different spoil / compost facilities at the discretion of the Employer.

PS C 8.2.19 **Mark-up / Overhead costs, surcharge and profit on PS C 8.2.18..... Unit : %**

Separate items will be listed for each facility / action.

The rate is to cover the Contractor's overheads, surcharge and profit on payments made for fees payable at spoil / compost facilities and will be calculated as a percentage levy on payments. Payments will only be made for this item after payments are made for the spoil facilities.

D : EARTHWORKS

D 2 **INTERPRETATIONS**

PS D 2.3 **DEFINITIONS**

Add the following to D 2.3:

Sand (cohesionless and non-cohesive)

For the purpose of the compaction requirements, a non-plastic material of which not less than 95 % by mass passes a sieve of nominal aperture size 4,75 mm, and not more than 10 % passes a sieve of nominal aperture size 0,075 mm.

D 3 **MATERIALS**

D 3.2 **CLASSIFICATION FOR PLACING PURPOSES**

Add the following to D 3.2:

PS D 3.2.4 **Protection Layer on Top of Geotextile**

A 100 mm thick sandy soil or sand material obtained from excavations or stockpiles shall be placed on the Grade 1 geotextile before rip rap is placed to protect the geotextile against damage.

The material shall not contain particles in excess of 37.5 mm in diameter.

PS D 3.2.5 **Filling of Voids in Rip Rap and Reno Mattresses**

Sandy soil or sand material obtained from excavations or stockpiles shall be placed on top of the Reno mattress revetment to establish natural vegetation.

PS D 3.2.6 **Clay Material for Lining of Detention and Conditioning Ponds**

Clay material shall be obtained from commercial sources which shall be used for the 300mm thick lining of the detention and conditioning ponds of Basins 6 and 9.

The properties of the clay material shall comply with the grading limits and characteristics indicated in the tables below.

SIEVE SIZE (mm)	**% TO PASS THROUGH SIEVE**
9.500	100
0.425	More than 60
0.250	More than 55
0.075	More than 40
0.020	More than 35
0.006	More than 20
0.0018	More than 10

CHARACTERISTIC	LIMITS
Plasticity Index (PI)	11 < PI < 35
Liquid Limit (LL)	30 < LL < 60
Linear Shrinkage (LS)	4 < LS < 10
Cohesion (C) (kPa)	12 < C < 24
Permeability (K) (cm/s)	$K < 1 \times 10^{-4}$

D 3.3 **SELECTION**

PS D 3.3.1 **General**

Substitute the second paragraph of D 3.3.1 with the following:

The Contractor shall deal in such a way with materials from all excavations to ensure that usable material is not contaminated with unsuitable material. If usable material is contaminated, such contaminated material shall be removed and replaced with material of standard at least equal to the in situ usable material, all at the Contractor's expense. No additional payment shall be made in respect of this and all relevant costs shall be deemed to be included in the tendered rates.

Add the following to D 3:

PS D 3.4.1 **Material For Subsoil Drainage**

PS D 3.4.1.1 **Pipes**

Slotted polyethylene drainage pipes complete with couplings with at least 8 kN/m^2 ring stiffness (BIG-DREN drainage pipes from SPC- SouthernPipe Contractors or equivalent)

Pipes without slots required for conveying ground water from the subsoil drainage proper to the point of discharge, shall be polyethylene pipes as specified above.

PS D 3.4.2 **Crushed Stone**

Crushed stone in subsoil drains behind concrete walls shall be 19 mm single-sized stone and 53mm nominal-sized stone around the 350mm ID HDPE slotted subsoil drainage pipe complying with the grading requirements of stone for concrete in SABS 1083.

PS D 3.4.3 **Geotextile Blanket**

The geotextile blanket around subsoil drains shall be a Grade 1 non-woven geotextile equivalent and equal to Kaytech Grade A6.

The provisions of PS DK 3.1.4 shall apply mutatis mutandis.

PS D 3.4.4 **Sand**

Sand in subsoil drains shall comply with the requirements of PS D 2.3.

PS D 3.4.5 **Damp Proof Membrane (DPM)**

Damp proof membrane shall be 500 micron thick polyethylene sheeting.

D 4 **PLANT**

Add the following to D 4:

PS D 4.5 **AVOIDING QUAGMIRE CONDITIONS**

In order to prevent quagmire conditions occurring in the excavations, relatively static plant such as excavators or back-actors shall be used combined with hand trimming to complete the excavation to final level. Should the Contractor allow quagmire conditions to develop, he shall, at his own expense, take such steps to rectify the conditions as the Employer's agent may order.

D 5 **CONSTRUCTION**

D 5.1 **PRECAUTIONS**

D 5.1.2 **Existing Services**

PS D 5.1.2.2 **Detection, location and exposure**

Add the following to D 5.1.2.2:

The requirements of PS A 5.4 shall apply mutatis mutandis.

If existing services are not shown on the drawings but the existence thereof can be reasonably expected, the Contractor shall, in conjunction with all relevant authorities, determine the exact depth and location of such services before the commencement of construction. After locating the exact position of services, whether indicated on the drawings or not, such services shall be deemed to be known services and the Contractor shall be liable for all costs and subsequent costs arising from the damage thereof as a result of the Contractor's activities. These services must also be indicated on the "As Built" drawings.

PS D 5.1.2.3 **Protection of cables**

Substitute "estimated position" in the second sentence of D 5.1.2.3 with "actual or exposed position".

PS D 5.1.4 **Nuisance**

PS D 5.1.4.1 **Dust Nuisance**

Add the following to D 5.1.4.1:

The Contractor is responsible for dust control and is liable for all claims that may result from dust nuisance on all parts of the site and at all times from the date of handing over of the site to the completion date of the contract. No payment regarding the above-mentioned will be made and all costs shall be deemed to be covered by the tendered rates.

PS D 5.1.6 **Road Traffic Control**

Add the following to D 5.1.6:

a) Sufficient road signs must be erected in such a way that motorists will be warned in time of works, e.g. at the closing of a street sufficient signs to direct traffic must be erected at the preceding intersection.

b) Bypasses and/or road signs shall be provided and/or erected at all locations where the free flow of traffic is obstructed and shall be approved by the Employer's agent before the commencement of construction. Where main roads are crossed, detours and temporary traffic signs must be provided in accordance with the South African Roads and Traffic Signs Manual.

c) Where a trench crosses a street or any place where a trench crosses the direction of traffic flow, drums must be placed in the street and not just along the sides of the street with danger tape in between.

d) Danger tape must be put up between drums and tied around the drums.

e) Drums may not be filled with stones. The spacing of drums must be in such a way (maximum 5 m) that they are visible from all directions.

f) Sufficient safety measures must be utilised for pedestrians.

D 5.2 **METHODS AND PROCEDURES**

D 5.2.1 **Site Preparation**

PS D 5.2.1.2 **Conservation of topsoil**

Add the following to D 5.2.1.2:

Removal of topsoil shall only occur in areas as approved by the Employer's agent . The topsoil shall be conserved for use elsewhere, where directed by the Employer's Agent.

PS D 5.2.2 **Excavation**

PS D 5.2.2.1 **Excavations for general earthworks and for structures**

Add the following to D 5.2.2.1:

Strip foundations and encasement of pipes shall be cast directly against excavated surfaces.

Materials under foundations and floors of structures, which are regarded by the Employer's agent as unsuitable for the bearing of such structures shall be removed to the depths and widths, ordered. The excavated voids shall then be filled with sand compacted to 100 % of MAASHTO density, to the underside of such foundation or floors, unless a soil cement mixture is ordered by the Employer's agent.

PS D 5.2.2.3 **Disposal**

Substitute the second sentence of D 5.2.2.3 with the following:

Suitable surplus material from excavations shall be utilised as fill material where filling is required, and should be placed, spread, and shaped to the specified lines and levels and compacted to 90% (100% for sand) of the MAASHTO density or as otherwise specified.

All surplus and unsuitable (not contaminated) material shall be disposed of at approved dump sites. The Contractor shall be responsible for acquiring a dump/spoil site for this purpose and all costs incurred, including royalties (if applicable) shall be borne by the Contractor.

All contaminated material unsuitable for fill shall be disposed of at the Vissershok Solid Waste Landfill site, approximately 30km away from the site of works. All royalties (if applicable) shall be borne by the Contractor.

PS D 5.2.2.4 **Excavation limits for payment purposes**

Where formwork has to be provided to the outside face of a concrete member, the limits of excavation for measurement and payment purposes shall be the vertical planes of the outside perimeter of the concrete member for which the formwork is to be provided at the founding level as shown on the Drawings. The perimeter of the concrete structure refers to the main body of the structure and does not include footings/toes around the bottom of the structure.

The volume measured for excavations is the nett dimensions as indicated on the drawings. No additional payment will be made for the provision of working space on the outside of structures, and the Contractor shall provide for that in his rates.

PS D 5.2.2.5 **Utilisation of excavated material**

Excavated material and material recovered from temporary work shall, in so far as it is suitable, be utilised for backfill. Material unsuitable for use as backfill or in excess of the quantity required to complete the backfill shall be spoiled or utilised as directed by the Employer's agent .

Excavated material not used for backfill or not taken to spoil but used in the construction of embankments or other parts of the work, as directed by the Employer's agent , shall be paid for under the relevant item for the purpose for which it is used.

PS D 5.2.2.6 **Excavation by hand around existing services**

Where hand excavations is required around existing services it shall be done within 1m above and on both sides of cables, within 300mm above and on both sides of pipes, as well as underneath the services.

D 5.2.3 **Placing and Compaction**

PS D 5.2.3.1 **Embankments**

Add the following to D 5.2.3.1:

Embankments of ponds and terraces shall be constructed of approved material from excavations and shall be compacted to 90 % (100 % for sand) of MAASHTO density, in layers not exceeding 300 mm in depth.

PS D 5.2.3.2 **Backfilling of trenches and backfilling against structures**

Add the following to D 5.2.3.2:

Backfilling around structures shall be compacted to 95 % (100 % for sand) of MAASHTO density. The material for backfilling against structures shall not contain particles in excess of 37.5 mm in diameter.

When specified or ordered by the Employer's agent the backfilling against structures shall be done using a mixture of soil cement. The mixture shall contain 5 % cement by mass and just sufficient water for it to be placed and compacted like ordinary backfilling material.

Add the following to D5.2.3:

PS D 5.2.3.3 **Protection layer on top of geotextile for rip rap**

The material as specified in PS D 3.2.4 shall be placed in a layer of 100mm thickness on top of the non-woven Grade 1 geotextile before rip rap material is placed in order to protect the geotextile from getting damaged during placing of the heavy rip rap material. No direct vehicular traffic on the geotextile shall be allowed and the method of back tipping shall be applied or the material shall be placed by hand. No compaction of the protection layer is required.

PS D 5.2.3.4 **Filling of voids in Reno mattresses**

Reno mattresses:

The material as specified in PS D 3.2.5 shall be placed in two layers of 100mm thickness each on top of the completed Reno mattresses, where ordered by the Employer's agent. No compaction of the fill material is required.

After placement of the first 100mm thick layer of material, water shall be used to wash the material in the voids between the rock in the mattresses. The placement of the second layer shall then proceed for which no washing in voids is required.

PS D 5.2.3.5 **Filling under floors**

Filling under the floors of structures shall be done with material compacted to 90% (100% for sand) of MAASHTO density.

PS D 5.2.4 **Finishing**

PS D 5.2.4.1 **Final grading**

Add the following to D 5.2.4.1:

Embankments, cut slopes and floor levels of the detention and conditioning ponds shall be trimmed to even grades as indicated on the drawings.

PS D 5.2.4.2 **Top soiling**

Add the following to D 5.2.4.2:

Topsoil shall be placed in areas where directed by the Employer's agent.

PS D 5.2.4.3 **Grass or other vegetation**

In addition to complying to the requirements of subclause 5.2.4.3 of SABS 1200 D, the Contractor shall comply to the following requirements:

a) **General**

The method of vegetation establishment depends on the requirements of the Employer's agent and shall be done by means of hand planting.

Two types of vegetation are proposed, namely:

i) Wetland vegetation to be planted inside the conditioning ponds, and

ii) Dry bed vegetation to be planted on the outer side slopes of the conditioning and detention ponds' fill embankments, as well as on the cut slopes outside the 3,7m wide gravel crest of the ponds, or other positions required by the Employer's agent.

iii) Grass hydroseeding.

b) **Preparation of surfaces to be planted with wetland and dry bed vegetation**

The 300mm thick layer of sandy soil placed on the clay lining in the conditioning pond shall not be topsoil, but clean uncontaminated excavated soil from at least 300mm and deeper below the existing natural ground level. The contractor shall ensure that the sandy soil, placed on top of the clay lining, is free of invasive seeds and plant material.

Undisturbed and/or compacted soil shall be prepared by scarifying thoroughly to a depth of 50 mm and removing all loose stones bigger than 20 mm from the surface prior to planting of the vegetation. No fertiliser is required and shall not be allowed.

Should the soil, where vegetation is required, be organically unsuitable, the unsuitable material shall be removed to a minimum depth of 50 mm and shall be replaced by suitable soil as required by the Employer's agent. Separate payment will be made in this regard.

After preparation of a surface is completed, the planting of such area shall be completed before encrustation takes place. The Contractor shall scarify to a depth of 50 mm at no additional payment should a crust have formed before planting has been completed.

c) **Planting of Wetland vegetation**

An approved horticulturist shall be appointed by the Employer to advise on the planting of the wetland vegetation over the floor area of the conditioning pond to establish well-functioning wetland vegetation. In total 50% of the floor area of the conditioning pond shall be planted in clusters as instructed by the horticulturist.

All the vegetation shall be planted by hand by the contractor in positions as instructed by the horticulturist, with no fixed pattern in order to establish a natural looking wetland.

The number of each type of plant is indicated in the bill of quantities to achieve the 50% average coverage of planted wetland vegetation in order for the plants to establish and naturally grow and distribute throughout the conditioning pond.

The wetland vegetation to be planted, the planting density and the minimum size of the plants to be planted, are as follows:

Plant	Number / m²	Min. plant size (height) (mm)
Ischyrolepsis subverticillata	1	1000
Cyperus textilis	1	1000
Elegia capensis	1	1000
Carpha glomerate	1	400
Wachendorfia thyrsiflora	1	300
Zanthedeschia aetiopica	1	300
Pronium serratum	1	400
Isolepsis prolifera	3	plugs (ground cover)
Isolepsis cernua	3	plugs (ground cover)
Juncus lomatophyllus	3	plugs (ground cover)

d) **Planting of Dry Bed vegetation**

The proposed dry bed vegetation is Carpobrotus edulis (Suurvygies), which shall be planted in densities of average 5 / m² to start off with a 50% coverage of the area to be planted. Carpobrotus edulis shall be planted by means of unrooted cuttings and plugs. The areas to be planted include the outer fill embankment slopes of the conditioning and detention ponds, cut slopes outside of the 3,7m wide gravel crests of the conditioning and detention ponds, as well as areas required by the Employer's agent.

e) **Preparation of surfaces to be planted by means of Grass Hydroseeding**

The Contractor shall supply representative samples of the soil, where grass hydroseeding is required, to an approved soil laboratory to obtain the optimum fertiliser mixture. No payment regarding these tests will be made and all costs shall be deemed to be covered by the tendered rates for grassing.

Undisturbed and/or compacted soil shall be prepared by scarifying thoroughly to a depth of 50 mm and removing all loose stones bigger than 20 mm from the surface prior to hydroseeding.

Should the soil, where vegetation is required, be organically unsuitable, the unsuitable material shall be removed to a minimum depth of 50 mm and shall be replaced by suitable soil as required by the Employer's agent. Separate payment will be made in this regard.

After preparation of a surface is completed, the planting of such area shall be completed before encrustation takes place. The Contractor shall scarify to a depth of 50 mm at no additional payment should a crust have formed before planting has been completed.

f) **Planting by means of Grass Hydroseeding**

The hydroseed mixture shall be applied at a distribution rate of 62 kg/hectare and shall be as follows:

5 kg Eragrostis Curvula

25 kg Lolium Multiflorum

10 kg Balansae Clover

10 kg Rhodes Grass

2 kg Kikuyu Grass

The supplier shall mix the seed and submit a certificate in duplicate with each consignment indicating the nett mass and contents of each seed container as well as showing the results of the germination tests.

A mulch/gel and soil binder shall be applied at a rate of 2 500 kg/ha and shall be added to the seed mix.

The fertiliser is a mixture of 2:3:2 (30) and super phosphate (single) to be applied with the seed mix at rates of 450 kg/ha and 250 kg/ha respectively.

The final mix to be applied shall consist of a combination of the seed mix, cellulose pulp and fertiliser (as described above) which shall be added to water. The quantity of water required shall be determined by the supplier.

g) **Planting and maintaining the vegetation**

Planting shall be performed in moist soil as advised by the horticulturist. The plants shall be watered as planting progresses.

Erosion that could occur during the construction period or the defects liability period, shall be filled and properly repaired.

Maintenance include watering, cultivating and replanting for areas that is not to the satisfaction of the Employer's agent, as well as any additional work required to ensure an acceptable cover.

An acceptable cover means that 75 % of the vegetated areas is covered to the satisfaction of the horticulturist and the Employer's agent at least three (3) months after planting.

PS D 5.2.6 Dewatering Of Foundation Excavations

Over and above his general obligations in regard to dealing with water as specified in SABS 1200 A, the Contractor shall be responsible for preventing the ingress of water into the foundation excavations. The preventative measures shall include the construction of proper drainage channels, diversion channels, berms, sumps, and the supply, operation and maintenance of the necessary bailing and pumping equipment.

The dewatering measures, with the exception of pumping, shall be maintained until the backfilling has been completed, after which all settled silt, mud, etc. shall be removed from the exposed surfaces where necessary. Between the various construction stages, pumping may be interrupted as may be decided by the Employer's agent. The draining or pumping of water from foundation excavations shall be so done that no concrete materials will be carried away.

PS D 5.2.7 Site Specific Specifications for Earthworks

PS D 5.2.7.1 Waste classification

Once the soils and sediments from the different basins are removed/excavated it will be considered as waste material according to the definition of waste detailed in the National Environmental Management: Waste Amendment Act, 2014 (Act No 26 of 2014). However, once the soils and sediments have been screened to remove plant material, roots and any waste materials which ended up in the basins with run-off and storm water during high rainfall events, the soil will be ready for re-use and no longer be considered as waste. The material requiring screening will be the top layer of sediment and soil and is expected to be a maximum of 10% of the total volume of excavated material.

As a precautionary approach, the soils and sediment currently present in the basins were classified and assessed according to the Waste Classification and Management Regulations (GN R.634 of 23 August 2013) and the National Norms and Standards for the Assessment of Waste for Landfill Disposal (GN R.635 of 23 August 2013). The outcome of this process indicated that it is non-hazardous waste varying between Type 3 (at inlets) and Type 4 (at outlets). This indicates that there are no constituents (trace metals of organic contaminants) present in the material at

concentrations which could present a risk to the receiving environment or human health. No further testing of the material by the contractor would be required during construction.

PS D 5.2.7.2 **Potential management options**

The potential beneficial use options for soils and sediments after screening include the following (but not limited to):

a) Brick quarry for backfilling and rehabilitation of old quarry [redacted] All plant material must be removed from the sediments before backfilling.

b) Sand mine for rehabilitation or other beneficial use [redacted]). Only sand removed during extension of basins will be acceptable, not sediments removed from the current basins. Plant material and other waste material must be removed.

Clean plant material including reeds and wetland vegetation as well as plant roots and rhizomes removed during screening can be used for composting [redacted]). Please note that the screening process must remove as much sand/sediment as possible to make the material suitable for composting.

PS D 5.2.7.3 **Required authorisations**

The contractor must obtain authorisation for the screening process as well as the beneficial use options for screened soils from the Department of Environmental Affairs and Development Planning (DEADP) (contact person: [redacted], Director Waste Management, [redacted]

a) Screening of excavated soils

It is recommended that the operational area for screening of the soils should be < 1000 m^2 (less stringent registration and operating requirements). According to the *National norms and standards for the sorting, shredding, grinding, crushing, screening or baling of general waste* (GN 1093 of 11 October 2017, Government Gazette 41175) a facility that has an operational area < 1000 m^2 must comply with section 4(4) of the Norms and Standards which states:
'A waste facility that is less than 1000 m^2 must register with the competent authority and comply with the principle of duty of care as contained in Section 28 of NEMA and section 16(1) and 16(3) of NEMWA.'

The information required for registration with DEADP include:

- Name of the facility
- Owner of facility (Contractor)
- Physical and postal address of the owner
- Contact details of the owner
- Land use or zoning of facility location area
- Locality map, co-ordinates and site plan of facility
- Description of activities (screening)
- Size of operational area
- Types and quantities of material that will be processed
- Source/s of the material that will be processed

The general duty of care requirements in terms of NEMA section 28 and NEMWAA section 16 requires the holder of waste to take all reasonable measures to prevent degradation of

the environment and harm to human health during excavation and transport of the soil. Method statements should include (but not limited to):

- Description of on-site screening process to separate the sediment and sand from other waste material
- Details on where the soils, organic material or waste material will be disposed or re-used
- Prevent the waste from being used for any unauthorized purpose

This project falls under the Section 30A Directive for which the City of Cape Town has provided a comprehensive approved environmental management programme. Method statements need to be approved by the project environmental control officer (ECO) and the CoCT Environmental Management Department before submission to DEADP.

The registration information and method statements should be compiled into a memorandum and submitted to DEADP [redacted]. DEADP will supply a letter of authorisation for the screening of the soils and sediments which require screening at the registered facility. After the screening of these soils have been completed, it can be used for the previously listed or any other approved beneficial use options.

No authorisation is required for composting of plant materials.

b) Temporary storage of waste

A temporary storage area might be required for the sediment material excavated from the top layer of the basins before the screening process (if excavation is faster than the screening process). This facility also needs to be registered with DEADP and will need to comply with the *National Norms and Standards for the Storage of Waste (GN R. 926 of 29 November 2013*), published under the NEMWAA. The purpose of GN R. 926 of 2013 is to provide a uniform national approach to waste storage, ensure best practice in management of the facilities and provide minimum standards for the design and operation of storage facilities. The contractor should register the temporary storage area, ideally next to the screening area. Information required for registration are similar to that of the screening facility and includes the following:

- Demarcation of the storage area;
- Name of the facility;
- Owner of the facility;
- Types of waste to be stored;
- Size of the facility;
- Sources of the waste to be stored;
- Timeframe for storage; and
- Geographical co-ordinates of the facility.

The same duty of care principles detailed in section 3.1 will also apply to the storage area. This information can be added to the registration and method statements for the screening facility and submitted to DEADP for authorisation.

PS D 5.2.7.4 **Waste disposal**

All waste not suitable for beneficial use, including waste removed during screening should be disposed at a licensed landfill facility. To decrease disposal costs, it is recommended that as much as possible material be used beneficially. The closest disposal facility is [redacted] which is approximately 30 km from the site.

The CoCT Solid Waste Management Department has an application procedure in place for disposal of special waste (any waste that is not domestic waste):

- Application to register as waste generator (contractor will generate the waste during excavation) via the Integrated Pollutant and Waste Information System (IPWIS) site [redacted] to obtain a WIR (Waste Information Regulation) number
- Application for authorisation to dispose special waste at [redacted] (application form available from [redacted]
- Submit a sample of the waste with the application form to the Scientific Services Department [redacted]
- After the application is approved, a VH no. will be provided and the applicant may request disposal permits [redacted]
- A quotation will be supplied for the amount of permits requested which need to be paid at any Municipal cash office before collection from [redacted]
- Disposal of special waste is only allowed between 8 am and 2 pm.

PS D 5.2.8 **Construction of Clay Liner in Detention and Conditioning Ponds**

The clay material shall be placed by truck and spread or distributed by grader or dozer. Sheep foot roller , clubfoot roller, pad foot roller or vibrating sheep foot rollers shall be used for the compaction of the clay liner on the pond floors and horizontal sections, followed by smooth drum rollers to obtain a smooth finish. The side slopes shall be compacted by plate compactors.

At least 5 to 10 equipment passes with a compactor is recommended to achieve the required compaction of at least 90% of Mod Aashto density on the pond floors and horizontal sections. Compaction equipment weighing 18 tonnes or more is recommended for this.

On the pond side slopes lighter equipment should be adequate.

The clay material shall be compacted between OMC and 5% above OMC. If the required density is not achieved, additional passes with the compaction equipment will be required. The final clay lining thickness shall not be less than 300mm on the pond floors and horizontal sections and not less than 200mm or 300mm on side slopes, as indicated on the drawings.

D 8 **MEASUREMENT AND PAYMENT**

PS D 8.1 **BASIC PRINCIPLES**

Add the following to D 8.1:

The rates for excavation shall also cover the cost of dealing with any stormwater or subsurface water, which may appear in the excavations.

D 8.2 **COMPUTATION OF QUANTITIES**

PS D 8.2.4 **Shoring**

Shoring will only be measured and paid for if written approval is given by the employer's agent before it is installed.

D 8.3 **SCHEDULED ITEMS**

PS D 8.3.2 **Bulk Excavation**

a) Excavate in all materials and use for embankment
or backfill or dispose, as ordered ..... Unit : m^3

Add the following to D 8.3.2(a):

There will also be distinguished between the different types of fill and backfill as well as the different densities to which each will be compacted.

There will be distinguished between the excavations for different structures and purposes and the volume will include excavated material of the existing basins and embankments, stilling basins, litter traps, access ramps, contamination pond structures, overflow structures, rip rap erosion revetments, gabions, Reno mattresses, temporary diversion channels, concrete channels, removal of siltation and all other temporary works to successfully complete the contract. The volume measured for excavation of concrete structures is the nett dimensions as indicated on the drawings. No additional payment will be made for the provision of working space on the outside of structures, and the Contractor shall provide for that in his rates. The rate shall additionally include provision for coping with any water that may occur in the excavations and all costs in the regard shall be deemed to be included in the tendered rates for earthworks.

Add the following subitems to D8.3.2:

PS D 8.3.2 **c) Hand excavation in all materials and use for embankment or backfill or dispose, as ordered ..... Unit : m^3**

The provisions of D 8.3.2(a) shall apply mutatis mutandis.

PS D 8.3.2 **d) Extra-over for hand excavation in**

1) Intermediate excavation ..... Unit : m^3

2) Hard rock excavation ..... Unit : m^3

3) Boulder excavation, Class A ..... Unit : m^3

4) Boulder excavation, Class B ..... Unit : m^3

The provisions of D 8.3.2(b) shall apply mutatis mutandis.

PS D 8.3.2 **e) Fill from stockpile ..... Unit : m^3**

Separate items are listed for different types of fill.

In addition to the costs to comply with all the pre-cautionary measures according to D 5.1 and the requirements according to PS D 5.2.2.3, the rate shall cover the costs of loading, transportation within free-haul distance, off-loading, spreading, watering, compacting to 90 % (100 % for sand) of MAASHTO density, final grading, complying with the requirements for tolerances and providing for testing, all in accordance with the requirements of the specification.

PS D 8.3.2 **f) Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (percentage of cement indicated) ..... Unit : m^3**

The tendered rate for sub item PS D 8.3.2(c) shall be additional to the rates tendered for D 8.3.2(a) and shall cover the cost of all incidentals required for the complete backfilling with soil cement as specified. The rate shall also include for the trimming and compacting of the excavation before placement of soilcrete.

PS D 8.3.2 **g) Excavate and dispose of unsuitable material from excavation bottom ..... Unit : m^3**

The rate shall cover the cost of complying with all the precautions required in terms of D 5.1 in addition to the cost of excavation of the additional depth in any material and the disposal of the unsuitable material as specified in PS D 5.2.2.3.

PS D 8.3.2 **h) Preparation of exposed excavated surfaces .....Unit : ha or m^2**

Separate items shall be listed for different types.

The rate shall cover the cost of ripping the exposed excavated surface to a depth of 150mm and then compacting it to 90% (100% for sand) of MODAASHTO density before placement of the clay liner on the detention and conditioning pond floors or embankments of the ponds, as well as pond cut side slopes.

PS D 8.3.5 **Extra Excavation In All Materials To Provide Working Space Around Structures**

Delete this sub clause and refer to sub clause PSD 5.2.2.4

D 8.3.8 **Existing Services**

PS D 8.3.8.1 **Location**

PS D 8.3.8.1 **c) Excavate by hand in soft material to expose service ..... Unit : m^3 or day work**

Where hand excavation around existing services do occur it shall be measured within 1 m above and on both sides of cables, and within 500 mm above and on both sides of pipes, as well as all excavations underneath the services.

PS D 8.3.8.1 **d) Extra-over PS D 8.3.8.1(c) for excavation in ..... Unit : m^3**

The provisions of PS D 8.3.2(d) shall apply mutatis mutandis.

PS D 8.3.8.2 **d) Services crossing excavations .....Unit : No**

Add the following to D 8.3.8.2:

The provisions of SABS 1200 DB : Earthworks (Pipe trenches) and the relevant project specification shall apply mutatis mutandis and payment will be made according to the applicable item of SABS 1200 DB.

Services situated at a depth exceeding 300 mm, measured from below the bottom of the excavation to the top of the service, will not be measured or paid for.

PS D 8.3.8.2 **e) Services that adjoin excavations ..... Unit : m**

Add the following to D 8.3.8.2:

The provisions of SABS 1200 DB : Earthworks (Pipe trenches) and the relevant project specification shall apply mutatis mutandis and payment will be made according to the applicable item of SABS 1200 DB.

PS D 8.3.9 **Extra-over For Backfill Or For Fill Material Against Structures ..... Unit : m^3**

Substitute the first paragraph of D 8.3.9 with the following:

This item is an extra-over for filling and compaction of soil to 95 % MAASHTO density or sand material to 100 % of the MAASHTO density within a width of 1,0 m around existing manholes, culverts, all concrete and relevant structures.

PS D 8.3.11 **Grassing Or Other Vegetation Cover ..... Unit : m^2**

Separate items will be scheduled for different types of vegetation planted, namely wetland vegetation and dry bed vegetation and different cover.

The rate covers the cost of all material, labour and equipment required for the preparation of the soil where planting of vegetation is required, the supply of the specified plants and application method of vegetation, irrespective of the number of applications to achieve the coverage, as described in PS D 5.2.4.3.

Payment for vegetation will be made as follows:

First payment

70 % of the tendered rate is payable on completion of preparing and planting the specified area.

Second payment

A further 30 % of the tendered rate is payable after the area has been neatly finished off and maintained and only if 75 % cover has been achieved and approved by the Employer's agent.

PS D 8.3.14 **Shaping And Trimming Of Earthworks .....Unit : m^2 or ha**

The rate shall cover the cost of the finishing off after mass earthworks have been completed and includes all labour and plant necessary to shape the surface in order to obtain a uniform surface to the specified levels and gradients, to recompact any disturbed material to the same density as that of the adjacent in situ material and any additional work required to neatly finish off these surfaces and gradients.

PS D 8.3.15 **Temporary Works : Control Water Inflow And/Or Ground Water .....Unit : m or m^2**

The tendered rate for the effective control of ground water and/or water inflow before and during excavation and installation shall cover the costs relating to the supply of all equipment and material as well as all labour involved. The rate shall also cover the costs with regard to the maintenance of equipment for the full period of construction.

Payment for this item shall only be made should the Contractor control groundwater and/or water inflow effectively by means of pumping before and during excavation and payment shall be measured per meter of culvert or pipeline layed, or square meter of area layed dry.

The rate shall also include costs relating to the excavation of drainage sumps and the backfilling and compaction thereof afterwards. No additional payment will be made with respect to the moving of equipment and the Contractor shall make provision for this in his rates.

PS D 8.3.16 **Filter Stone ..... Unit : m^3**

The volume measured for payment is the net volume according to the dimensions as shown on the drawings or as requested by the Employer's agent. Nominal stone size shall be specified.

The rate shall cover the cost of obtaining, delivery and placing as required under wet conditions.

PS D 8.3.17 **Shore Excavation Opposite Structure Or Service ..... Unit : m**

The length measured will be that of the centre-line of the wall to be built on the side of the fill to be retained . The rate shall cover the cost of the supply, placing, maintenance and removal of the shoring and other support measures together with any cost that results from the inconvenience of working in the supported area and the cost of any risks inherent in the operation. The rate for operation and maintenance shall cover the cost of operating and maintaining the sheeting, timbering and other equipment, as applicable, for 24 hours a day, 7 days a week, throughout the period during which, in the opinion of the Employer's agent, the facilities are required.

The tendered rate shall allow for additional excavation for shoring as well as the design of effective shoring.

Shoring will be measured in depth categories as specified in the bill of quantities. The depth of shoring shall be measured as the depth of soil effectively shored, along the support system to the bottom of the nominal bedding and no deeper.

Payment will be made after discussion and written instruction by the Employer's agent for effective and properly implemented shoring.

PS D 8.3.18 **Preparation Of Bedding ..... Unit : m^2**

Separate items will be listed for different types of cover and sizes. The area measured for payment is the area covered by in situ cast concrete floors of structures. No distinctions for steps or transitions in the floor will be made and all costs related to this shall be deemed to be covered by the appropriate rates.

The rate shall cover the costs of all labour and equipment required to shape and trim the floor of the in situ concrete structures to comply to the slopes, levels and widths as shown on the drawings, to compact these areas to 90 % (100 % for sand) of the MAASHTO density and for any additional work required to prepare the bedding, before concrete is placed.

PS D 8.3.19 **Removal And Reinstatement Of Existing Grass Areas ..... Unit : m^2**

The rate for the reinstatement of lawns, where it is crossed by excavations, will include the following.

i) the removal of grass sods in the strip needed for excavations;

ii) maintenance of the grass sods during the construction period;

iii) reinstating the grass to its original level and watering it after shaping of the earthworks.

Payment will only be made for grassed areas sufficiently reinstated and on approval of the Employer's agent.

PS D 8.3.20 **Reinstatement Of Shrubs ..... Unit : No**

Shrubs, bushes, plants and reeds will be regarded as shrubs for the purpose of measuring. Annuals will not be regarded as shrubs.

The rate for reinstating shrubs, where excavations have crossed gardens, will include the following:

i) the removal of shrubs with minimum damage thereto;

ii) maintenance of these shrubs during the construction period;

iii) replanting and watering of shrubs in their original or new positions as applicable.

Payment will only be made for shrubs successfully reinstated and on approval of the Employer's agent.

PS D 8.3.21 **Temporary Works : Sand Bags for Coffer Fill In Dam ..... Unit : m^3**

The rate shall include all costs to provide sand bags, the filling thereof with soil or sand and the construction of the coffer fill, including polyethylene plastic sheeting (at least 250 micron thickness) for waterproofing in the basin to divert flows and to prevent siltation, as well as the removal of the sand bags and polyethylene sheeting to approved fill or spoil areas.

Payment shall be measured per cubic meter of sand used for these sand bag structures and only if they are effective.

PS D 8.3.22 **Placing of Protection Layer on Geotextile for Rip Rap..... Unit : m^3**

The rate shall cover all the costs with respect to material, labour and plant of selecting, loading at temporary stockpiles, transporting with the freehaul distance, offloading, placing and finishing off of the required material as described in PS D 3.2.4 and PS D 5.2.3.3 before placing of the rip rap material.

PS D 8.3.23 **Filling of Voids in Reno Mattresses ..... Unit : m^3**

The rate shall cover all the costs with respect to material, labour and plant of selecting, loading at temporary stockpiles, transporting with the freehaul distance, offloading, placing of the material by hand and finishing off of the required material as described in PS D 3.2.5 and PS D 5.2.3.4 after completion of the Reno mattress revetment.

D 8.4 **SUBSOIL DRAINS**

PS D 8.4.1 **Pipes In Subsoil Drains**

a) Slotted polyethylene drainage pipes complete with couplings (state size) with at least 8 kN/m^2 ring stiffness (BIG-DREN drainage pipes from SPC- southern pipe contractors or equivalent) ..... Unit : m

b) Polyethylene fitting (state size and type of fitting) ..... Unit : No

The rate shall cover the cost of supplying and installing the pipe or fitting in a stone bed or no-fines concrete, as indicated on the drawings.

PS D 8.4.2 **Crushed Stone In Subsoil Drains ..... Unit : m^3**

The rate shall cover the cost of supplying, transporting irrespective of the distance and placing the required stone size in the subsoil drain, as specified in PS D 3.4.2 and as indicated on the drawings.

PS D 8.4.3 **Supply and place Grade 1 non-woven geofabric (Kaytech Grade A6 or equivalent) in Subsoil Drains ..... Unit : m^2**

The rate shall cover the cost of supplying the Grade 1 non-woven geotextile blanket and of placing it as indicated on the drawings.

PS D 8.4.4 **Supply and place DPM on Diversion Canal Floor and Side Slopes..... Unit : m^2**

The rate shall cover the cost of supplying the 500 micron thick polyethylene damp proof membrane (DPM), as well as the provision of sand-filled sand bags for anchoring and stabilisation of the lined canal, all completed as indicated on the drawings. DPM sheets shall overlap at least 200 mm in such a way that flowing water shall not lift or flow underneath the sheets. The upstream DPM shall be laid on top of the adjacent downstream DPM at the overlap to prevent flows from entering underneath the sheeting.

The rate shall also cover the cost of removal of the DPM from the diversion canal floor and side slopes, as well as the emptying and removal of the sand bags afterwards.

D 8.5 **Clay Layers in Detention and Conditioning Ponds**

PS D 8.5.1 **Clay Layer on Pond Floors and Horizontal Sections ..... Unit : m^3**

The clay material complying to the specifications of PS D 3.2.6 used for the lining of the detention pond and conditioning pond floors shall be constructed as specified in PS D 5.2.8 and shall nowhere be less than 300mm in thickness after compaction.

PS D 8.5.2 **Clay Layer on Pond Side Slopes ..... Unit : m^3**

The clay material complying to the specifications of PS D 3.2.6 used for the lining of the detention pond and conditioning pond side slopes shall be constructed as specified in PS D 5.2.8 and shall nowhere be less than 200mm or 300mm in thickness, as indicated on the drawings, after compaction.

DB : EARTHWORKS (PIPE TRENCHES)

DB 1 **SCOPE**

Add the following to DB 1.1:

This specification also covers the excavation for cable trenches.

PS DB 2.2 **APPLICATION**

Substitute "pipe trenches" with "pipe and cable trenches" in DB 2.2.

DB 3 **MATERIALS**

PS DB 3.5 **BACKFILL MATERIALS**

a) Substitute "from trenches" in DB 3.5(a) with "from trenches or excavations ".

Add the following to DB 3.5(b):

b) All pipe trenches in street reserves shall be classified as areas subject to loads from road traffic.

c) All pipe trenches underlying or adjacent to carriageways shall be backfilled with sand complying with the requirements for A3 materials, as specified in PS D 2.3.

DB 3.6 MATERIALS FOR REINSTATEMENT OF ROADS AND PAVED AREAS

PS DB 3.6.1 Subbase And Base

Substitute DB 3.6.1 with the following:

Where trenches cross or run adjacent to surfaced roads and paved areas of which the surfaces are scheduled to be reinstated, the material excavated from the existing base and/or subbase pavement layer(s) shall be set aside and used in the reconstruction of the subbase layer. Where applicable new material complying with the requirements of SABS 1200 MF shall be used in the reconstruction of the base layer. Any shortfall in material for the reconstruction of the subbase layer shall be made up by the use of material complying with the requirements of SABS 1200 ME.

DB 4 **PLANT**

PS DB 4.1 **EXCAVATION EQUIPMENT**

Add the following to DB 4.1:

All excavations exceeding the specified widths, shall be backfilled with approved selected material. No payment shall be made for this and all relevant costs shall be deemed to be included in the tendered rates.

PS DB 4.4 **DEWATERING EQUIPMENT**

One set of dewatering equipment shall consist of pumps, pipes, well points and other equipment necessary for keeping the trenches sufficiently free from water for dewatering of excavations up to 4 m depth and a trench length of 45 m for both sides and 70 m on one side.

DB 5 **CONSTRUCTION**

DB 5.1 **PRECAUTIONS**

PS DB 5.1.1 **Water In Trenches**

Water in pipe trenches may cause movement of the pipe due to flotation and backfilling must be completed as soon as possible. If there was any movement, the Contractor must remove and relay the pipes at his own cost and to the satisfaction of the Employer's agent.

PS DB 5.1.2 **Stormwater, Seepage And Dewatering Of Excavations**

Substitute DB 5.1.2 with the following:

The costs of dealing with water shall be deemed to be included in the tendered rates for excavation and no additional payment shall be made in this respect.

Add the following to DB 5.1:

PS DB 5.1.4 **Existing services that intersect or adjoin trenches**

Add the following to DB 5.1.4

The conditions of PS A5.4 shall apply mutatis mutandis.

PS DB 5.1.5 **Hand Excavation**

Certain trenches will have to be excavated by hand, because of limited access and space. The Contractor is to ensure that all excavation done by hand is in strict accordance with the requirements of the Occupational Health and Safety Act.

PS DB 5.2 **MINIMUM BASE WIDTHS SPECIFIED**

Substitute paragraph (b) of DB 5.2 with the following:

The minimum base width for all pipes with a diameter less than 125 mm shall be 600 mm plus the outside diameter of the pipes, irrespective of the depth at which they are laid, except for subsurface drains where the width shall be 400 mm and for house water connections where the width shall be 300 mm.

The base width of box culverts shall be the nett width of the in situ cast floor slab plus 600 mm.

Bedding is required for all pipes with a diameter less than 125 mm, except for subsurface drains.

The minimum base width for Telkom ducts shall be 500 mm.

The minimum base width for electric cable trenches shall be 500 mm. Where more than one cable is installed in the same trench, the base width shall become 300 mm plus the distances specified between the centre lines of the cables (50 mm minimum).

PS DB 5.4 **EXCAVATION**

Add the following to DB 5.4:

The provisions of PS D 5.2.2.4 shall apply mutatis mutandis for hand excavation.

PS DB 5.5 **TRENCH BOTTOM**

Substitute "90 %" with "90 % (100 % for sand)".

DB 5.6 **BACKFILLING**

PS DB 5.6.2 **Material For Backfilling**

Substitute "from trench excavations" in the first paragraph of DB 5.6.2 with "from excavations for trenches and structures.

Add the following to DB 5.6.2:

Where pipe trenches cross a road the selected fill blanket specified in PS LB 3.2 shall be brought up to the bottom of the subbase.

PS DB 5.6.3 **Disposal Of Soft Excavation Material**

Add the following to DB 5.6.3:

The provisions of PS D 5.2.2.3 shall apply mutatis mutandis.

PS DB 5.7 **COMPACTION**

PS DB 5.7.2 **Areas Subject To Traffic Loads**

Add the following to DB 5.7.2:

All pipe trenches that fall in street reserves will be regarded as areas subject to traffic loads.

Sand backfilling shall be compacted to 100 % of MAASHTO density.

DB 5.9 REINSTATEMENT OF SURFACE

PS DB 5.9.2 **Private Property And Commonage**

Add the following to DB 5.9.2:

Gardens and lawns shall be repaired to the original standard where they were crossed. Grass and plants shall be taken out of the ground, temporarily planted, watered during construction and replanted after backfilling.

PS DB 5.9.4 **Bitumen Roads : Subbase And Base**

Add the following to DB 5.9.4:

Any additional imported material required for the reinstatement of selected layers, subbase or base shall comply with the requirements of the relevant standardised and/or project specifications.

PS DB 5.9.5.1 **Bitumen Roads : Surfacing**

Add the following to DB 5.9.5.1:

The thickness of the asphalt shall be 30 mm for all surfaced streets except if specified otherwise.

DB 8 **MEASUREMENT AND PAYMENT**

PS DB 8.1 **BASIC PRINCIPLES**

Add the following to DB 8.1.2(b):

The depth of electric cable trenches is as indicated on the relevant drawings, if applicable.

DB 8.2 **COMPUTATION OF QUANTITIES**

PS DB 8.2.4 **Shoring**

Add the following to DB 8.2.4:

Shoring will only be measured and paid for if written approval is given by the Employer's agent before it is installed.

DB 8.3 **SCHEDULED ITEMS**

PS DB 8.3.2 **Excavation ..... Unit : m**

Add the following to DB 8.3.2:

The rate shall also cover the cost of dealing with any stormwater or subsurface water, which may appear in the trenches.

PS DB 8.3.2 **a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material ..... Unit : m**

Add the following to D 8.3.2(a):

In cases where services lay parallel to steep slopes, the depth of the excavation will be measured along the centre of the trench (on the route of the service).

The rate shall also provide for the fact that the excavation width in sand will be wider than normal and that fast excavation and backfill will reduce ground water seepage.

The depth of excavation in street reserves shall be measured from the final finished level.

i) Electric cable trenches

Excavation for electric cables not laid with other services will be measured and paid for separately under the relevant depth increments. The rate shall provide for excavation, preparing trench lengths as requested by the electrical subcontractor, backfilling and compaction thereof.

The rate shall also make provision for the possibility that long trenches need to be prepared for the electrical Contractor to lay full cable lengths (up to 300 m) and immediate backfilling after the installation of the cable (same day) to prevent theft.

ii) Combined trenches

The rate for excavation and backfilling of trenches with more than one service, shall allow for trench widths as set out in PS DB 5.2 and the bill of quantities. Extra bedding and fill blanket will be measured as in the case of normal pipe trenches.

The depth increment for combined trenches is determined by the deepest pipe in the trench.

PS DB 8.3.2 **c) Excavate unsuitable material from trench bottom ..... Unit : m^3**

Delete "and the disposal" in the heading of DB 8.3.2(c) and in the last paragraph.

Add the following sub items:

PS DB 8.3.2 **d) Hand excavation and backfill ..... Unit : m^3**

The provisions of PS DB 8.3.2(a), DB 8.3.2(b) and PS DB 8.3.2(c) shall apply mutatis mutandis for hand excavation.

Payment shall only be made if so ordered by the Employer's agent.

PS DB 8.3.2 **e) Excavate by hand in soft material to expose existing services ..... Unit : m^3**

The rate shall apply for pipe lines and cables.

The provisions of sub clause PS D 8.3.8.1(c) shall apply mutatis mutandis.

PS DB 8.3.2 **f) Extra-over PS DB 8.3.2(a) for temporary stockpiling of material ..... Unit : m^3**

Temporary stockpiling of material will only be measured and paid for if ordered so in writing by the Employer's agent and if it is not contaminated with unsuitable material.

The rate shall provide for the handling and stockpiling of the material within the free-haul distance.

DB 8.3.3 **Excavation Ancillaries**

PS DB 8.3.3.1 **Make up deficiency in backfill material (provisional) ..... Unit : m^3**

Add the following to DB 8.3.3.1:

d) Stockpile ..... Unit : m^3

Add the following to the last paragraph of DB 8.3.3.1:

No payment will be made for the transport of material from commercial sources or sources outside the site that the Contractor has selected.

PS DB 8.3.3.3 **Compaction in road reserves ..... Unit : m^3**

Add the following to DB 8.3.3.3:

This item is only applicable to the backfill above the bedding and fill blanket. No payment shall be made under this item if sand, compacted to 100% of MAASHTO density is used.

PS DB 8.3.3.5 **Backfilling of culverts with soil cement ..... Unit : m^3**

Backfilling of box culverts with a soil cement (soilcrete : 5 % cement by mass) mixture, as described in PS D 5.2.3.2, shall be measured as shown on the drawings. Backfilling as above shall only be done with the written permission of the Employer's agent.

The rate shall provide for the supply, delivery, mixing and placing of all the necessary materials as well as for labour and supervision.

PS DB 8.3.4 **Particular Items**

a) **Shore trench opposite structure or service ..... Unit : m**

Add the following to DB 8.3.4(a):

PS DB 8.3.4 **a) Shore a trench opposite structure or service ..... Unit : m**

Add the following to DB 8.3.4(a):

Separate items shall be provided for shoring on both sides and on one side of trenches.

The tendered rate shall allow for additional excavation for shoring as well as for the design of effective shoring.

Shoring will be measured in depth categories as specified in the bill of quantities. The depth of shoring will be measured as the depth of soil effectively shored, along the support system to the bottom of the nominal bedding and no deeper.

Payment will only be made after discussion and written instruction by the Employer's agent for effective and properly implemented shoring.

PS DB 8.3.4 **b) Temporary works : Control water inflow and or groundwater..... Unit: m or Sum**

Substitute DB 8.3.4(b) with the following:

The tendered rate for the effective control of ground water and/or water inflow before and during excavation and installation shall cover all the costs relating to the supply of all equipment and material as well as all labour involved. The rate shall also cover the costs with regard to the maintenance of equipment for the full period of construction.

Payment for this item shall only be made should the Contractor control groundwater and/or water inflow effectively by means of pumping before and during excavation and payment shall be measured by meter of pipe or culvert layed, or a sum in the case of structures.

Payment per metre of pipe layed in trenches shall also include the control of ground water and/or water inflow at all manholes.

1) In trenches..... Unit : m

2) Excavations for structures ..... Unit : Sum

The rate shall also include costs relating to the excavation of drainage sumps and the backfilling and compaction thereof afterwards. No additional payment will be made with respect to the moving of equipment and the Contractor shall make provision for this in his rates.

Separate items are listed for different pipe or culvert sizes.

PS DB 8.3.5 **Existing Services That Intersect Or Adjoin A Pipe Trench**

PS DB 8.3.5 **a) Existing services that intersect a trench ..... Unit : No**

Add the following to DB 8.3.5(a):

Existing services with a depth of cover exceeding 300 mm, measured from the bottom of excavation to the top of the existing service shall not be measured and paid for.

The rate shall also cover the cost of the following:

i) Sufficient photo's being taken of existing services and submitted to the Employer's agent before they are being crossed, if there is a possibility of a difference of opinion over the condition of these services.

ii) Repair of damaged services to its original condition.

iii) If such a service is removed, replacement thereof, as per original.

PS DB 8.3.5 **b) Existing services that adjoin a trench ..... Unit : No or m**

Add the following to DB 8.3.5 (b):

The unit "number" will only be used for services such as poles and trees.

No payment will be made for overhead services that do not rest directly on the ground except where allowance is made for this in the schedule of quantities.

Existing services that rest directly on the ground e.g. poles, trees, walls and structures are handled in the same way as underground services, but the axis of the service will be determined as follows:

The vertical axis is defined as the nearest side or corner of the existing structure to the excavation, measured at the point where the structure and natural ground level intersect.

The horizontal axis will be at the point where the structure and the natural ground level intersect. In this instance, where the excavation falls above the 45° line but within 1,0 meter horizontally from the structure, the service will also be measured as adjoining.

If the structure, according to the above-mentioned, does not qualify as an adjoining service but the foundation of the structure is such that if a 45° line drawn from the nearest bottom corner thereof cuts through the excavation, the structure will be measured as an adjoining service **if approved by the Employer's agent** .

PS DB 8.3.5.4 **Crossing of roads, streets and accesses ..... Unit : Sum**

The tendered rate shall cover all additional costs for the crossings as specified and shall be all inclusive with exception of specific items that are provided for in the bill of quantities.

There will be distinguished between different crossings.

DB 8.3.6 **Finishing**

PS DB 8.3.6.1 **Instatement of road layers ..... Unit : m^2**

Add the following to DB 8.3.6.1:

The rate shall include for the selective excavation of existing subbase and base material where this material is going to be re-used.

PS DB 8.3.6.2 **Extra-over DB 8.3.6.1 for imported material ..... Unit : m^3**

The quantity will be calculated according to the actual volume of material placed in the final position according to the specified dimensions.

The rate is an "extra-over" Item DB 8.3.6.1 and includes all costs of supplying and placing of imported material in the final position with material from commercial sources.

PS DB 8.3.6.3 **Reinstatement of sidewalk ..... Unit : m^2**

The rate includes the cost of all labour, material and equipment required to construct a 100 mm thick layer of concrete grade 25 MPa/19 mm to replace the existing concrete sidewalk where required.

PS DB 8.3.8 **Cutting Of Existing Bituminous Surfacing ..... Unit : m**

The rate includes the cost of all labour and equipment required to cut the existing bituminous/asphalt layer by means of a mechanical saw to ensure a neat joint and to protect the bituminous/asphalt layer.

SANS 1200 DE: SMALL EARTH DAMS

DE 3 **MATERIALS**

DE 3.3 **SELECTION**

PS DE 3.3.1 **General**

Substitute DE 3.3.1 with the following:

The Contractor shall deal selectively with material from general excavation.

The Contractor shall deal in such a way with materials from all excavations for structures to ensure that usable material is not contaminated with unsuitable material. If usable material is contaminated, such contaminated material shall be removed and replaced with material of standard at least equal to the in situ usable material, all at the Contractor's expense. No additional payment shall be made in respect of this and all relevant costs shall be deemed to be included in the tendered rates.

DE 5 **CONSTRUCTION**

DE 5.2 **METHODS AND PROCEDURES**

DE 5.2.2 **Excavation**

DE 5.2.2.2 **Preparation of exposed surfaces**

PS DE 5.2.2.2b) **Soil surfaces**

Substitute the second sentence with the following:

After the foundation has been approved, the soil shall be ploughed to a depth of 300mm, wetted or dried, as applicable, and then compacted to at least 90% (100% for sand) of Mod AASHTO density.

PS DE 5.2.2.4 **Disposal**

Substitute DE 5.2.2.4 with the following:

The provisions of PS D 5.2.2.3 shall apply mutatis mutandis.

PS DE 5.2.5.1 **Freehaul**

Substitute DE 5.2.2.1 with the following:

The provisions of D 5.2.5.1 shall apply mutatis mutandis.

PS DE 5.2.5.2 **Overhaul**

Substitute DE 5.2.5.2 with the following:

The provisions of D 5.2.5.2 shall apply mutatis mutandis.

DE 8 **MEASUREMENT AND PAYMENT**

Measurement and payment with respect to earthworks shall be done in accordance with the applicable items of SABS 1200 D.

SANS 1200 DK: GABIONS AND PITCHING

DK 3 **MATERIALS**

DK 3.1 **GABIONS**

DK 3.1.1 **Stone**

PS DK 3.1.1.2 **Size**

Substitute DK 3.1.1.2 with the following:

The size of the stone to be used in gabions and Reno mattresses shall be in accordance with the grading specifications (gradation curves) as shown on the drawings.

Stone shall be sound, tough, durable and free from soft material such as sand, clay, shale and organic material. All stone for gabions and Reno mattresses shall be subject to the prior approval of the Employer's agent.

PS DK 3.1.3 **Geotextile**

Substitute DK 3.1.3 with the following:

a) **Composition and manufacture**

The geotextile shall be manufactured from a synthetic polymer processed into a permeable, homogeneous sheet. The geotextile to be used for this contract shall consist of non-woven continuous filament needle-punched polyester.

b) **Classification**

The geotextile for gabions and Reno mattresses, as well as for rip rap shall comply to grade 1 as specified in PS DK 3.1.3(c) or as shown on the drawings. Only non-woven geotextiles shall be considered for erosion protection works or filter backing for the protection of earthworks against erosion, as specified in the schedule of quantities or shown on the drawings.

The standard atmosphere for testing and the preconditioning atmosphere for all geotextile tests (SABS tests and others) shall have a relative humidity in the range of 0 to 80 per cent and a temperature in the range of 15 °C to 35 °C.

c) **Property requirements for specific application**

The property requirements for geotextile to be used for erosion protection works shall comply with the following specification:

Property requirements for non-woven geotextile filter fabric for specific applications			
Property	**Unit**	**Gabions and Reno mattresses and subsoil drainage**	**Graded Rip rap**
SANS Grade		Grade 1	Grade 1
Kaytech or equivalent grade		A6	A10
Thickness (under 2kPa)	mm	3.4	9.3
Mass (Minimum)	g/m²	320	950
Porosity	%	92	87
Normal permeability	1×10^{-3} m/s	5.9	5.3
Penetration load (CBR)	kN	4.5	11.3
Puncture resistance (Diameter of hole)	mm	13	2
Minimum overlap of geotextile layer or sheet	mm	300	300

Add the following to DK 3:

"PS DK 3.3 **RIP RAP**

PS DK 3.3.1 **Stone**

PS DK 3.3.1.1 **Quality**

The provisions of DK 3.1.1.1 shall apply mutatis mutandis.

PS DK 3.3.1.2 **Size**

The size of the stone to be used for rip rap shall be in accordance with the grading specifications (gradation curves) as shown on the drawings.

Stone shall be sound, tough, durable and free from soft material such as sand, clay, shale and organic material. All stone for rip rap shall be subject to the prior approval of the Employer's agent.

PS DK 3.3.2 **Geotextile**

The provisions of PS DK 3.1.3 shall apply mutatis mutandis."

DK 4 **PLANT**

Add the following to the first sentence:

", while operations for rip rap require predominantly heavy duty machinery and equipment."

DK 5 **CONSTRUCTION**

PS DK 5.3.1 **General**

Replace “at least 90%” with “at least 90% (100% for sand)”.

Add the following to DK 5:

“PS DK 5.4 **Rip rap**

The Contractor shall ensure that a 100mm sandy soil protection layer is in place on top of the geotextile before rip rap is placed. Rip rap shall be dumped and spread by means of heavy duty equipment such as excavators.”

DK 8 **MEASUREMENT AND PAYMENT**

PS DK 8.2.8 **Rip rap rock sourced from commercial sources..... Unit : m^3**

The rate shall cover all the costs related to sourcing and selecting the material from commercial sources in accordance with the grading specified, the uploading, transport to positions where rip rap is required, the dumping thereof and all the labour and equipment required to construct the rip rap berm complete according to the lines, levels and grades as shown on the drawings, with a degree of accuracy of ± 50mm permissible deviation of finished levels from design levels.

DM 3 **MATERIALS**

PS DM 3.1 **CLASSIFICATION FOR EXCAVATION PURPOSES**

Add the following to DM 3.1:

All in situ pavement material shall be classified as soft material for excavation purposes.

DM 3.2 **CLASSIFICATION FOR PLACING PURPOSES**

PS DM 3.2.3 **Selected Layers**

Substitute DM 3.2.3 with the following:

Materials used for selected layers shall comply with the requirements of standard specification 1200 M.

All imported material underlying the subbase or base of the final road prism, whichever may be applicable, that does not comply with the requirements for lower selected layer or upper selected layer in the respective depth categories, shall be removed and replaced with material complying with the requirements of selected layers, all at the Contractor's expense.

DM 4 **PLANT**

PS DM 4.2 **PLANT FOR TREATMENT BELOW SELECTED LAYER**

PS DM 4.2.1 **Pneumatic-Tyred Roller**

Pneumatic-tyred rollers shall be of the self-propelled type that is equipped with smooth pneumatic-tyred wheels of the same diameter. The mass of the roller shall be at least 10 tons. All wheels must bear the same mass.

The rollers must be equipped with devices that will be able to keep the wheels wet and clean during operation.

The wheels of the roller shall be arranged in such a way that one pass with the roller will cover the whole width of the machine. The roller must be able to take a tyre pressure of 600 kPa and the minimum allowed working tyre pressure shall be 450 kPa. The maximum difference in pressure between any two wheels shall not be greater than 35 kPa.

DM 5 **CONSTRUCTION**

DM 5.1 **PRECAUTIONS**

PS DM 5.1.2 **Accommodation Of Traffic**

Add the following to DM 5.1.2:

Bypasses shall be constructed and road signs erected where the free flow of public traffic is restricted. Such bypasses and road signs shall be in accordance with the "CSRA-CUTA : Road Traffic Signs Sub-committee; Road Signs Note no 13, the SA Road Traffic Signs Manual" and shall be approved by the Employer’s agent before the commencement of construction.

DM 5.2 **METHODS AND PROCEDURES**

DM 5.2.2 **Cut And Borrow**

PS DM 5.2.2.2 **Dimensions of cuts**

Substitute "subbase" in the second paragraph of DM 5.2.2.2 with "subbase or selected layer, whichever may be applicable", and

Substitute "CBR of at least 7" with "CBR as applicable according to the provisions of PS DM 3.2.3".

PS DM 5.2.2.3 **b) Cut to spoil**

Substitute DM 5.2.2.3(b) with the following:

All surplus and/or unsuitable material shall be removed from the site and disposed of at the spoil site (as described in PS D 5.2.2.3) and shall be shaped to establish a free draining surface.

PS DM 5.2.2.4 **Temporary stockpiling of materials**

Add the following to DM 5.2.2.4:

The Contractor shall program the works in such a manner that suitable excavated material shall, if practically possible, be placed directly in the appropriate position to ensure that temporary stockpiling is limited to an absolute minimum. No payment shall be made for the temporary stockpiling of material where such material is to be used for backfilling of pipe trenches, except when so ordered in writing by the Employer's agent.

DM 5.2.3 **Treatment Of Road Bed**

PS DM 5.2.3.3 **Treatment of road bed**

a) Preparation and compaction of road bed.

Substitute the first paragraph of DM 5.2.3.3(a) with the following:

The road-bed shall be scarified to a depth of 150 mm, watered, shaped and compacted to 90 % of MAASHTO density (100 % for sand), except where otherwise ordered by the Employer's agent.

In clay areas only excavation and shaping to the correct level will be necessary.

Add the following subclause:

(c) In situ preparation of road-bed with eight roller passes.

Any part of the road-bed that lies within the selected layer and which, regardless of its density, is suitable according to the Employer's agent's opinion, can be used in situ if so instructed by the Employer's agent.

If due to the nature of material, the degree of compaction cannot be controlled by means of in situ density tests, the Employer's agent may instruct compaction to be done by eight roller passes as specified in PS DM 4.2. The Employer's agent may further request that the compaction effort be altered by increasing or reducing the number of passes and that payment be amended accordingly.

The surface of the road-bed shall be shaped true in respect of line and level within the tolerances as specified in clause 6. During the shaping of the road bed, all material that

has to be removed and cannot be re-used, shall be disposed of and will be paid for under item PS DM 8.3.7. If necessary, additional material that has been approved by the Employer's agent shall be imported to meet the required levels.

No strict measurements in connection with soil moisture content will be applied by the Employer's agent during compaction. The Contractor must however convince the Employer's agent that all possible efforts have been made to utilise favourable soil moisture conditions. Compaction must be done during periods when the road-bed is not to wet or to dry. The Employer's agent has full authority to decide whenever conditions are favourable for compaction, and may at any stage instruct the Contractor to water the road-bed at the Contractors expense if he, in the Employer's agent's opinion, neglected to satisfy the above-mentioned requirements.

PS DM 5.2.5 **Selected Layer**

Add the following to DM 5.2.5:

The Employer's agent may, depending on the quality of the in situ material, order the omission of one or both of the selected layers. To determine the amount of selected layers, if any, the Employer's agent may order the Contractor to dig test holes with maximum dimensions of 1,5 m x 1,5 m and 1,0 m deep at positions indicated by the Employer's agent, before construction commences.

The Contractor shall backfill all test holes with selected material and compact it to 95 % of MAASHTO density, after the Employer's agent has taken samples and profiled the holes.

PS DM 5.2.9 **Shaping And Compacting Below Selected Layer**

Each portion of the road-bed below the selected layer which, by virtue of its inadequate natural density, is directed by the Employer's agent to be compacted by means of a pneumatic-tyred roller, shall be prepared by shaping where necessary, and each such portion shall be compacted by means of at least eight complete passes by a pneumatic-tyred roller. One pass shall consist of the complete area being systematically passed in the longitudinal direction so that each pass overlaps the previous by half.

DM 6 **TOLERANCES**

PS DM 6.5 **DIMENSIONS AND LEVEL CONTROL**

The Contractor shall submit to the Employer's agent, in a form acceptable to the Employer's agent, records of dimension and level control, prior to requesting the Employer's agent to carry out any routine inspections.

DM 7 **TESTING**

PS DM 7.2 **PROCESS CONTROL**

Amend table 1 of DM 7.2 as follows:

Substitute "2 000 m^2" with "1 500 m^2", "1 500 m^2" with "1 200 m^2 and "5 000 m^2" with "3 000 m^2".

DM 7.3 **ROUTINE INSPECTION AND TESTING**

Substitute DM 7.3.2 with the following:

No density shall be less than the specified minimum density for the relevant layer.

The cost of all routine testing done by the Employer's agent, and of which the results do not comply with the specified minimum requirement for the material, shall be borne by the Contractor and will be subtracted from the monthly payment certificates.

SANS 1200 G: CONCRETE (STRUCTURAL)

PERFORMANCE SPECIFICATION FOR CONCRETE DESIGN

1. APPLICATION

This performance specification is applicable to all concrete used for the construction for the project.

The structural concrete in the project are intended for use in:

- **Basin 9**
  - Inlet works
  - Overflow (spillway) structure
  - Outlet structure
  - Evaporation pond
- **Basin 6**
  - Inlet works
  - Spillway structure
  - Outlet structure
  - Evaporation pond

2. CODES AND DESIGN SPECIFICATIONS

All works to comply with current South African Standards as a minimum.

These include but are not limited to:

- SANS 10160:2011 - Basis of structural design and actions for buildings and industrial structures. Part 1 to 8.
- SANS 1200:1982 - Concrete (Structural). Part G.
- SANS 10100:2000 - The structural use of concrete. Part 1 and 2

International standards for consideration:

- BS EN 206:2013 - Concrete - Specification, performance, production and conformity

3. RESPONSIBILITIES

The Contractor's scope of work to include (design responsibility):

- Mix design for the applicable exposure and durability for the project;
  - Reinforcement minimum cover = 50mm, unless specified otherwise
  - Design life = 50 years
- Submitting documentation required for the mix design (Refer to Section 1.4), for acceptance by the Employer's Agent.
- Preparing and implementing a Quality Assurance Management Plan.
- Site monitoring reports (to be signed off by the Mix Designer) to be submitted for acceptance by the Employer's Agent (monthly).

- A maintenance procedure and plan (for client implementation).

4. SUBMITTALS

- Details and experience of Mix Designer, including PR Eng registration number.
- Copy of valid Professional Indemnity cover Certificate of Designer / Company (Minimum value to be twice the value of the concrete works for each and every claim).
- List concrete requirement (to include, but not limited to):
    - The structures are exposed to industrial and municipal sewage.
    - Abrasion and chemical resistance required, mainly due to industrial waste.
    - Water tight structures, designed with a maximum crack width of 0.2mm and a minimum cover of 50mm.
    - The structures design life: 50 years.
    - The grade of concrete for all structures and structural elements = 35MPa cube strength @ 28 days , 19mm stone.
    - Shutters as proposed by contractor (Steel, timber, etc.)
    - Curing and shutter stripping as proposed by contractor.
    - Maximum heat of hydration = 24°C (increase in temperature).
- Mix design (to include):
    - Materials, material origins, mix proportions and associated testing.
    - Cube test results for 3, 7 and 28 days
- Quality Assurance Management Plan (including post concreting inspections and sign offs).
- Remedial Maintenance Procedures and Suggested Remedial Maintenance Program.

5. SUPPLIERS WARRANTY

The contractor shall submit a written guarantee accompanied by substantiating data, stating that the products used are in accordance with or exceed these specifications.

In addition to the above, upon completion of works the Mix Designer shall submit all documentation to confirm constructed concrete works meet his design specifications and were correctly implemented on site.

G : CONCRETE (STRUCTURAL)

G 3 MATERIAL

PS G 3.2.1 Applicable Specifications

Substitute G3.2.1 with the following :

All cement types shall comply with the requirements of SANS EN 197-1.

Where Malmesbury Hornfels (shale) is used as aggregate in concrete, a blend (by mass) of 50% CEM 1 42,5 or CEM 1 42,5R and 50% blast furnace slag shall be used in the concrete mix.

PS G 3.2.3 Storage Of Cement

Add the following to G 3.2.3:

Separate storage facilities shall be provided for the various types of cement specified.

Consignments of cement shall be used in the same sequence as that in which they are delivered to site. No cement shall be used which has been stored on site for a longer period than 6 (six) weeks. All cement so stored for a longer period than 6 (six) weeks, all cement damaged in any way, and all cement which does not comply with the specification, shall be removed immediately and permanently from the site.

PS G 3.5.2 Air-entraining Agents

Substitute G 3.5.2 with the following:

Air-entraining agents shall not be used in concrete.

PS G 3.9 Damp Proof Membrane (DPM)

Damp proof membrane between the floor and top of the 19mm stone filter subsoil drainage layer shall be 500 micron thick Polyethylene sheeting placed to overlap adjacent sheets by at least 250 mm.

G 4 PLANT

PS G 4.5.3 Ties

Add the following to G 4.5.3:

Permanent metal ties shall have a minimum concrete cover of 50 mm after formwork has been removed.

Tie holes shall be filled with an approved expansive cementitious grout equivalent to "Durabed" of ABE. The product shall be prepared to a non-slump consistency, but where no cracking occurs when pressed into a firm ball. Trial mixes shall be made to arrive at the required working consistency.

G 5 **CONSTRUCTION**

G 5.1 **REINFORCEMENT**

PS G 5.1.3 **Cover**

Substitute G 5.1.3 with the following :

The cover of concrete over reinforcement, unless otherwise indicated on the drawings, shall in no case be less than 50 mm.

PS G 5.2.1 **Classification Of Finishes**

Add the following to G 5.2.1:

The following surface conditions are required on the various portions of the finished concrete:

(a) **Rough**

Concealed surfaces and surfaces more than 150 mm below final ground level.

(b) **Smooth**

All surface finishes not classified as "rough" in paragraph (a) shall be classified as "smooth". All exposed arises (i.e. where the angle between adjacent sides is 110° or less) unless otherwise indicated on the drawings, shall be chamfered 25 mm x 25 mm by means of triangular fillets fixed to the formwork.

(c) **Special smooth, repaired and rubbed**

This shall be for formed surfaces of structures prominently exposed to public view where appearance is of special importance. Formwork shall only be of approved plywood, approved commercial formboard or smooth tongue-and-groove boards, except that in certain cases such as for pre-cast units permission may be granted to use steel formwork provided that sufficient vibration is used. After defects have been repaired, as described in paragraph (e), all ridges, nail marks and other projections shall be removed with carborundum stone. After the treatment the surface shall then be kept continuously wet for 10 days after which period of additional curing it shall be allowed to approach surface dryness immediately prior to treatment by sack rubbing in order to secure a degree of suction most favourable for obtaining good bond. A soft mortar consisting of one part cement and two parts sand passing the 1,18 mm sieve shall be thoroughly rubbed over the entire exposed surface with clean hessian, completely filling all pits and irregularities. The mortar consistency shall be that of thick cream. At a sufficient interval after the sack rubbing to prevent smearing, but before the mortar hardens, most of the excess mortar shall be removed by rubbing with clean hessian. After the mortar has set for several hours, curing shall be resumed and continued for at least two (2) days. The surface shall then be allowed to become surface dry and in this condition well sanded with no. 2 sandpaper.

(d) Exposed arises

All exposed arises (i.e. where the angle between adjacent sides is 110° or less) unless otherwise indicated on the drawings, shall be chamfered 25 mm x 25 mm by means of triangular fillets fixed to the formwork.

(e) Repair of concrete

Immediately after the removal of the formwork, the Employer’s agent shall inspect the concrete for defects. Skilled workmen only shall perform all repairs of such defects, by approved methods and to the satisfaction of the Employer’s agent and at the expense of the Contractor.

Repairs shall be carried out as soon as practicable after the removal of the formwork and in any case not longer than twenty four (24) hours after exposure. Concrete that is damaged from any cause and concrete that is honeycombed, fractured or otherwise

defective, and concrete which, because of excessive surface depressions must be excavated and built up to bring the surface to the prescribed lines, shall be removed and replaced with mortar or concrete as hereinafter specified or as otherwise directed by the Employer's agent .

Concrete filling generally of the same class as the damaged concrete shall be used for holes extending entirely through concrete sections and of such a size as will accept concrete and for holes in mass concrete greater in area than 0,1 m^2 and deeper than 100 mm and for holes in reinforced concrete which are greater in area than 0,15 m^2 and which extend beyond the reinforcing. Mortar filling composed of sand and cement in the same proportions as used for the concrete and of a consistency such as will make the mortar sufficiently plastic to be easily placed, shall be used for all other imperfections.

A filling shall be bonded tightly to the surface of the area being repaired and shall be bound and free from shrinkage, cracks and hollow areas after the filling has been cured and dried. Curing of repaired areas shall be performed in such a manner and for such periods as the Employer's agent may direct.

Particular care shall be exercised to ensure that the colour of the repair work shall match as nearly as possible to the colour of the surrounding concrete. No cement washing or plastering shall be carried out except on the written instruction of the Employer's agent .

PS G 5.2.5 **Removal of Form Work**

In Table 2 of G 5.2.5, substitute "Portland cement and Portland cement 15" in columns 2, 3 and 4 with "CEM 1 Portland cement, delete columns 5, 6 and 7 and substitute "Portland blast-furnace cement" in columns 8, 9 and 10 with "CEM II blast-furnace cement or blends of CEM I Portland cement with granulated blast-furnace slag".

PS G 5.4 **PIPES AND CONDUITS**

Add the following to G 5.4:

All pipes and specials, which must be installed in the floors and walls of structures, shall be embedded in the concrete during the casting of such concrete. No holes shall be left for the later installation of pipes and specials, without the written approval of the Employer's agent .

Where such holes have been approved by the Employer's agent , the Contractor shall be responsible for the grouting-in of such pipes or specials with an approved expansive cementitious grout as specified in PS G 4.5.3, regardless of whether or not these have been supplied by himself. The Contractor shall provide a smooth, dense and waterproof finish around the pipes or specials.

The clear space between pipes of any kind embedded in reinforced concrete and the clear space between such pipes and reinforcement shall at any point be not less than -

(a) 50 mm, or

(b) 5 mm plus the maximum size of coarse aggregate,

whichever is the greater.

G 5.5 **CONCRETE**

PS G 5.5.1.5 **Durability**

Substitute G 5.5.1.5 with the following:

Concrete shall be so proportioned to ensure that the water/cement ratio does not exceed 0,5 and to ensure workability, water reducing admixtures of approved manufacture shall be used in preference to increasing the cement content.

PS G 5.5.1.7 **Strength concrete**

Add the following to G 5.5.1.7:

The grade of strength concrete and the maximum nominal size of coarse aggregate (28 days cube strength / nominal stone size) for each portion of the works, unless otherwise indicated on the drawings, shall be as follows:

i) Blinding layers ..... 20 MPa/19 mm

ii) Encasing of pipes ..... 20 MPa/19 mm

iii) Benching and screeds ..... 25 MPa/10 mm

iv) All Reinforced concrete ..... 35 MPa/19 mm

v) Strip foundations ..... 20 MPa/19 mm

vi) Mass concrete.....25 MPa/19 mm

vii) Concrete footings for fencing .....15 MPa/19 mm

PS G 5.5.7 **Construction Joints**

Add the following to G 5.5.7.1:

Construction joints shall be limited to the minimum and shall only be made in positions as shown on the drawings or in positions as specifically approved by the Employer's agent . Construction joints between tank bottoms, floors, or wall bases, and the walls standing on them shall not be made flush with the supporting surface, but shall be made in the wall 150 mm above the base. The 150 mm high riser wall shall be cast as an integral part of the bottom, floor or base, i.e. the concrete in the riser shall be deposited simultaneously with the concrete in the bottom, floor or base adjacent to it. Where there is a fillet at the bottom of a wall, the construction joint shall be made 150 mm above the fillet.

Fresh concrete shall be bonded to old concrete with an approved type of epoxy bonding compound, such as Epidermix 344 or equivalent.

The cost of all construction joints shall be deemed to be included in the rates for the relevant concrete items and no separate payment will be made for this.

Add the following Clauses to G 5.5.7.

PS G 5.5.7.4 **Expansion joints**

Expansion joints shall be formed in positions and in accordance with details as shown on the drawings. All expansion joints shall be formed with an approved closed cell polyethylene fill material with a density of not less than 100 kg/m^3 (similar to "SPV 120" as supplied by Sondor or equivalent). Joint sealers shall consist of a one component polyurethane sealing compound (similar to Sikaflex PRO 2 HP, as supplied by SIKA or equivalent).

Rearguard S-type PVC waterstops with centre bulbs shall be installed under floors and Hydrofoil PVC waterstops with centre bulbs in walls, as indicated on the drawings.

All sealants, fill material and waterstops shall be installed strictly in accordance with the specification of the manufacturers and to the satisfaction of the Employer's agent . The sealant shall be installed in one operation and jointing to already hardened sealant will not be permitted.

PS G 5.5.7.5 **Key Joints**

Key joints shall be formed in positions and in accordance with details as indicated on the drawings.

PS G 5.5.9 **Adverse Weather Conditions**

Add the following to G 5.5.9.1:

No material having a temperature of below 5 °C shall be used for concrete, and no concrete shall be deposited when the ground or air temperature is below 2 °C. Furthermore, if the air or ground temperature is likely to fall below 2 °C within 12 (twelve) hours after depositing of concrete, no concreting shall be done without the written consent of the Employer's agent . If such consent is given the Contractor shall heat the aggregate stockpiles and mixing water, and defrost the formwork and reinforcement.

PS G 5.5.10 **Concrete Surfaces**

Add the following to G 5.5.10.1:

Concrete surfaces under screeds, granolithic floor finishes or benching, and surfaces of strip foundations and footings shall be brought up to a plane, uniform surface with a suitable screed board.

Add the following to G 5.5.10:

PS G 5.5.10.4 **Wood-floated finish**

Where wood floating is specified or scheduled, the surface shall first be given a finish as specified in G 5.5.10.1 and after the concrete has hardened sufficiently, it shall be floated to a uniform surface free from trowel marks. The screeded surface shall be wood-floated, either by hand or machine, only sufficiently to produce a uniform surface free from screed marks.

PS G 5.5.10.5 **Steel-floated finish**

Where steel floating is specified or scheduled, the surface shall be treated as specified in PS G 5.5.10.4 except that, when the moisture film has disappeared and the concrete has hardened sufficiently to prevent laitance from being worked to the surface, the screeded surface shall be steel-trowelled under firm pressure to produce a dense, smooth, uniform surface free from trowel marks.

PS G 5.5.11 **Watertight Concrete**

Substitute G 5.5.11 with the following:

PS G 5.5.11.1 **General**

All structures that are designed to retain water or to keep water out, shall be regarded as watertight structures.

PS G 5.5.11.2 **Requirements and tests for watertightness of structures**

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 structures enumerated in PS G 5.5.11 has been proved by testing to be watertight.

Upon completion of construction and when so agreed by the Employer's agent, the structure shall be filled by the gradual admission of water until the water level reaches the designed maximum level. The water level shall then be carefully noted and recorded by the Employer's agent in relation to a fixed bench mark, and the structure shall be allowed to remain filled for a period of 2 (two) weeks or such longer time as may be required to permit complete saturation of the concrete. During this period, readings will be taken by the Employer's agent and the results so obtained will be available for the information of the Contractor.

At the end of this period more water shall be added, if necessary, to bring the water level back to the designed maximum level and the water shall be left undisturbed for a period of at least 4 (four) days during which time the level shall again be recorded by the Employer's agent at regular intervals. The structure shall be considered to be watertight if the drop in water level does not exceed 6 mm in 96 (ninety six) hours in the case of a roofed structure and if no leakage is apparent.

The testing shall be included in the Contractor's programme.

The acceptable drop in level in the case of an unroofed structure shall be such that it allows for normal evaporation during the time of the test.

If appreciable leakage is evident at any stage of the filling or testing or if, in the opinion of the Employer's agent , the degree of watertightness is unsatisfactory, the Contractor shall, when so ordered by the Employer's agent , discontinue the test immediately and at his own expense take approved steps to rectify the work. The work of rectification shall be continued assiduously until, on repetition of the test procedure, a satisfactory test result is obtained and the degree of watertightness is acceptable.

Backfilling around structures shall not commence until a satisfactory test result has been obtained.

The Employer's agent shall have the right to retest the structure before the expiry of the defects liability period and the results of these tests will be made available to the Contractor. If these tests indicate to the Employer's agent that the degree of watertightness is unsatisfactory, the Employer's agent (before issuing the final certificate) will be entitled to order the Contractor to rectify the work at his own expense in such a manner as will cause least interruption to the Employer and will ensure that the degree of watertightness of the structure is satisfactory.

Concrete mix design requirements for water retaining structures:

- Minimum Cementitious Content = 325 kg/m^3
- Maximum water / cement ratio = 0,5 (for Portland Pulverised ash cement or CEM 1 cement with p.f.a = 0,5)
- Maximum Cementitious Content
  - CEM 1 + slag = 400 kg/m^3
  - CEM 1 + p.f.a = 450 kg/m^3

Add the following new items to G5:

G 5.6 **NO-FINES CONCRETE**

PS G 5.6.1 **Materials**

Cement shall be CEM II.

Water and aggregate shall comply with the requirements of G 3.3 and G 3.4.

Each size of aggregate shall be a single size aggregate graded in accordance with SABS 1083.

PS G 5.6.2 **Classes Of No-fines Concrete**

No-fines concrete shall be classified by the prefix NF and the size of aggregate to be used. Class NF 19 means a no-fines concrete with a 19 mm nominal size aggregate.

The volume of aggregate per 50 kg of cement for each class of concrete shall be as follows:

CLASS	**AGGREGATE PER 50 kg CEMENT**
NF 38	0,33 m^3
NF 19	0,30 m^3
NF 13	0,27 m^3

PS G 5.6.3 **Batching And Mixing**

Cement shall be measured by mass or in full pockets of 50 kg each and aggregate shall be measured by volume in approved measuring boxes or barrows.

The aggregate shall be moist or wetted before the cement is added. Where drum mixers are used, about 20 % of the water shall be poured into the drum before the aggregate and cement are loaded. The mixing time in the drum shall be about 45 to 50 seconds.

The quantity of water added shall be just sufficient to form a smooth grout which will adhere to and completely coat each and every particle of aggregate, and which is just wet enough to ensure that, at points of contact of aggregate, the grout will run together to form a small fillet to bond the aggregate together. The mix shall contain no more than 20 litres of water for every 50 kg of cement.

Mixing shall be done in an approved batch-type mechanical mixer, but small quantities may be hand mixed.

PS G 5.6.4 **Placing**

No-fines concrete shall be placed in accordance with the procedure approved by the Employer's agent. It shall be placed in its final position within 15 minutes of having been mixed.

The concrete shall be worked sufficiently to ensure that it will completely fill the space to be concreted and that adjacent aggregate particles are in contact with one another. Excessive tamping shall be avoided and the concrete shall not in any circumstances be vibrated.

PS G 5.6.5 **Protection**

All no-fines concrete shall be protected from the elements and loss of moisture. Protection against loss of moisture shall be accomplished by one or more of the following methods:

a) Retaining formwork in place;

b) Covering exposed surfaces with sacking or other approved material kept continuously wet;

c) Covering exposed surfaces with plastic sheeting.

No-fines concrete placed during cold weather shall be adequately protected against frost for at least three (3) days.

PS G 5.8 **JOINING NEW CONCRETE TO EXISTING**

Where partial demolition is required for extension work to existing structures, the contact face shall be cut to predetermined line and level, and any loose and fragmented material shall be removed, and projecting steel cleaned and bent as directed by the Employer's agent. Where partial demolition is not required but extension work only, the contact surface shall be scabbled and cleaned of all dirt and loose particles.

If dowels are required, they shall be installed in holes drilled into the existing structure, in accordance with the details shown on the drawings, and secured by means of an approved type of epoxy bonding compound such as Epidermix 372 or equivalent.

Fresh concrete shall be bonded to the old concrete with an approved type of epoxy bonding compound, such as Epidermix 344 or equivalent.

G 6 **TOLERANCES**

PS G 6.2.3 **Specified Permissible Deviations**

Add the following to G 6.2.3:

"Degree of accuracy 1 shall apply to this contract".

G 8 **MEASUREMENT AND PAYMENT**

G 8.1 **MEASUREMENT AND RATES**

PS G 8.1.1 **Formwork**

Delete "or the plan size of the excavation where additional excavation is provided to facilitate erection of forms" in the first sentence of PS G 8.1.3.1(c).

Delete the following in G 8.1.1.3(c):

"and for different prop heights for beams and slabs".

PS G 8.1.2 **Reinforcement**

Substitute 8.1.2.2(b) with the following:

"Welded mesh will be listed separately for each type and measured by mass"

PS G 8.1.3 **Concrete**

Delete "or the plan size of the excavation where additional excavation is provided to facilitate erection of forms" in the first sentence of PS G 8.1.3.1(c).

Add the following to PS G 8.1.3.1(d):

Strip foundations and encasement of pipes shall be cast directly against the sides and bottoms of excavations. No payment shall be made for additional concrete in over-break.

Delete the full stop at the end of G 8.1.3.3(a) and add the following:

"and special steps necessary before depositing concrete during cold weather, as prescribed in PS G 5.5.9".

G 8.2 **SCHEDULED FORMWORK ITEMS**

PS G 8.2.5 **Narrow Widths**

Replace G 8.2.5 with the following :

Narrow widths formwork will not be measured separately, but shall be included in G 8.2.1 and G 8.2.2, where applicable.

Add the following items to G 8.2:

PS G 8.2.6 **Box out holes / Form voids ..... Unit : m**

Replace this item with the following payment item:

Box out holes / Form voids

Items will be scheduled as follows:

(a) **Cylindrical of volume**:

	Over	**and**	**Up to and including**	**Unit**
i)	-		0.01m³	No
ii)	0.01m³		0.05m³	No
iii)	0.05m³		0.15m³	No
iv)	0.15m³			No

(b) **Cubical of volume**:

	Over	**and**	**Up to and including**	**Unit**
i)	-		0.01m³	No
ii)	0.01m³		0.05m³	No
iii)	0.05m³		0.15m³	No
iv)	0.15m³			No

PS G 8.2.7 **Chamfers Exceeding 20 mm x 20 mm, Grooves And Rebates ..... Unit : m**

The size of chamfers, or the width and depth in the case of grooves and rebates, is stated.

The unit of measurement shall be the metre length of chamfer formwork provided. Chamfers 20mm x 20mm and smaller will not be measured for payment and their cost shall be deemed to be included in the rates tendered for formwork.

PS G 8.3.2 **High-Tensile Welded Mesh ..... Unit : kg or t**

Add the following to G 8.3.2:

Welded mesh shall be measured and paid for by mass.

The rate shall include for overlaps and wastage.

G 8.4 **SCHEDULED CONCRETE ITEMS**

PS G 8.4.4 **Unformed Surface Finishes ..... Unit : m^2**

Add the following to G 8.4.4:

The concrete surface finishes under screeds, granolithic finishes or benching as prescribed in PS G 5.5.10 shall not be measured separately. The rates for the related concrete items shall also cover the cost of these surface finishes.

PS G 8.5 **JOINTS ..... Unit : m**

Add the following to G 8.5:

Distinction will be made between different types and sizes.

The length shall be measured on the surface of the completed expansion or key joint. The rate shall cover all costs related to the construction of the joint, inclusive of forming the joint, joint filler and joint sealant, complete as specified on the drawings, after curing of the concrete has been completed. The rate shall also cover the cost of formwork, testing and making good. Dowels and waterstops will not be measured separately and shall be included in the tendered rate for joints.

The rate shall additionally cover all the costs related to the material, labour and equipment required to install the waterstop, with inclusion of accommodating the waterstop in the formwork, welding and joining the waterstop to the dimensions as indicated on the drawings, as well as making good and ensuring the correct positioning during the cast of the concrete.

Waterstops shall be installed strictly in accordance with the specification of the manufacturers and to the satisfaction of the Employer's agent.

Add the following new pay items to G 8:

PS G 8.9 **TESTING STRUCTURES FOR WATERTIGHTNESS.....Unit : Sum**

The rate shall cover the cost of all equipment and labour necessary to test the structure for water tightness as described in PS G 5.5.11.1, including the supply of water and filling the structure, and for emptying it afterwards, all to the satisfaction of the Employer's agent.

No additional payment will be made for re-testing the structure for water tightness after the repair of leaks.

PS G 8.10 **SUPPLY AND INSTALLATION OF 2,4 m HIGH INDUSTRIAL TYPE CONCRETE PALISADE FENCING ..... Unit : m**

The rate shall cover the cost of the supply and installation of the 2,4m high industrial type concrete palisade fencing on the perimeter of the basin areas, including the pre-fabricated concrete posts, rails, pales, all electro-galvanised (zinc and chrome passivated) nuts, bolts and washers, pvc washers and erection, complete as specified and shown on the drawings and shall include the cost of all the material and labour to install the fence at position to the satisfaction of the Employer's agent.

The rate shall additionally cover the cost of concrete security extensions (cranks) cast onto the posts to accommodate 4 straining wires to which the 500mm diameter galvanised flat razor wire coil shall be fixed, including all the material and labour required as specified and shown on the drawings.

PS G 8.11 **BUILDING PIPES INTO CONCRETE WORK AND GROUTING PIPES ..... Unit : No**

Distinction will be made between different types and sizes, irrespective of the type of pipe.

Supply and installation of pipes smaller than 200mm dia will not be paid separately and the Contractor shall provide for this in his rates. The rate shall cover all the costs related to forming the opening for the pipe, scabbling, cleaning and preparing the concrete surface, building the pipe into the wall at the correct position and level, cutting of the pipe where necessary, providing an approved non-shrink epoxy grout, placing and ramming it solidly into all voids (according to the manufacturer's instructions), formwork and finishing to a smooth watertight surface to the satisfaction of the Employer's agent.

HA : STRUCTURAL STEELWORK (SUNDRY ITEMS)

HA 5 **CONSTRUCTION**

HA 5.2 **FABRICATION AND ASSEMBLY**

PS HA 5.2.6 **Handrails**

Substitute the first sentence of HA 5.2.6 with the following:

Shop drawings of all pre-fabricated glass fibre reinforced plastic (GRP) handrails shall be submitted to the Employer's agent for approval.

Samples of each type of handrail system proposed shall be submitted for approval prior to placement of purchase orders.

All materials and equipment necessary for the fabrication and installation of the handrails shall be stored before, during and after shipment in a manner to prevent cracking, twisting, bending, breaking, chipping or damage due to over exposure to the sun. Any material that, in the opinion of the Employer's agent , has become damaged as to be unfit for use, shall be promptly removed from the site of work, and the Contractor shall receive no compensation for the damaged material or its removal.

GRP products exposed to weather shall contain an ultraviolet inhibitor and shall additionally receive one mil thick UV coating to shield from ultra-violet light if specified or requested.

Handrails shall be prefabricated GRP handrail system with square stanchions and round tubing as railings and shall be manufactured by an approved firm specialising in such works from Glass Reinforced Plastic(GRP).

The stanchions shall be top mounted, using GRP foot pieces. Structural GRP member composition shall consist of a glass fibre reinforced polyester or vinyl ester resin matrix, approximately 50% resin to glass ratio, using the pultrusion process.

The handrail systems shall be custom made according to the design drawings and the suppliers measurements on site.

Handrails shall be Yellow of colour, shall consist of a handrail and a knee-rail, both manufactured of GRP of nominal thickness. The rails shall be 38 x 38 x 5mm round tube and the stanchions posts shall be 51 x 51 x 6mm square tube manufactured by the pultrusion process. The parts must be coated with an industrial grade polyurethane paint for additional UV protection and wear resistance. The resin matrix shall be iso-polyester and shall contain an UV inhibitor. Stanchions shall be manufactured pre-formed in one piece and shall be of GRP.

The normal height of the pultruded handrail measured to the centre of the top rail shall be 1 100 mm above the top of concrete wall when horizontal, while the intermediate rail is located at mid-height.

The pre-fabricated handrail sections shall be installed plumb and level as per the supplier's specifications.

Stanchions shall be spaced at intervals not exceeding 1,5 m and shall be fixed with two SS M16 bolts, washers and nuts each.

Materials shall be as shown on the drawings or as scheduled.

Add the following to HA 5.2:

PS HA 5.2.15 **Pre-fabricated UHMWPE grids to be installed in the litter taps of the inlet works of Basins 9 and 6**

Large grids for trash racks of litter traps

Grids for litter traps shall be manufactured to the dimensions as indicated on the detailed drawings. The grids shall be manufactured in panels as shown on the drawings. The trash rack of each litter trap will contain ten (10) grid panels.

Each panel shall consist of 37 solid bars. Each bar shall be 20 mm thick and 90 mm deep with one rounded end spaced at 40,5 mm centre to centre. The complete grid, including bars, reinforcing members and mounting plates shall be manufactured from Ultra High Molecular Weight Polyethylene (UWMWPE) material.

Shop drawings of the pre-fabricated UHMWPE grids shall be submitted to the Employer's agent for approval after confirming measurement on site by the supplier. A sample of a grid panel shall be submitted for approval prior to placement of purchase orders.

The pre-fabricated grid panels shall be fixed to the concrete structure by means of stainless steel rawl bolts as indicated on the drawings.

Small grids for wall openings of inlet structures

Grids for openings in wall of litter trap shall be manufactured to the dimensions as indicated on the detailed drawings. The grids shall be manufactured in two different panel sizes as shown on the drawings. Each inlet structure will contain four (4) 300mm W x 500mm H and two (2) 500mm W x 300mm H panels.

Each bar shall be 20 mm thick and 90 mm deep with one rounded end spaced at 40,5 mm centre to centre. The complete grid, including bars, reinforcing members and mounting plates shall be manufactured from Ultra High Molecular Weight Polyethylene (UWMWPE) material.

Shop drawings of the pre-fabricated UHMWPE grids shall be submitted to the Employer's agent for approval after confirming measurement on site by the supplier. A sample of a grid panel shall be submitted for approval prior to placement of purchase orders.

The pre-fabricated grid panels shall be fixed to the concrete structure by means of stainless steel rawl bolts as indicated on the drawings.

PS HA 5.2.16 **Prefabricated Stainless Steel Sluice Gates**

Sluice gates shall be prefabricated by using Grade 316L stainless steel by a reputable supplier. (Gereg or equivalent). The Fulton wall-mounted sluice gates shall be designed to withstand the pressures as directed by the Employer's Agent (maximum operating head, as indicated in tables below).

The main offer shall be for "GEREG" or equivalent manufactured equipment, which is deemed most suitable for the service anticipated. It is not intended, however, to eliminate other products of equal quality and design. The tenderer shall prepare his tender based on the specified Gereg or equivalent equipment for purposes of determining a competitive offer.

At the time of tender the tenderer may offer substitutions to the specified equipment for consideration. The equipment proposed for substitution shall be of proven superiority to that specified. This shall further be supported by a list of current users in similar installations, as well as full data sheets, design calculations and drawings showing sufficient detail and dimension to assess and verify the design of each sluite gate.

The following Fulton wall-mounted sluice gates with specified maximum operating heads are required.

Basin 6

Position	Opening size (mm)	Flow direction	Max. operating head (mm)	Manual gear box ratio	Spindle / Hand wheel φ (mm)
Inlet to basin	1500 x 1500	Off seat	2500	4 & 10 : 1	55 / 600
Diversion	1200 x 1200	On seat	3500	3 & 6 : 1	45 / 600
Outflow to recharge	1200 x 1200	On seat	3000	3 & 6 : 1	45 / 600
Outflow to Donkergat	600 x 600	On seat	3000	N/A	30 / 600
Domestic effluent bypass	400 x 400	On seat (shaped to benching)	2000	N/A	30 / 300

Basin 9

Position	Opening size (mm)	Flow direction	Max. operating head (mm)	Manual gear box ratio	Spindle / Hand wheel φ (mm)
Inlet to basin	1350 x 1350	Off seat	3500	4 & 10 : 1	50 / 600
Diversion	825 x 825	On seat	2000	3,5 : 1	50 / 600
Outflow from basin	825 x 825	On seat	3000	3 : 1	35 / 500

The bottom of the sluices shall close flush horizontal, except for the 400 x 400mm sluice gate for the domestic effluent bypass at Basin 6. The gates and frames shall be manufactured from stainless steel grade 316 L material, the spindles from grade 316 stainless steel, the hand wheels from grade 304 stainless steel and fasteners and/or anchor bolts from grade 316 stainless steel. Where spindle guides are required, they shall be manufactured from bronze material. Pedestals shall be made from grade 316 L stainless steel material. Plexiglass cover tubes for the spindles shall be provided to keep the thread clean. Gear boxes, where required, between the spindles and the hand wheels shall be manual and the gear ratios shall be as given in the tables above. The spindles shall be of the "Rising" type.

PS HA 5.2.17 **Prefabricated Galvanised Steel Security Gates**

Gates shall be manufactured to the dimensions indicated on the drawings. Gates shall be prefabricated complete in every respect including hinges, washers, bolts and barrel bolts attached to the gates.

Gates shall be installed at the positions indicated on the drawings and indicated by the Employer's agent. Gates shall be hung on gate fittings in accordance with the requirements shown on the drawings. Gates shall be so erected as to swing in a horizontal plane at right angles to the plumb installed gate posts, clear of the ground in all positions.

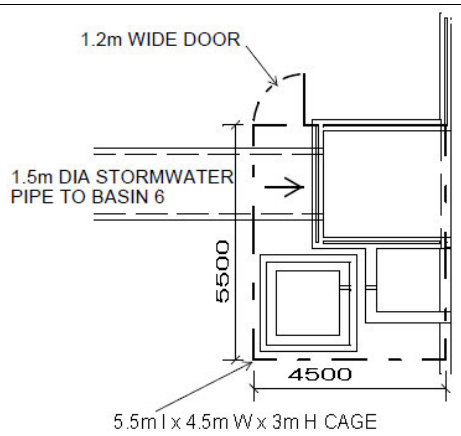
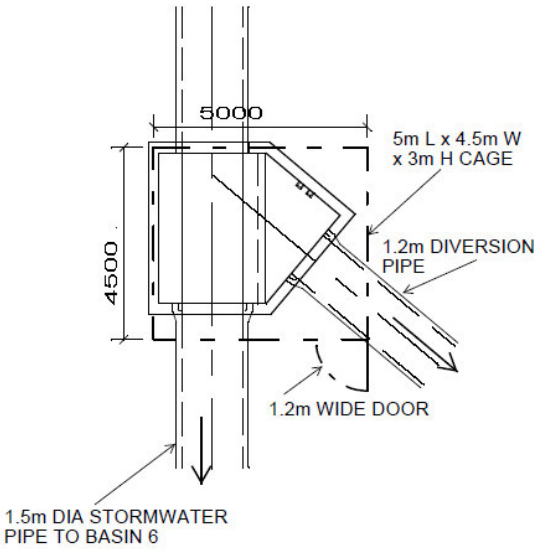
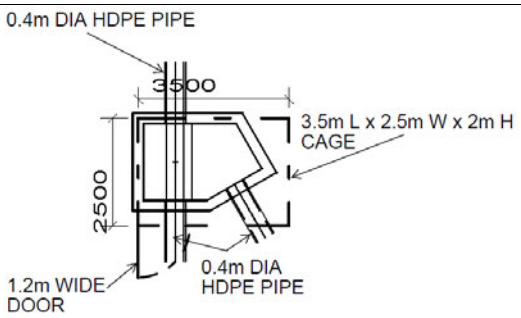
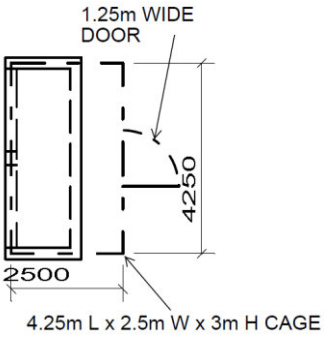
PS HA 5.2.18 **Prefabricated Security Steel Cages for protection of Sluice Gates and Monitoring Equipment**

Security cages shall be prefabricated by welded flat panel steel mesh, hot-dipped galvanised and PVC coated by a reputable supplier (Betafence or equivalent). The cages vary in size and shall be manufactured and assembled on site to the sizes, as indicated in tables below. The Contractor shall take note that the indicated sizes are for tender purposes and that the final sizes, type of footings and position of gates shall be finalised between the Contractor and the Employer's Agent before the order is finalised. The majority of the cages are partially founded on and fixed to the structure walls as indicated. Provision must be made for the sluice gates to be removed through the roof of the cage. The Employer's Agent shall determine whether a concrete slab or concrete ring beam under the cage shall be provided to prevent entry underneath vertical cages sides.

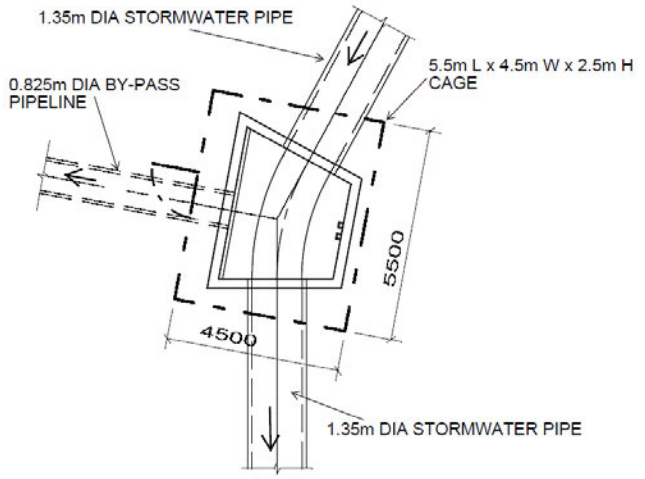
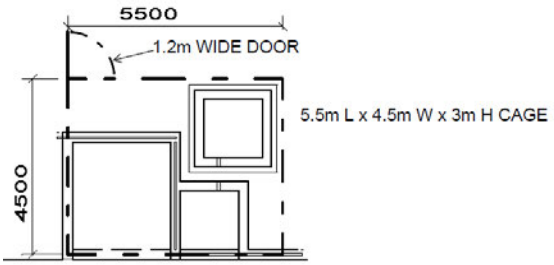
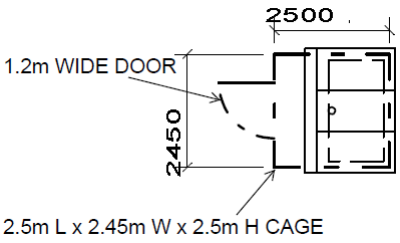
The main offer shall be for "BETAFENCE" or equivalent manufactured cages, which is deemed most suitable for the purpose anticipated. It is not intended, however, to eliminate other products of equal quality and design. The tenderer shall prepare his tender based on the specified Betafence or equivalent equipment for purposes of determining a competitive offer.

The preliminary cage sizes are indicated in the tables below.

Basin 6

Position	Cage plan dimensions (mm)	Cage height (mm)	Footings / Founding of cage
Inlet to litter trap & manhole for monitoring equipment	5500 x 4500	3000	
Diversion Manhole DIV 1	5000 x 4500	3000	
BP 3 Domestic effluent bypass manhole	3500 x 2500	2000	
Outlet structure of Basin 6	4250 x 2500	3000	

Basin 9

Position	Cage plan dimensions (mm)	Cage height (mm)	Footings / Founding of cage
Structure BP1	5500 x 4500	2500	
Inlet to litter trap & manhole for monitoring equipment	5500 x 4500	3000	
Outlet structure of Basin 9	2500 x 2450	2500	

HA 8 **MEASUREMENT AND PAYMENT**

PS HA 8.3.7 **Handrails ..... Unit : m**

Distinction will be made between different structures.

The rate shall cover the cost for the manufacturing and supply of all material, handling, delivering to site, off loading and installation, all complete as specified and indicated on the drawings. The rate shall also cover the cost of all bolts, nuts, washers, epoxy and grouting required to securely fix the handrails as required by the Employer's agent.

PS HA 8.3.8 **Pre-Fabricated UHMWPE Grids at Litter Trap .....Unit : Sum**

Distinction will be made between different sizes and basins.

The rate shall cover the cost of the supply and installation of the grids / grid panels in positions, all complete as specified on the drawings and project specifications. The rate shall also cover all labour, all material and equipment required to fix the UHMWPE grids, including the stainless steel rawl bolts to the satisfaction of the Employer's agent.

PS HA 8.3.9 **Pre-Fabricated Stainless Steel Sluice Gates ..... Unit : No**

Distinction will be made between different pipe sizes to be controlled, structures and basins, as well as maximum water pressures (operating heads), which each sluice gate must be able to withstand while still be able to function effectively.

The rate shall cover the cost of the supply and the installation of the specified sluice gate, including the frame, spindle, handwheel, all complete as shown on the drawings. The cost will also cover all bolts, nuts, equipment, and all material required to fix the sluice gates to the Employer's agent's satisfaction, as well as the testing thereof for functioning and watertightness.

PS HA 8.3.10 **Pre-Fabricated Galvanised Steel Security Gates ..... Unit : No**

At security fences the pair of galvanised steel security leaf gates shall be measured as one.

The tendered rate shall include full compensation for the procuring and furnishing of all material, including gates, gate posts, bolts, barrel bolts, concrete footings, razor plates, all complete and the erection of the gates as specified and indicated on the drawings.

PS HA 8.3.11 **Galvanised Steel Razor 6 – Coil Stack Security Fencing ..... Unit : m**

Distinction will be made between different basins.

The rate shall include full compensation for the procuring and furnishing of all material, including, concrete footings plus cast-in galvanised steel eye bolts for anchoring of coil stack fencing on inside and outside, all complete as specified and indicated on the drawings.

PS HA 8.3.12 **Security Cages for protection of Sluice Gates and Monitoring equipment ..... Unit : No**

Distinction will be made between different basins and structures to be protected.

The rate shall cover the cost for the manufacturing and supply of all material, handling, delivering to site, off loading and installation, all complete as specified and indicated on the provisional drawings. The final size, position and footings shall be determined and finalised on site by the Contractor and the Employer's agent.

PS HA 8.3.13 **Step irons for Concrete Structures ..... Unit : No**

Distinction will be made between different basins and structures where step irons have to be installed.

The tendered rate shall include full compensation for the procuring and furnishing of the type of step irons, as specified on the drawings, as well as all labour, plant and material to install the step irons according to the manufacturer's specifications and as specified and indicated on the drawings.

L : MEDIUM PRESSURE PIPELINES

L 3 **MATERIALS**

PS L 3.1 **GENERAL**

Substitute the first sentence of L 3.1 with the following:

Types and classes of pipes shall be as scheduled.

PS L 3.8 **JOINTING MATERIALS**

PS L 3.8.4 **Loose Flanges**

Substitute the first sentence of the last paragraph of L 3.8.4 with the following:

Bolts and nuts shall comply with the requirements of SABS 135.

PS L 3.9.5 **Joints, Bolts, Nuts And Washers**

Substitute L 3.9.5 with the following:

All joints, bolts, nuts and washers shall be cadmium-plated or stainless steel.

PS L 3.10 **VALVES**

PS L 3.10.1 **Gate Valves**

All gate valves shall comply with the requirements of SABS 664 and shall be suitable for a working pressure of 1,6 MPa. All gate valves must be supplied with a square spindle nut, suitable to be used with a valve key.

Gate shall open clockwise. The direction for opening and closing shall be permanently displayed on the valves. Valves shall have non-rising spindles.

Compression shut-off valves with rubber protected gate and smooth finish without recess inside, may be used.

All flanged gate valves shall be drilled according to SABS 1123 Table 1600/3. Pipes shall not be tested against a closed valve. Thrust blocks for test sections shall be approved by the Engineer prior to testing of pipes.

L 4 **PLANT**

PS L 4.3 **TESTING**

Add the following to L 4.3

The Contractor must ensure that the test equipment is in good order and that it is calibrated.

PS L 8 **MEASUREMENT AND PAYMENT**

PS L 8.2 **SCHEDULED ITEMS**

PS L 8.2.8 **Recover Old pipeline fittings .....Unit : No**

Substitute L 8.2.8 with the following:

Removal of existing pipeline fittings complete and deliver to designated City of Cape Town (CoCT) stores. The rate shall cover all the costs of labour, material and plant required to complete the removal, handling and delivery, including sign-off at designated CoCT stores, of the old pipeline fittings.

LB : BEDDING (PIPES)

LB **BEDDING (PIPES)**

PS LB 1 **SCOPE**

Add the following to LB 1.1:

This specification also covers the bedding required for electric cables.

LB 3 **MATERIALS**

PS LB 3.1 **SELECTED GRANULAR MATERIAL**

Substitute LB 3.1 with the following:

Selected granular material shall be an aggregate, sand or granular material, all of a non-cohesive nature and free from any organic material, of which the grading analysis shows 100 % passing a 13,2 mm sieve and not more than 5 % passing a 0,075 mm sieve.

In very wet conditions and if so ordered by the Employer's agent , a non plastic crushed material with the specification as stated underneath should be used for bedding cradle.

a) **Grading**

Sieve size (mm)	**% going through**
19,0	100
13,2	84 - 100
9,5	70 - 84
4,75	45 - 65
2,36	29 - 47
1,18	19 - 33
0,600	13 - 25
0,300	10 - 18
0,150	6 - 13
0,075	4 - 10

b) **Crusher value**

The aggregate crushing value, calculated at minus 13,2 mm plus 0,5 mm fraction, may not exceed 29.

PS LB 3.2 **SELECTED FILL MATERIAL**

Substitute LB 3.2 with the following:

The requirements of PS LB 3.1 shall apply mutatis mutandis.

PS LB 3.3 **BEDDING**

Add the following to LB 3.3:

All pipes shall be classified as rigid pipes and shall be laid on a Class C bedding except water connections, which shall be classified as flexible pipes. Cable bedding is specified separately.

PS LB 3.4.1 **Suitable Material Available From Trench Excavations**

Substitute LB 3.4.1 with the following:

The provisos of PS D 3.3.1 shall apply mutatis mutandis.

LB 5 **CONSTRUCTION**

LB 5.1 **GENERAL**

PS LB 5.1.4 **Compacting**

Substitute "90 %" of MOD AASHTO" in LB 5.1.4 with "90 % of MOD AASHTO (100 % for sand)".

LB 8 **MEASUREMENT AND PAYMENT**

LB 8.1 **PRINCIPLES**

PS LB 8.1.1 **Supply Of Bedding Materials Measured Separately**

Add the following to LB 8.1.1:

Payment for bedding material and selected fill material is only made if the selected trench-excavation material cannot be used in the same position as bedding material but has to be obtained from another part of the site of works or from commercial sources.

PS LB 8.1.4 **Separate Items For Cradle And Blanket**

Substitute LB 8.1.4 with the following:

No distinction shall be made as regards material for the bedding cradle and selected fill blanket, and the material shall comply with the requirements for material for bedding cradle.

PS LB 8.1.5 **Disposal Of Displaced Material**

Add the following to LB 8.1.5:

Surplus displaced material shall be dumped and levelled at an approved dumping site, as described in PS D 5.2.2.3.

LB 8.2 **SCHEDULED ITEMS**

Add the following to LB 8.2:

PS LB 8.2.1 **Provision of Bedding from Trench Excavation**

Add the following to LB 8.2.1:

Where bedding material is available direct from the trench excavation, it will not be paid for.

PS LB 8.2.2 **Supply Only Of Bedding By Importation**

PS LB 8.2.2.3 **From commercial sources**

Add the following to sub-item LB 8.2.2.3:

c) Bedding for wet conditions ..... Unit : m^3

The requirements of PS LB 3.1 for bedding in wet conditions must be noted. Payment will only be applicable if ordered by the Employer's agent .

PS LB 8.2.2.4 **From stockpile (Provisional)**

a) Selected granular material ..... Unit : m^3

b) Selected fill material ..... Unit : m^3

The rate shall cover the cost of obtaining, handling and transport regardless the distance, of the required bedding material from the stockpile, the delivery thereof at positions that are spaced along the trench in such a way as suits the working method of the Contractor, as well as the removal of material displaced by this importation within a free-haul distance of 0,5 km.

PS LB 8.2.5 **Overhaul of Material for Bedding Cradle and Selected Fill Blanket .....Unit : m^3 : km**

Substitute LB 8.2.5 with the following:

a) Limited overhaul ..... Unit : m^3

b) Long overhaul ..... Unit : m^3.km

Except that the volume is calculated according to LB 8.1.3, the requirements of D 8.3.6 or DA 8.3.3, as applicable, shall apply for overhaul.

LD: SEWERS

LD 2 **INTERPRETATION**

PS LD 2.4 **ADDITIONAL ABBREVIATIONS**

Add the following to LD 2.4:

GRP : Glass reinforced polyester.

LD 3 **MATERIALS**

LD 3.1 **PIPES, FITTINGS, AND PIPE JOINTS**

PS LD 3.1.5 **uPVC-pipes**

Substitute "approved flexible joints" in LD 3.1.5 with "spigot and socket rubber ring joints".

PS LD 3.1.8 **GRP Pipes**

Add the following to LD 3.1.5:

GRP pipes must comply with the applicable stipulations in ANSI / AWWA C950 – 88 and must have a suitable flexible joint.

LD 3.5 **MANHOLES, CHAMBERS, ETC.**

PS LD 3.5.2 **Precast Concrete Sections**

Add the following to LD 3.5.2:

Precast concrete sections with an inside diameter of at least 1 000 mm (or as specified) shall be used for manholes. Sectional spun concrete cylinders shall have been manufactured from dolomitic aggregate.

The joint between the manhole and the concrete roof slab shall be sealed effectively with a sealant, to the prescriptions of the manufacturers and approval of the Employer's agent , to prevent the infiltration of subsurface water or stormwater. Lifting holes shall be sealed off effectively, with an epoxy, after installation and before backfilling.

In the case of only one inlet pipe with the same diameter as the outlet pipe and with a deviation of less than 45° from the straight, the invert level of the outlet pipe shall be 10 mm lower than that of the inlet pipe.

Where the angle between the inlet and outlet of the manhole deviates by more than 45 ° from the straight or where more than one inlet enter a manhole, the invert level of the outlet shall be 30 mm lower than the lowest inlet invert level.

The soffits of all inlet pipes in a manhole shall be on the same level. If the outlet pipe is bigger than all the inlet pipes, it shall have the same soffit level as the inlet pipes.

All manholes complete with bottom, shall be able to accommodate a water pressure of the full manhole depth, as specified on the drawings, with an additional 50 % safety factor.

Benching must be formed with 20MPa /10mm concrete using dolomitic aggregate.

PS LD 3.5.7 **Step Irons**

Substitute LD 3.5.7 with the following:

Step irons shall be installed in all manholes deeper than 1,2 m. Step irons shall consist of polypropylene coated 12 mm high tensile steel, such as Calcamite or equivalent. The installation of the step irons shall be in accordance with the specification of the manufacturer.

Add the following to LD3:

PS LD 3.7 **Oil Absorbent Booms**

An effective organic oil absorbent boom which will not absorb water and which can absorb up to 25 times its own weight of oil and hydro-carbon shall be used, such as the Supersorb boom from Drizit or equivalent. The boom shall be 180mm in diameter.

The booms are supplied in 4m lengths and shall be joined to form the required length. The casing of the booms shall be from polyester / polyamide fabric with cotton / polyester stitching, which is filled with a mainly wood fibre based material.

LD 5 **CONSTRUCTION**

LD 5.6 **MANHOLES, INSPECTION CHAMBERS, ETC**

PS LD 5.4 **CONNECTIONS TO MANHOLES**

Add the following to LD 5.4:

If the gradient of a pipe is more than 1:10, a vertical bend shall be used to connect up to the manhole. The Contractor shall take care that no low point is formed in the pipe as a result of the bend. If a pipe lies at a gradient of 1:10 (5,71°), a 11,25° bend cannot be used since a bend with an angle larger than the grade of the pipe will result in a low point. It is the responsibility of the Contractor to shorten the bend in order to create the required angle.

For pipes with a gradient of up to 1:10, the angle can be taken up by a joint in the manhole and if required, also by the joint between the short-length and first full pipe.

PS LD 5.6.1 **General**

Substitute LD 5.6.1(a) with the following:

Manholes shall be precast concrete for uPVC sewer pipes and GRP for GRP pipes and shall be constructed as shown on drawings or as per manufacturer's specifications.

1. Final cover levels of manholes in streets and paved areas shall be to the same level as the street or paved area.

2. On sidewalks, lawns and garden areas the cover level shall be 20 mm above the final ground level.

3. In midblock sewers it shall be 50 mm above ground level.

4. In the veld 100 mm above natural ground level or as shown otherwise.

If a manhole is positioned at a low point or in a hollow where stormwater infiltration may occur, the manhole cover level must be raised to a level to avoid the danger of infiltration, or to a level as agreed with the Employer's agent .

If the manhole needs to be raised with more than 300 mm, FC sections with the same diameter shall be installed and sealed with epoxy.

PS LD 5.6.2 **Benching**

Add the following to LD 5.6.2.3:

Benching for all manholes except those with sand traps shall be in accordance with the drawings bound into the document.

PS LD 5.6.3 **Step Irons**

Add the following to LD 5.6.3:

Step irons shall only be installed in manholes deeper than 1,2 m.

PS LD 5.6.4 **Brick Manholes**

Add the following to LD 5.6.4.3:

Walls of brick manholes, as well as the extension of precast manholes above the concrete roof slab, shall be plastered internally. External plasterwork shall extend to at least 150 mm below ground level. Manholes shall not be extended above the concrete roof slab by more than 300 mm with brickwork.

If manhole covers are raised with bricks, a half-brick recess, as a foothold, shall be left directly below the concrete slab above the step irons.

Add the following to LD 5:

PS LD 5.11 **Oil Absorbent Booms**

The oil absorbent booms as described in PS LD 3.7, shall be fastened by means of 5 mm nylon rope laced through the eyelets of 8 mm diameter stainless steel eyebolts, spaced at 5 m maximum. The stainless steel eyebolts shall be fastened to the concrete underflow weir vertical wall at 5 m maximum apart.

LD 7 **TESTS**

PS LD 7.1 **GENERAL**

Add the following to LD 7.1.5:

All tests shall be repeated after the completion of backfilling of pipe trenches.

PS LD 8 **MEASUREMENT AND PAYMENT**

LD 8.2 **SCHEDULED ITEMS**

PS LD 8.2.3 **Manholes ..... Unit : No / Sum**

Substitute LD 8.2.3 with the following:

The unit of measurement shall be the number or sum of each, in the depth increments as scheduled, fully installed in accordance with the details shown on the drawings, inclusive of the in situ, concrete floor slab, brick walls, brick force, benching, in situ concrete top slab, as well as manhole frame and cover, complete as specified on the drawings.

The rate shall cover the cost of excavating and backfilling with approved selected material from site, stockpile or commercial sources, compacted to 93 % of MAASHTO density (100 % for sand), supplying and installing of all material and accessories, as well as for the removal and spoil of all surplus material. The rate shall also include the connection of pipes to manholes, etc. and of building pipes into the walls of such structures, but not for the cutting of skewed ends.

The depths of manholes as mentioned in the schedule of quantities, shall be measured from the final cover level to the outlet invert level (flow level).

PS LD 8.2.11 **Connection To Existing Sewer Manhole ..... Unit : No**

Add the following to LD 8.2.11:

Separate items will be scheduled for each diameter of connecting pipe.

The tendered rate shall include full compensation for connecting the proposed pipe to the existing manhole, including the breaking into the structure, any additional channelling and benching associated with the connection, cutting the pipe to suit the connection, supplying and building in the short junction pipe, extra couplings, dealing with existing flow, preventing foreign material from entering the sewer and making the connection, sealing, reinstating and making good of the structure after completion.

PS LD 8.2.13 **Deviation Of Sewage Through Temporary Pipeline ..... Unit : Sum**

The tendered rate shall be all inclusive for the labour, plant and material for handling the sewage flow as described below:

Blocking of the existing upstream manhole for the duration of the deviation.

Breaking into and connecting to two (2) existing manholes, any additional channelling and benching associated with the connection, cutting the manhole and pipe to suit the connection, supplying and building in extra couplings, dealing with existing flow, preventing foreign material from entering the sewer, making the connection and making good of the manhole on completion.

The supply and laying of the temporary pipeline above ground shall be measured separately.

PS LD 8.2.14 **Supply And Lay Temporary Sewer pipeline ..... Unit : m**

The rate shall include the supply and lay of a ∅ 250 mm Corflo uPVC double wall, radial ribbed sewer pipe above ground level, any support required across the inlet approach to the access culvert and the maintenance thereof during the deviation of sewer flow.

The excavation for pipelines, pipes, backfilling and manholes shall be measured separately.

PS LD 8.2.15 **Installation of oil absorbent boom ..... Unit : m**

The tendered rate shall cover all costs with respect to the supply and installation of the oil absorbent boom as described in PS LD 3.7 and PS LD 5.11 and is all inclusive for the supply, installation, as well as all equipment and labour required to fasten the oil absorbent boom system, as specified.

LE : STORMWATER DRAINAGE

LE 3 **MATERIALS**

LE 3.1 **CULVERT UNITS AND PIPES**

PS LE 3.1 d) **Skewed Ends**

Substitute LE 3.1(d) with the following:

Where pipe culverts are to be constructed with a skew angle of more than 20°, the skew ends shall be cut on site.

PS LE 3.1 f) **Materials For Subsurface Drains**

i) Pipes : Slotted polyethylene drainage pipes complete with couplings with at least 8 kN/m^2 ring stiffness [redacted])

Pipes without slots required for conveying ground water from the subsoil drainage proper to the point of discharge, shall be polyethylene pipes as specified above.

ii) Geotextile : The geotextile blanket around subsoil drains shall be a Grade 1 non-woven geotextile equivalent and equal to [redacted].

The provisions of PS DK 3.1.4 shall apply mutatis mutandis.

iii) Aggregate : Crushed stone in subsoil drains behind concrete walls shall be 19 mm single-sized stone and 53mm nominal-sized stone around the 350mm ID HDPE slotted subsoil drainage pipe complying with the grading requirements of stone for concrete in SABS 1083.

iv) Filter sand : For the purpose of the compaction requirements, a non-plastic material of which not less than 95 % by mass passes a sieve of nominal aperture size 4,75 mm, and not more than 10 % passes a sieve of nominal aperture size 0,075 mm.

PS LE 3.1 g) **Type of pipes and box culverts**

All concrete pipes shall be Spigot and Socket type

PS LE 3.1 d) **Skewed Ends**

Substitute LE 3.1(d) with the following:

Where pipe culverts are to be constructed with a skew angle of more than 20°, the skew ends shall be cut on site.

LE 3.4 **MANHOLES, CATCHPITS AND ACCESSORIES**

PS LE 3.4.3 **Manhole Covers, Grid Inlets, Etc.**

Substitute the last sentence in LE 3.4.3 with the following:

Covers and frames for manholes and grid inlets shall comply with the requirements of SABS 558 for Type 2A.

PS LE 3.4.5 **Locking Devices For Manhole Covers**

Two 6 mm x 40 mm long stainless steel grub screws shall be installed in the cover as follows:

i) Two holes must be drilled through the cover on opposite sides to host the screws.

ii) Two threaded holes must be provided in the frame to suit the screws and must be at least 20 mm deeper than required for the screws to accommodate dirt etc. These holes must be drilled through the holes in the cover to ensure accurate alignment.

iii) Incisions must be made in the frame to indicate the positions of the holes after the cover is in place.

Add the following to LE 3 :

PS LE 3.6 **HDPE PIPES**

High density polyethylene high density (HDPE) double layer pipelines for underground buried non pressure pipes, of nominal external diameter DN/OD, shall be internally smooth of blue light colour to allow a better visual inspection or when using cameras, and externally corrugated of black colour.

The class of ring stiffness SN (KN/m2) shall be measured according to EN ISO 9969, produced for continuous co-extrusion of both layers in conformity with standards ISO SANS 21138-3 (2008) certified by the South African institute SABS.

The pipes shall be composed with jointing kit composed of a coupler and elastomeric seals that guarantees tightness and conforms to SANS 4633, to be singly positioned on the first groove of corrugation of each pipe head where the coupler shall be inserted.

The pipe has to bare on its surface the marking foreseen by ISO SANS 21138-3 (2008) and has to have the following:

- test certification of ring stiffness flexibility foreseen by ISO SANS 21138-3 2008 using testing method described in UNI EN 1446.

- extruded by (ISO9001:2000) certified producer.

- test certification of hydraulic tightness of joints foreseen by SANS 21138-3 2008 using test method described by EN1277.

- test certification of abrasion resistance verified according to DIN EN 295-3.

- SANS certification for jointing system.

The corrugated pipes in HDPE shall be made of co-extruded two layers, externally corrugated to guarantee a high level of ring stiffness, internally smooth capable of high flow rate.

LE 5 **CONSTRUCTION**

LE 5.1 **TRENCH BOTTOM**

PS LE 5.1.3 **Unsuitable Founding Conditions**

Substitute "90 % of MAASHTO maximum density" in LE 5.1.3 with "90 % of MAASHTO maximum density (100 % for sand)".

LE 5.2 **BEDDING AND LAYING**

PS LE 5.2.2 **Pipe Culverts**

Add the following to LE 5.2.2:

All pipes shall be laid on a Class C bedding, as specified in SABS 1200 LB.

PS LE 5.2.4 **Pipes With Open Joints Laid With Geofabric Filter Wrapping**

Substitute LE 5.2.4 with the following:

Pipes shall not be laid with open joints.

PS LE 5.4 **BACKFILLING OF PREFABRICATED CULVERT UNITS**

PS LE 5.4.2 **Portal And Rectangular Sections**

Add the following to LE 5.4.2:

Backfilling on the sides of portal and rectangular sections can, if indicated on the drawings and requested in writing by the Employer's agent , be done with a 1:3:6/38 mix concrete, or soil/cement mixture (7% cement by mass).

LE 5.5 **CATCHPITS, MANHOLES, INLETS, AND OUTLET STRUCTURES**

PS LE 5.5.3 **Plaster**

Add the following to LE 5.5.3:

No plaster is required for manholes or inlets, except where otherwise shown on the drawings or ordered in writing by the Employer's agent .

PS LE 5.5.5 **Precast Manholes And PS LE 5.5.7 : Precast Inlet And Outlet Structures**

Substitute LE 5.5.5 and LE 5.5.7 with the following:

Manholes and inlet and outlet structures shall be constructed in accordance with the details as shown on the drawings.

LE 8 **MEASUREMENT AND PAYMENT**

LE 8.2 **SCHEDULED ITEMS**

PS LE 8.2.1 **Supply And Lay Concrete Pipe Culverts ..... Unit : m**

Add the following to LE 8.2.1:

The provisions of LE 8.2.1 shall apply mutatis mutandis to uPVC pipes.

PS LE 8.2.2 **Supply And Lay Portal And Rectangular Culverts..... Unit : m**

Add the following to LE 8.2.2(b):

The rate shall also include a 1:2 cement / sand mortar at the bottom of the culvert legs after laying.

PS LE 8.2.4 **Extra-over Items LE 8.2.1 And LE 8.2.2 For Cutting End**

Units For Culverts On Site ..... Unit : No

Add the following to LE 8.2.4:

Payment shall be made only for skew cuts greater than 20° at manholes, kerb inlets and inlet and outlet structures.

PS LE 8.2.8 **Supply And Install Manholes, Catchpits, And The Like ..... Unit : No / Sum**

Substitute LE 8.2.8 with the following:

The unit of measurement shall be the number or sum of each, in the depth increments as scheduled, fully installed in accordance with the details shown on the drawings, inclusive of the in situ, concrete floor slab, brick walls, brick force, benching, in situ concrete top slab, as well as manhole frame and cover, complete as specified on the drawings.

The rate shall cover the cost of excavating and backfilling with approved selected material from site, stockpile or commercial sources, compacted to 93 % of MAASHTO density (100 % for sand), supplying and installing of all material and accessories, as well as for the removal and spoil of all surplus material. The rate shall also include the connection of pipes to manholes, catchpits, etc. and of building pipes into the walls of such structures, but not for the cutting of skewed ends.

The depths of manholes as mentioned in the schedule of quantities, shall be measured from the final cover level to the outlet invert level (flow level).

PS LE 8.2.14 **Supply And Install Subsurface Drains According To Drawings ..... Unit : m**

The length shall be measured on the centre line of the completed subsurface drain.

The rate shall cover the cost of supplying, transporting, off-loading and installing all materials as per PS LE 3.1 as well as for cutting, wasting, overlapping and installing of the materials where applicable.

PS LE 8.2.15 **Connecting Subsurface Drains To Manholes, Kerb Inlets, Etc ..... Unit : No**

The number is the number of subsurface drain pipes built in at manholes or kerb inlets.

The rate shall cover the cost of all labour, plant and materials necessary to connect the subsurface drain to manholes and/or kerb inlets, and making the structure watertight, all as shown on the drawings.

PS LE 8.2.16 **Concrete Lined Channels ..... Unit : m**

Channels of different shapes and sizes will be scheduled separately.

The rate shall cover the cost of the supply, delivery and placing of all materials as specified on the drawings, including formwork, wood-floated finishing, steel reinforcement, weep-holes and filter materials wrapped in geotextile below and alongside the channels and compaction and preparation of the channel bed to 93 % of MAASHTO density, all as specified on the drawings.

PS LE 8.2.17 **Expansion Joints ..... Unit : m**

Expansion joints for the different channels will be scheduled separately. The length shall be measured on the surface of the completed expansion joints.

The item shall be extra-over PS LE 8.2.17 and the rate shall cover all costs of the construction of the joint, complete as specified on the drawings.

PS LE 8.2.18 **Locking Devices For Manhole Covers ..... Unit : No**

The rate shall cover the cost of the supply of two 6 mm x 40 mm long stainless steel grub screws, the fitting thereof and the providing of two incisions on the frame all as specified in PS LD 3.5.9.

PS LE 8.2.19 **Sealing of Culvert Lifting Holes ..... Unit : No**

The rate shall include the proper sealing of culvert lifting holes with 1:2 cement / sand mortar and an approved 200 x 200 mm rubber / bitumen polyethylene waterproof membrane (type Bituthene 3000 of equivalent) according to the manufacturer's specifications.

PS LE 8.2.20 **Supply And Lay HDPE Pipes ..... Unit : m**

Separate items will be listed for different sizes.

The rate shall cover the cost of the supply and lay of the HDPE non-pressure pipes on bedding of classes A, B or C according to the manufacturer's specifications and in accordance to PS LE 3.6. The rate shall include all material, labour and equipment required to lay the pipes, the jointing thereof and the cutting of skew ends, where required.

PS LE 8.2.21 **Brick up of pipe ends ..... Unit : m^2**

Separate items will be listed for different sizes.

The rate shall cover the cost of all material, labour and plant required to brick up pipe ends as required by construction of a 230mm or 345mm brick wall as specified. The rate shall also cover the cost to ensure that the bricked-up pipe end is well sealed with 1 cement : 2 sand mortar mix and the completed bricked-up wrapped with geotextile Grade 1 with a minimum mass of 320 g/m^2 (Kaytech Grade 6 or equivalent).

PROJECT SPECIFICATION : PORTION 2

SABS 1200 M : ROADS (GENERAL)

M3 **MATERIAL**

PS M 3.2 **RESPONSIBILITY FOR LOCATION**

Add the following to M3.2:

The subbase and base layers of all streets shall be constructed with material from designated borrow areas. The Contractor is responsible for the selection of the material in the borrow areas and if the material in the paving layers do not comply with the minimum requirements it shall be removed and replaced with suitable material at the expense of the Contractor.

M 5 **CONSTRUCTION**

Add the following paragraph:

PS M 5.1 **SELECTION**

The Contractor shall deal selectively with material when existing streets are broken up in order that suitable material is not contaminated with unsuitable material. If suitable material is contaminated, the Contractor shall replace such contaminated material with suitable material, at his own expense.

M 6 **TOLERANCES**

PS M 6.3 **FREQUENCY OF CHECKS**

Add the following to M 6.3:

These checks shall be submitted to the Employer's agent for his approval.

M 7 **TESTING**

PS M 7.3 **ROUTINE INSPECTION AND TESTING**

Substitute M 7.3.3 with the following:

Statistical evaluation of test results shall not be applicable to this contract and all tests shall meet the specified minimum requirements for the specific material.

SABS 1200 ME : SUBBASE

ME 3 **MATERIALS**

ME 3.2 **PHYSICAL PROPERTIES**

PS ME 3.2.1 **Subbase Material**

Substitute ME 3.2.1 with the following:

a) Materials of G5 quality for use in the unstabilised subbase shall comply with the requirements of SABS 1200 M 3.3.3.

b) Materials of G7 quality for use in the unstabilised subbase shall comply with the requirements as specified in SABS 1200 M 3.3.3, except that the maximum aggregate size after compaction shall not exceed 63 mm.

PS ME 3.2.2 **Gravel Shoulder And Gravel Wearing Coarse Material**

Substitute ME 3.2.2 with the following:

The material used for gravel shoulders and/or gravel wearing course shall comply with the following requirements:

i) Maximum aggregate size after compaction ..... 37,5 mm

ii) Oversize index (Io) ..... nil

iii) Shrinkage product (Sp) 100-240

iv) Grading coefficient (Gc) 16-34

v) Minimum CBR at 95 % of MAASHTO of density 25

Where:

Oversize index (Io) is the mass of the material larger than 37,5 mm, expressed as a percentage of the total mass of material;

Shrinkage product (Sp) is the product of the linear shrinkage and the percentage smaller than 0,425 mm (expressed as a percentage of the material smaller than 37,5 mm) of the material;

and

Grading coefficient (Gc) is the product of the percentage of material smaller than 26,5 mm but larger than 2,0 mm and the percentage smaller than 4,75 mm (expressed as a percentage of the material smaller than 37,5 mm) divided by 100.

ME 3.3 **STABILISING AGENT**

PS ME 3.3.1 **General**

Substitute ME 3.3.1 with the following:

Where ionic stabilisation is required, the stabilising agent shall be approved by the Employer's agent, and the rate of application shall be 0,03 ℓ /m^2 for layer thickness of 150 mm and 0,02 ℓ /m^2 for layer thicknesses of 100 mm.

ME 5 **CONSTRUCTION**

ME 5.4 **PLACING AND COMPACTION**

PS ME 5.4.1 **Placing**

Substitute "the project specification" in the second paragraph of ME 5.4.1 with "ME 6.1.4".

PS ME 5.4.5 **Work In Restricted Areas**

No additional payment shall be made for work in restricted areas and any relevant costs shall be deemed to be included in the tendered rates.

ME 5.7 **TRANSPORT**

PS ME 5.7.1 **Free-haul**

Substitute ME 5.7.1 with the following:

An unlimited free-haul distance shall apply to subbase material.

ME 7 **TESTING**

ME 7.2 **PROCESS CONTROL AND ROUTINE INSPECTION AND TESTING**

PS ME 7.2.1 **Process Control**

Substitute "1 500 m^2" with "1 200 m^2" and "5 000 m^2" with "3 000 m^2" in Table 2 of ME 7.2.1.

PS ME 7.2.2 **Routine Inspection And Testing**

Substitute the second sentence of ME 7.2.2 with the following:

No density shall be less than the specified minimum density for the relevant layer.

SABS 1200 MJ : SEMENTED PAVING

MJ 8 **MEASUREMENT AND PAYMENT**

MJ 8.2 **SCHEDULED ITEMS**

PS MJ 8.2.2 **Construction of Paving Complete ..... Unit : m^2**

Add the following to PS MJ 8.2.2:

The rate shall additionally include the rate of all labour, equipment material and transport thereof to fill the openings in and between the [redacted]" paving blocks with sandy material from stock piles by washing it into the openings to completely fill all the openings to the satisfaction of the Employer's agent.

SABS 1200 MK : KERBING AND CHANNELLING

MK 3 **MATERIALS**

MK 3.2 **PRECAST KERBING AND CHANNELLING**

PS MK 3.2.3 **Strength**

Substitute MK 3.2.3 with the following:

Precast kerbs, edging and channels shall be of grade 20MPa/19mm concrete.

PS MK 3.9 **BEDDING MATERIAL**

Substitute ME 3.9 with the following:

The material on which concrete kerbs, channels and edging are bedded, shall be in accordance with the dimensions shown on the drawings and shall consist of a 15MPa/6,7mm concrete mix.

MK 5 **CONSTRUCTION**

MK 5.1 **EXCAVATION AND BEDDING**

Substitute “90%” in MK 5.1 with “93% (100% for sand)”.

MK 5.2 **PRECAST CONCRETE KERBING AND CHANNELLING**

Substitute the first sentence of MK 5.2 with the following:

Precast concrete kerbing and channelling shall be laid and bedded on concrete bedding complying with the requirements of PS MK 3.9 and to the dimensions shown on the drawings.

SABS 1200 MM : ANCILLARY ROADWORKS

MM 3 **MATERIALS**

MM 3.2 **ROAD SIGNS**

PS MM 3.2.1 **General**

Add the following to MM 3.2.1:

All road signs and road markings shall be in accordance with the SA Road Traffic Signs Manual and as shown on the drawings.

No special breakaway devices are required.

PS MM 3.2.2 **Structural Steel**

Substitute the second paragraph of MM 3.2.2 with the following:

All structural steel, including steel tubes, shall have a hot-dip (galvanised) zinc coating that complies with the requirements of SABS 763 for coatings of type A1 or B1 articles, as applicable.

MM 5 **CONSTRUCTION**

MM 5.2 **ROAD SIGNS**

PS MM 5.2.1.6 **Galvanising**

Substitute the second paragraph of MM 5.2.1.6 with the following:

Galvanised mild steel supports for road signs shall be painted in accordance with PS MM 5.2.2.4.

MM 5.2.2 **Painting**

PS MM 5.2.2.4 **Painting of structural steelwork**

The provisions of MM 5.2.2.4 shall apply mutatis mutandis to the painting of galvanised surfaces, except for the following:

a) **Surface preparation**

Galvanised surfaces shall be thoroughly scrubbed down using an approved galvanised iron cleaning agent to remove all traces of the resin protective coating.

The surface shall be washed down and scrubbed to remove all traces of grease, oil, dirt, etc;

b) **Priming**

Two coats of calcium plumbate primer shall be applied to a dry film thickness of at least 25 microns. The undercoat shall follow within one week after the priming.

d) **Finishing coat**

The colour of the finishing coat shall be dark grey, as specified in MM 3.2.8.2.

PS MM 5.3.2 **Surface Preparation**

Substitute "48 h" in MM 5.3.2 with "7 days (168 h)".

MM 8 **MEASUREMENT AND PAYMENT**

MM 8.3 **SCHEDULED ITEMS FOR PERMANENT ROAD SIGNS**

Add the following payment item:

PS MM 8.3.8 Road Signs ..... Unit : No

Distinction will be made between different road signs as scheduled.

The tendered rate shall cover the cost of all material, plant, labour and equipment to procure, supply, excavation, including excavation in the stabilised sand / cement spillway where applicable, the construction of the footing and erect the road sign, complete as shown on the drawings and in accordance with the South African Road Traffic Signs Manual.

3.4.3.2 PARTICULAR / PROJECT SPECIFICATIONS

Particular Specification : PE Cement Stabilised Sand

Please see the following other particular specifications under the following paragraphs:

C 3.5.5 – Environmental Management Specification and its Annexures attached hereto, and

C 3.5.6 – Occupational Health and Safety Specification attached hereto

CITY OF CAPE TOWN

WATER AND SANITATION DEPARTMENT

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

PARTICULAR SPECIFICATION : PE : CEMENT STABILISED SAND

SPECIFICATION PE : CEMENT STABILISED SAND

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SPECIFICATION PE : CEMENT STABILISED SAND

PE 1.0 SCOPE

This section covers the stabilisation of the dam walls and overflow structures of basins in horizontal layers with cement in accordance with the dimensions as indicated on the drawings.

PE 2.0 INTERPRETATION

The abbreviations used in this specification are interpreted as follows:

OMC : Optimum moisture content

UCS : Unconfined compressive strength

PE 3.0 MATERIAL

PE 3.1 MATERIAL TO BE STABILISED

The material to be stabilised, consists of sandy material and shall be of the required quality to comply with the required compaction tests and control tests as defined in PE 7.1.

PE 3.2 STABILISING AGENT

The stabilising agent shall be Portland Cement complying to the requirements of SABS 471 and must be supplied in bags.

The cement must be stored under proper cover from the date of purchase to the date of usage in order to protect it against moist and to prevent it from getting wet. Cement supply which is kept for longer than three (3) months on the site shall not be allowed to be used in the works, unless authorised by the employer's agent.

The Contractor shall ensure an approved source and consignment tempo to prevent any interruption of the works as a result of the shortage of the required materials.

Putrefied or contaminated stabilising agents shall not be used in the works and shall be removed from the site without any delay.

PE 3.3 WATER

Water to be applied in the mixing process, must be clean and of a good quality without any undesirable concentrations of salts or contain any other material, which could break up the mix during the mix process. All the water sources used, shall be approved by the employer's agent.

PE 4.0 EQUIPMENT

Mixing shall be performed by means of graders and / or rotavators or disc ploughs to work and mix the layer, to be stabilised, over its full depth and surface by means of successive passes.

Alternatively mixing of material can also be done in central mixing plant, but the contractor will not be entitled to payment for extra additional transport costs, handling costs or any other costs arising from this procedure.

Sufficient and effective compaction equipment shall be used in order to obtain the required compaction densities.

PE 5.0 CONSTRUCTION

PE 5.1 APPLICATION RATE AND SPREADING

The application rate of the stabilising agent shall be 10% cement per dry mass of the sand to be stabilised or as required by the employer's agent. The layer to be stabilised, shall be placed,

spread and shaped according to the specified lines, slopes and cross sections as indicated on the drawings, except for the downstream inclined slope of the spillway structures, where placing and compaction of layers be done 100 mm wider (measured perpendicular to the final finished off inclined surface) as shown on the drawings, in order to ensure that the finishing off be done to the specified lines and dimensions.

The compacted layer thickness shall not exceed 200 mm, unless otherwise instructed by the employer's agent. The application of the stabilising agent must be done by arranging the cement bags systematically in a grid pattern of which the grid dimensions have been pre-calculated and the stabilising agent spread proportionately.

PE 5.2 **MIXING, WETTING AND COMPACTION**

Mixing shall commence immediately after addition of the stabilising agent. Mixing shall be done for the full layer thickness. The contractor shall pay special attention that the mixing process of each layer be done with care to prevent any disturbance of the already compacted previous underlying layer. Mixing shall be done continuously for as long as required and shall be repeated if required to ensure a thorough uniform mixture of the sand and cement over the full area and depth of the layer to obtain a homogenous mixture.

Immediately after a homogenous mixture is obtained, the moisture content of the mixture shall be determined. If required, water shall be added to increase the water content to a value not higher than 3% below the OMC and not lower than 7% below the OMC. The material shall then be compacted to at least 100% of the modified AASHTO density.

The mixing process shall be completed within five (5) hours after the stabilising agent has come into contact with the sand and compaction shall be completed within a further three (3) hours. The contractor shall further ensure that the specified mixing and compaction shall be obtained along the joint between the stabilised layer and the adjoining general fill material.

During mixing and compaction a further loss of moisture can occur as a result of evaporation and hydration, in which case the moisture content shall be corrected by further light wetting. Any part of the works that gets saturated with water after application of the stabilising agent and before the mixture has been compacted, will be rejected. Such parts of the works shall either be removed from the site of works, or be allowed to dry out to 3% lower as the OMC, after which it shall be broken up, and be reworked as required by the employer's agent, re-compacted and finished off , all at the cost of the contractor.

PE 5.3 **FINISHING OFF AT JOINTS**

Finishing off of all visible surfaces is required and shall be executed after the compaction of the full cement stabilised structure has been completed.

Any part of a completed stabilised layer, which is located adjacent to new work, and requires the movement of equipment over it, shall be temporarily covered with sandy material with a minimum thickness of 100 mm to protect the already compacted work against possible damage. The method of back tipping shall be applied with the placing of this temporary sand layer.

The contractor shall pay special attention to ensure that a proper bond (overlap) is obtained between the already completed and new parts of the same layer.

PE 5.4 **CURING**

Stabilised layers shall be cured for at least seven (7) days after compaction by means of regular wetting to protect it against drying out, except in the case of wet weather conditions or as otherwise instructed by the employer's agent. Curing shall be done by continuously wetting or keeping the stabilised layers moist by means of fog spray, or preferably to place and spread the next layer as soon as possible after completion of the previous layer. In the latter case the sand material, which forms the protective layer, shall be wetted as frequently as required and shall be done at least once every 24 hours.

No additional payment shall be done for curing and the contractor shall provide for this in his rates for stabilisation.

PE 5.5 **CONSTRUCTION RESTRICTIONS**

The stabilising agent shall only be applied to an area with size to allow for mixing, wetting and compaction to be completed within a period of eight (8) hours, i.e., from the time that the stabilising agent comes into contact with the sand up to the time that compaction is completed.

The stabilising agent shall not be applied if the moisture content of the sand is in excess of 1% lower than the OMC.

No stabilising shall be performed during wet weather conditions. Should the employer's agent be of the opinion that the wind intensity could adversely affect the stabilising operations or when wet weather is imminent, he may order that no stabilisation is allowed. Any rain falling on the working area during the process of stabilisation may be sufficient cause for the employer's agent to order any affected areas to be reconstructed at the contractor's own cost.

The contractor shall take care that no traffic or any plant not actually used for processing the layer be allowed to pass over the freshly spread stabilising agent. Only equipment for curing or placing of the successive layer shall be allowed on the stabilised area during the curing period.

Should the successive layer be placed more than 10 hours after completion of the previous layer, dry cent shall be added to the surface of the completed layer at an application rate of 0,5 kg/m² immediately prior to the placing of the successive layer, if so ordered by the employer's agent.

The placing of sand material on an already stabilised and compacted layer shall be done by means of back tipping.

PE 5.6 **FINISHING OF SURFACES**

Finishing of all visible surfaces is required and shall be performed after compaction of the full cement stabilised structure has been completed.

Exposed areas shall be neatly finished off according to the specified lines and dimensions to provide an uniform appearance. All such finished surfaces must be cured for at least seven (7) days after completion of the finishing off process by keeping these surfaces continuously damp.

The contractor shall take care that excess and unsuitable material resulting from the finishing off process do not contaminate the surrounding sand material where grassing is specified, and shall be removed to the designated spoil sites. No additional payment shall be made for this and the contractor shall provide for this in his tendered rates.

PE 6.0 **TOLERANCES**

Permissible deviations from the exact shape, lines and dimensions of the cement stabilised sand layers in the overflow structures or dam walls, or as otherwise ordered by the employer's agent, shall not exceed the following:

Layer thickness : ± 25 mm

Covered surfaces

Horizontal dimension	:	minus 0 to plus 75 mm
Vertical dimension	:	± 75 mm

Exposed surfaces

Deviation from surface	:	± 50 mm perpendicular
Overflow level / crest height	:	minus 0 to plus 50 mm

PE 7.0 **TESTS**

PE 7.1 **PROCESS CONTROL**

The test frequency shall be at least three (3) density tests and three (3) UCS tests per batch or per layer. No density test result lower than the minimum 100% of the modified AASHTO density shall be approved. The minimum specified UCS to be achieved, is 2,0 MPa.

The test frequency may be reduced at the discretion of the employer's agent.

PE 7.2 **APPROVAL AND CONTROL WITH RESPECT TO MIXING AND SPREADING OF THE STABILISING AGENT**

The quantity and distribution of the stabilising agent per layer shall, at the discretion of the employer's agent, be determined by direct measurement, the count of cement bags and visual observation for the purpose of control and approval of the works. Should the work not be executed to the satisfaction of the employer's agent, he may request chemical tests to be performed in order to determine the uniformity of the mixture.

The UCS tests shall be executed according to the specified frequency, as mentioned in 7.1 above. According to these test results obtained, the employer's agent may require that the amount of stabilising agent applied be increased or decreased. These tests shall also serve as a control with respect to the execution of the mixing process.

PE 8.0 **MEASUREMENT AND PAYMENT**

PE 8.1 **SAND MATERIAL TO BE STABILISED**

Measurement and payment of earthworks and the sand material to be stabilised, shall be done in accordance of the applicable items under SANS 1200D.

PE 8.2 **STABILISING AGENT ..... Unit : Ton (t)**

The unit of measurement shall be the ton of stabilising agent actually supplied in the works irrespective of the specified application rate or that specified by the employer's agent. The actual application rate or mix ratio shall not be lower than the prescribed application rate or mix ratio. Should the actual application rate or mix ratio exceed the specified application rate or mix ratio, payment shall be then based on the specified application rate plus a maximum permissible tolerance of 5%.

The unit rate shall cover the cost of the supply of the stabilising agent within the works and the contractor shall base his rate on the specified application rate. No additional transport cost will be payable and the contractor shall allow for that in his tendered rates.

PE 8.3 **STABILISATION ..... Unit : m^3**

Measurement and payment shall be done per cubic metre (m^3) material stabilised and is an "extra over" payment items for general fill.

The rate shall cover the cost of all work, labour, equipment and supervision required for the spreading and mixing of the stabilising agent, for the addition of water, for the completion of the stabilisation process, for curing of stabilised sections, for the executing control tests and any additional expenses required to complete the prescribed works, but excluding the cost of supplying the stabilising agent.

PE 8.4 **SPREADING OF SUCCESSIVE LAYERS ..... Unit : kg or ton (t)**

Measurement and payment shall be done per mass (kg) of (t) cement spread at the specified application rate (se PE 5.5) prior to the construction of the successive layer in cases where the previous layer was completed longer than 10 hours prior to the construction of the successive layer.

The rate shall cover all costs associated with all labour and equipment required to spread the material to attain the required application rate, as well as the wetting thereof if so required by the employer's agent.

PE 8.5 **FINISHING OF SURFACES ..... Unit : m^2**

Measurement and payment shall be done per square metre (m^2) exposed cement stabilised surfaces. Measurement shall further distinguish between horizontal and inclined surfaces. Surfaces which are not exposed and visible shall not be measured.

The rate shall cover the costs of all labour and equipment required to attain the required finishing according to the specified tolerances, the removal of surplus material to designated spoil areas, including unlimited long haul, the curing of finished surfaces, as well as the fill and final finishing of holes and cavities with a 1:3 cent : sand mortar mix as required by the employer's agent.

PE 8.6 **BACK TIPPING ..... Unit : m^3**

Measurement and payment shall be done per cubic metre (m^3) of fill material placed and is an "extra over" payment items PS D 8.3.2(a) and PS D 8.3.2(c).

The rate shall cover the additional costs associated with the process of back tipping whereby tipping and spreading of sand material is done from one side in order to protect the underlying completed stabilised layers, and covers all labour and equipment required to execute the process of back tipping effectively.

PE 8.7 **PREPARATION OF STEPPED SURFACE BEFORE THE PLACEMENT OF MASS CONCRETE WING WALLS ..... Unit : m^3**

Measurement and payment shall be done per cubic metre (m^3) material removed during the preparation of the surfaces before placing the mass concrete wing walls.

The rate shall cover the costs related to all labour and equipment required for the preparation of the stepped surfaces in the cement stabilised sand overflow structures as indicated on the drawings, as well as the removal of the surplus finished off material to designated spoil sites with the inclusion of unlimited long haul.

The preparation of the above mentioned stepped surfaces with maximum step height (rise) of 300 mm shall only be allowed after the finishing off of the inclined surfaces of the overflow structures have been completed, as described in PE 5.6 above.

3.4.4. WAYLEAVES, PERMISSIONS AND PERMITS

The Contractor shall be responsible for obtaining all of the necessary wayleaves, permissions or permits applicable to working near any existing services or other infrastructure on Site, and shall ensure that any wayleaves, permissions or permits obtained by the Employer's Agent prior to the award of the contract are transferred into the Contractor's name.

The Contractor shall abide by any conditions imposed by such wayleaves, permissions or permits.

The Contractor shall ensure that all wayleaves, permissions and permits are kept on site and are available for inspection by the relevant service authorities on demand.

The Contractor shall also ensure that any wayleaves in respect of electricity services are renewed timeously every three months.

3.4.5. LOCAL PRODUCTION AND CONTENT

The Contractor will be required to comply with all local content requirements as stated in this document.

3.4.6 EMPLOYMENT OF SECURITY PERSONNEL

All security staff employed by the contractor on behalf of the CCT or at any CCT property must be registered with Private Security Industry Regulatory Authority (PSiRA). Proof of such registration must be made available to the employer's agent upon request.

3.4.7 EXISTING SERVICES

3.4.7.1 Known services

The positions of existing services, insofar as they are known, are shown on the drawings. Items have been allowed in the Bills of Quantities for dealing with and protecting services.

The Contractor shall take whatever precautions necessary to protect these services from damage during the period of the Contract.

3.4.8 SITE ESTABLISHMENT

3.4.8.1 Services and facilities provided by the Employer

(i) Source of Water Supply

The Contractor shall at his own cost, make all arrangements necessary for the supply and distribution of water required for construction purposes, as well as for use in and about his site establishment and for human consumption.

The Contractor shall be allowed to make use of the Employer's water mains for all water supply, except dust mitigation, during construction. All arrangements with regards to water supply on site shall be the responsibility of the contractor. Water for the manufacturing of concrete shall be obtained from the Employer's water main system.

Water used by the Contractor from the Employer's mains in the municipal area will be charged for at the tariffs ruling of the time of use.

Dust mitigation will be vigorously enforced, as the construction sites fall within or adjacent to existing industrial developments. Dust mitigation shall thus continuously be applied by constant watering of gravel haul routes and erecting shade cloth fences where required. Water for the purpose of dust mitigation shall be obtained from the Wesfleur WWTW in Atlantis. The cost thereof shall be borne by the Contractor and shall provide for this in his tendered rates. The Contractor shall not be allowed to use potable water for dust mitigation.

The Contractor shall make himself thoroughly acquainted with the regulations relating to the use of water and shall take adequate measures to prevent the wastage of water. The Employer accepts no responsibility for the shortage of water due to any cause whatsoever, nor additional costs incurred by the Contractor as a result of such shortage.

The Contractor shall take note that no direct payment will be made for any costs incurred for the provision of any additional water supply points nor for the cost of water used from it. Payment for the aforementioned shall be deemed to be covered by the rates and prices tendered and paid for the various items of work included under the Contract.

(ii) Source of Power Supply

The Contractor shall at his own cost, make all arrangements necessary for the supply and distribution of electrical power required for construction purposes as well as for use in and about his site establishment.

The Contractor shall comply with all prevailing legislation in respect of the generation and distribution of electricity and shall, when required by the Employer's agent, produce proof of such compliance.

All arrangements with regards to electrical supply on site shall be the responsibility of the contractor. Electricity used by the Contractor shall be charged for at the tariffs ruling at the time. The Employer accepts no responsibility for any power failure due to load shedding or any other cause whatsoever, nor additional costs incurred by the Contractor as a result of such failures.

The Contractor shall take note that no direct payment will be made for any costs incurred for the provision of any electrical supply points nor for the cost of electricity used. Payment for the aforementioned shall be deemed to be covered by the rates and prices tendered and paid for the various items of work included under the Contract.

(iii) Sanitation

No water-borne sewage or other off-site excrement disposal systems are available in the vicinity of the Site.

The Contractor shall provide the necessary ablution facilities for his camp, depot and areas of work. Pit latrines shall not be allowed. Chemical toilets shall be provided and shall be adequately serviced.

The Contractor shall take note that no direct payment will be made for any costs incurred for the provision of this and payment for the aforementioned shall be deemed to be covered by the rates and prices tendered and paid for the various items of work included under the Contract.

(iv) Area for Contractor's site establishment

Available camp site and storage areas will be indicated to tenderers at the site inspection following the non-compulsory clarification meeting. The Contractor shall be liable for all royalties and cost related to the camp site and storage area and all such costs will be deemed to be included in the tendered rates.

The Contractor shall use this area only for the purposes of erecting his site offices, workshops, stores, concrete batching plant and other facilities required for the execution of the Contract. The Contractor shall not use the area nor allow it to be used for any purposes not directly associated with the execution of the Contract.

The Contractor shall be responsible for arranging, at his own cost, for the provision of all services he may require in the area, as well as elsewhere on the Site.

Should the Contractor deem the area made available by the Employer to be inadequate or unsuitable for the Contractor's particular needs, then the Contractor shall be at liberty to make his own arrangements with the owners of other sites which he considers are better suited to his needs; provided always that the use by the Contractor of any area other than that made available to him by the Employer shall be subject to the prior written approval of the Employer's Agent, which approval shall not be unreasonably withheld; and provided further that the Contractor shall have no claim against the Employer in respect of any costs incurred by him, either directly or indirectly in consequence of utilising any area other than that made available to him by the Employer, and which costs exceed those costs allowed for by the Contractor in his Tender.

The Contractor shall confine his camp, concrete batching area and storage of materials to the areas designated. Security required for camp and storage of materials shall be the responsibility of the contractor. On completion of the construction works the surface of the areas utilised shall be re-instated to their original condition.

(v) Security

The construction site is considered vulnerable to vandalism and theft. It is the responsibility of the Contractor to ensure the safety of equipment and personnel during construction; e.g. through provision of security guards on site.

3.4.8.2 Facilities provided by the contractor

(i) Temporary Offices

Site meetings will be held in the Contractor's site office. Refer to PSA 4.2 for these requirements. The facilities are required for the Employer's Agent are specified under SANS 1200 AB.

(ii) Sanitary Facilities

The Contractor shall supply chemical toilets for use by his workmen. The number of toilets shall be based on one toilet per fifteen (15) personnel on site. Separate toilets will be provided for men and women and must be marked clearly. The Contractor's staff will use the chemical toilet facilities at all times.

The Contractor shall, at his own expense, be responsible for safely and hygienically dealing with and disposing of all human excrement and similar matter generated on the Site during the course of the Contract, to the satisfaction of the Employer's Agent and the responsible health authorities in the area of the Site.

No separate payment will be made to the Contractor in respect of discharging his obligations in terms of this subclause and the costs thereof shall be deemed to be included within the Contractor's tendered Preliminary and General Items.

3.4.8.3 Notice boards

The typical detail of the project notice board required shall be as detailed on STE/A-16 in Annex 8 under C3.6 Annexes.

3.4.8.4 Housing for contractor's employees

No housing is available for the contractor's employees, and the Contractor shall make his own arrangements for housing his employees or transporting them to and from the site. The Contractor is in all respects responsible for the housing and transporting of his employees and for the arrangement thereof, and no extension of time due to any delays resulting from this will be granted.

3.4.9 SURVEY CONTROL AND SETTING OUT OF THE WORKS

Survey pegs will be indicated to the Contractor. The Contractor shall be solely responsible for the protection of the survey pegs. The Contractor's attention is specifically drawn to the requirements of Clause PSA 5.1.1.

3.4.10 ALTERATIONS, ADDITIONS, EXTENSIONS AND MODIFICATIONS TO EXISTING WORKS

The Contractor must confirm in writing to the Employer's agent within 14 days after the site has been handed over to him, that the accuracy of all levels, dimensions and volumes of existing structures or components thereof are compatible with the proposed works.

3.4.11 WATER FOR CONSTRUCTION PURPOSES

The Contractor shall at his own cost, make all arrangements necessary for the supply and distribution of water required for construction purposes as well as for use in and about his site establishment and for human consumption.

The Contractor shall be allowed to make use of the Employer's water mains for all water supply, except for dust mitigation, during construction. All arrangements with regards to water supply on site shall be the responsibility of the contractor. Water for the manufacturing of concrete shall be obtained from the Employer's water main system.

Water used by the Contractor from the Employer's mains in the municipal area will be charged for at the tariffs ruling of the time of use.

Dust mitigation will be vigorously enforced, as the construction sites fall within or adjacent to existing industrial developments. Dust mitigation shall thus continuously be applied by constant watering of gravel haul routes and erecting shade cloth fences where required. Water for the purpose of dust mitigation shall be obtained from the Westfleur WWTW in Atlantis. The cost thereof shall be borne by the Contractor and shall provide for this in his tendered rates. The Contractor shall not be allowed to use potable water for dust mitigation.

The Contractor shall take note that no direct payment will be made for any costs incurred for the provision of any additional water supply points nor for the cost of water used from it. Payment for the aforementioned shall be deemed to be covered by the rates and prices tendered and paid for the various items of work included under the Contract, all as described in paragraph 3.4.7.1.

3.4.12 FEATURES REQUIRING SPECIAL ATTENTION

3.4.12.1 Safety regulations

Both the "Factories, Machinery and Building Work Act (Act 22 of 1941) and the "Machinery and Occupational Safety Act (Act 6 of 1983)" must, wherever they appear in the SABS 1200 standardised specifications, be substituted by the "Occupational Health and Safety Act (Act 85 of 1993)".

The Contractor shall apply suitable proven methods for construction complying with the OHS Act so that his activities will not constitute a hazard to his work force, the public or any adjacent property. All excavations shall be suitable safeguarded and barricaded especially during night-time, weekends or holidays and any other day of inactivity by the Contractor. The Contractor shall also ensure that excavations are shored or otherwise made safe. The camp and construction site will be locked after hours to ensure the safety of the public. No additional payment will be made to the Contractor for complying with these requirements.

3.4.12.2 "Record" drawings ("As-built" drawings)

As the work progresses, the Contractor shall keep full records of all amendments to and deviations from the drawings as issued to the Contractor at the start of the contract. The Contractor must submit this information monthly with his payment certificate to the Employer's agent. The true positions, invert levels and ground levels of all services shall be indicated on the drawings, for which purpose the Contractor shall receive a separate complete set of drawings from the Employer's agent at no cost. The actual position and depth of any future connections, as well as any previously unknown existing services shall also be provided.

The completion certificate shall only be issued after the Employer's agent has received a properly completed set of **"Record"** drawings from the Contractor. No separate payment shall be made for this service as all costs related thereto shall be deemed to be included in the relevant items.

3.4.12.3 Finishing and tidying

Progressive and systematic finishing and tidying will form an essential part of this contract. Under no circumstances shall spoil, rubble, materials, equipment or unfinished operations be allowed to accumulate unnecessarily and in the event of this occurring the Employer's agent shall have the right to withhold payment for as long as necessary in respect of the relevant works in the area(s) concerned.

3.4.12.4 Workmanship and quality control

The responsibility to produce work that conforms in quality and accuracy of detail to the requirements of the Specifications and Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality control system and provide suitably qualified and experienced engineers, foremen, surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the Works at all times.

The cost of supervision and process control, including testing carried out by the Contractor, will be deemed to be included in the rates tendered for the related items of work.

The Contractor's attention is drawn to the provisions of the various Standardized Specifications regarding the minimum frequency of testing required. The Contractor shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

On completion and submission of every part of the work to the Employer's Agent for examination and measurement, the Contractor shall furnish the Employer's Agent with the results of the relevant tests, measurements and levels to demonstrate the achievement of compliance with the Specifications.

3.4.12.5 Dust mitigation

Dust mitigation will be vigorously enforced, as the construction sites fall within or adjacent to existing industrial developments. Dust mitigation shall thus continuously be applied by constant watering of gravel haul routes and erecting shade cloth fences where required. Water for the purpose of dust mitigation shall be obtained from the Westfleur WWTW in Atlantis. The cost thereof shall be borne by the Contractor and shall provide for this in his tendered rates. The Contractor shall not be allowed to use potable water for dust mitigation.

3.4.12.6 Access to site

Access roads shall be kept clean from spills from construction vehicles and the Contractor shall patrol the surfaced access roads at least four times daily. Cleaning / mopping up of waste shall be performed as soon as possible after observation of any spills or wastes and damage to road surfaces shall be repaired as soon as possible.

3.4.13 SITE INSTRUCTION BOOK

A triplicate book for site instructions shall be supplied free of charge by the Contractor and shall at all times be kept on the Site and accessible to the Employer's agent during normal working hours. At the end of the Contract the Contractor shall hand the site instruction book to the Employer's agent.

3.4.14 INTERRUPTION OF EXISTING SERVICES

The known services are indicated on the drawings, but it remains the responsibility of the Contractor to detect and protect the existing services. The Contractor must liaise with all services owners before any excavation begins.

3.4.15 CONSTRUCTION IN RESTRICTED AREAS

Working space may sometimes be restricted. The construction method used in these restricted areas largely depends on the Contractor's plant. However, the Contractor must note that measurement and payment will be according to the specified cross-sections and dimensions irrespective of the method used, and that the rates and prices tendered will be deemed to include full compensation for difficulties encountered while working in restricted areas. This will also apply to over break during any excavation. Payment will always be based on specified cross sections and dimensions. No extra payment or any claim for payment due to these difficulties will be considered.

3.4.16 CONTRACTOR'S REPRESENTATIVE AND SUPERINTENDANCE

The Contractor shall employ suitably-qualified representatives to oversee construction activities. Any change in the Contractor's key supervisory personnel shall be communicated timeously to the Employer's agent in writing.

The Contractor shall submit to the Employer and Employer's agent a list of addresses and telephone numbers of his Representatives who may be contacted both during and outside normal working hours in connection with the Works. The Contractor shall also refer to the General Conditions of Contract for Construction Works (Third Edition, 2015).

3.4.17 SITE MEETINGS

The Employer's agent will conduct monthly site meetings as a minimum, prepare and circulate minutes, as determined by him in consultation with the Employer. The Contractor shall attend these meetings and shall ensure that when necessary, all required sub-contractors are represented. The Contractor shall submit monthly progress reports as required in terms of the Employer's reporting systems.

3.4.18 WORK CONSIDERED TO BE LABOUR BASED (LABOUR INTENSIVE)

The following components of work can be executed using labour-based construction methods.

1. Locating of existing services
2. Shuttering and fixing of reinforcing steel.
3. Gabion and Reno mattress works.
4. All cleaning and finishing off.

Note:

In the Bills of Quantities, the cost of labour based construction activity is covered by using the standard SANS 1200 payment item with no additional extra-over payment item to cover the additional cost of using labour based construction methods.

3.4.19 UNIVERSAL ACCESS

In pursuit of becoming a fully accessible city, the City of Cape Town expects all Consultants and Service Providers to design and construct to SANS Standards for accessible Design, and any relevant City of Cape Town documents as may be relevant, and to exhibit a commitment to employing Universal Design Principles in their design, construction, service and product delivery of construction projects. This applies to all projects whether new, temporary, upgrades or rehabilitation works.

The contractor will engage with project representatives and the CCT's Universal Accessibility Department on how Universal Design Principles will enhance accessibility, within this project, that meets a variety of needs and creates a city that is accessible to everyone.

Part C3.5 Management

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3.5.1. FORMS FOR CONTRACT ADMINISTRATION
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3.5.5. ENVIRONMENTAL MANAGEMENT PROGRAMME
3.5.6. HEALTH AND SAFETY

3.5.1. FORMS FOR CONTRACT ADMINISTRATION

The Contractor shall complete, sign and submit with each monthly statement for payment, the following updated returns (the format of which are attached in C3.6 Annexes as amended from time to time):

a) Monthly Project Labour Report (Annex 1)
b) B-BBEE Sub-contract Expenditure Report (Annex 2)
c) Joint Venture Expenditure Report (Annex 3)
d) Targeted Labour Contract Participation Expenditure Report (Annex 4)
e) Targeted Enterprises Contract Participation Expenditure Report (Annex 5)

The Monthly Project Labour Report must include details of all labour (including that of sub-contractors) that are South African citizens earning less than **R350.00** per day, as adjusted from time to time (excluding any benefits), who are employed on a temporary or contract basis on this contract in the month in question.

In addition to the Monthly Project Labour Report the Contractor shall simultaneously furnish the Employer's Agent with copies of the signed employment contracts entered into with such labour, together with certified copies of identification documents, proof of attendance in the form of attendance register or timesheets as well as evidence of payments to such labour in the form of copies of payslips or payroll runs. If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it and proof of such acknowledgement shall be furnished to the Employer's Agent.

The Monthly Project Labour Reports shall be completed and submitted in accordance with the instructions therein and copies of all submitted documents must be kept on site be made available to the employer's agent upon request.

The **B-BBEE Sub-contract Expenditure Report** is required for monitoring the prime contactor's compliance with the sub-contracting conditions of the **Preference Schedule**.

The Joint Venture Expenditure Report is required for monitoring the joint venture's compliance with the percentage contributions of the JV partners as tendered, where the joint venture has been awarded preference points in respect of its consolidated B-BBEE scorecard.

The Targeted Labour Contract Participation Expenditure Report (if applicable) is required for monitoring the contractor's compliance for achieving the specified minimum targeted labour contract participation goal (CPG_L) and, if applicable, for calculating any penalty in terms thereof.

The Targeted Enterprises Contract Participation Expenditure Report (if applicable) is required for monitoring the contractor's compliance for achieving the specified minimum targeted enterprises contract participation goal (CPG_E) and, if applicable, for calculating any penalty in terms thereof.

The Expenditure Reports shall be verified by the Employer's Agent/Employer's Agent's Representative.

In respect of Annexes 2 and 3, the Employer shall, in addition to any other sanctions available to it , apply the financial penalties applicable to breach of preferencing conditions in the **Preference Schedule** Preference Schedule in Part T2.2 Returnable Schedules. In the case of joint ventures (Annex 3), the contractor shall prove his compliance with item 6) in Section 2 of the Preference Schedule by providing a consolidated scorecard at his own cost on instruction from the Employer's Agent.

3.5.2 PARTICIPATION OF TARGETED LABOUR

3.5.2.1 Minimum targeted labour contract participation goal

In support of the National Department of Public Works' Expanded Public Works Programme which is aimed at alleviating poverty through the creation of temporary employment opportunities using labour intensive methodologies and practices where possible, the Employer is seeking to increase the intensity of labour, as appropriate, in all of its infrastructure sector projects.

It is a requirement of this contract, therefore, that the work be executed in such a manner so as to maximise the use of labour intensive construction methods in order to provide low and semi-skilled temporary employment opportunities.

To this end, a minimum targeted labour contract participation goal is specified below, which shall be achieved by the Contractor in the performance of the contract, failing which, penalties as described will be applied. The Contractor is required to provide all skills training where necessary, so as to ensure that a minimum level of competence is achieved and maintained, such that the various activities are carried out safely and to the required standard. The cost of training shall be included in the rates for the various work activities.

The specified minimum targeted labour contract participation goal (CPG_L) is | **1.25 %**

The minimum CPG_L is such that the Contractor will have to carry out some of the work that would normally have been undertaken using mechanised construction methods, by using labour intensive construction methods instead. It is left to the discretion of the Contractor to identify suitable work activities for the intensification of labour. The Contractor shall, within 5 working days of being requested in writing by the Employer's Agent to do so, submit details of his/her plan to achieve the minimum CPG_L.

3.5.2.2 Definitions

For the purposes of the requirements in respect of the participation of targeted labour, the following definitions shall apply:

"Target area" means the geographical area shown on plan in Part C4: Site Information.

"Targeted labour contract participation goal (CPG_L)" means the sum of the wages (excluding any benefits), for which the Contractor, or any of his/her sub-contractors contracts targeted labour in the performance of the contract, expressed as a percentage of the value of the contract.

"Targeted labour" means low and semi-skilled individuals, whose wages (excluding any benefits) do not exceed the threshold value, who reside in the target area, that are employed by the Contractor, or any of his/her sub-contractors, in the performance of the contract.

"Threshold value" is **R350.00** per day as adjusted from time to time (excluding any benefits). The threshold value is not to be confused with any industry sector minimum wage determined in accordance with the Basic Conditions of Employment Act, 75 of 1977.

"Value of the contract" means the contract sum (accepted contract amount) less provisional sums, contingencies and VAT.

3.5.2.3 The selection and recruitment of targeted labour

Where targeted labour is to be drawn from specific local communities (defined in terms of the target area), such labour shall be identified using the relevant Sub-Council Job-Seekers Database. The Contractor shall request, via a Community Liaison Officer (if required in terms of the contract), a list of suitable candidates from the database, from which the Contractor shall make his/her final selection. The contractor shall enter into written contracts of temporary employment with all targeted labour.

Any difficulty experienced by the Contractor in identifying candidates though the Job-Seekers Database, or as regards any matter relating to the employment of targeted labour, shall be immediately referred to the Employer's Agent.

3.5.2.4 Contract participation goal credits

Credits towards the achieving the minimum CPG_L shall be granted by converting the total monetary value of wages paid to targeted labour (including that of sub-contractors) to a percentage of the value of the contract. No credits shall be accorded should the contractor/sub-contractor fail to enter into written contracts with the targeted labour. Furthermore, no credits shall be accorded in respect of targeted labour employed on work in respect of provisional sums or prime cost items. Such labour shall nevertheless be recorded on the Project Labour Report which is required to be furnished by the Contractor.

3.5.2.5 Training of targeted labour

The Contractor is required to provide all informal (on-the-job) skills training so as to ensure that a minimum level of competence is achieved and maintained, such that the various activities are carried out safely and to the required standard. The cost of informal training shall be included in the rates for the various work activities.

3.5.2.6 Penalties

The financial penalty to be applied for failing to meet the specified minimum targeted labour contract participation goal in the performance of the contract (unless proven to be beyond the control of the Contractor), is as follows:

$$\text{Penalty} = (CPG_L{}^S - CPG_L{}^A) \times P^*$$

Where $CPG_L{}^S$ = the specified minimum targeted labour contract participation goal (expressed as a percentage).

$CPG_L{}^A$ = the targeted labour contract participation goal achieved (expressed as a percentage).

P^* = the value of the contract.

3.5.3. COMMUNITY LIAISON OFFICER

It is a requirement of this Contract that a Community Liaison Officer (CLO) shall be appointed by the Contractor. The primary functions of the CLO shall be to assist the Contractor with the selection and recruitment of targeted labour, to represent the local community in matters concerning the use of targeted labour (and/or enterprises) on the works, and to assist with and facilitate communication between the Contractor, the Employer's Agent and the local communities.

The identification of suitable candidates (maximum 5; minimum 3) for the CLO position shall be resolved by the relevant Sub-council Manager through a process of advertising and shortlisting. Should suitable candidates not be identified through this process, the Contractor shall be allowed to seek candidates from the relevant Sub-Council Job-Seekers Database. The final selection and appointment of the CLO in terms of the contract shall be the responsibility of the Contractor.

The period of appointment of the CLO shall be as stated in the Contract for Temporary Employment as a Community Liaison Officer referred to below. The date of commencement of temporary employment of the CLO shall be as agreed with the Employer's Agent.

It is required, therefore, that the Contractor enter into a contract of temporary employment with the selected CLO, the contracting parties being the Contractor and the CLO. To this end, a specimen Form of Contract of Temporary Employment as Community Liaison Officer is included in this document (Part C1.8: Agreement and Contract Data). This Form of Contract sets out, inter alia, the agreement between the parties, the duties and conditions of employment of the CLO. The rate of remuneration for the CLO, payable by the Contractor, is currently **R360.00** per day. As said contract will be between the Contractor and the CLO, all costs involved shall be borne by the Contractor and the tender shall be deemed to include for this.

3.5.4. PARTICIPATION OF TARGETED ENTERPRISES

3.5.4.1 Minimum targeted enterprises contract participation goal

It is a requirement of this contract that enterprises located within the target area, as defined, be engaged by the Contractor for the provision of supplies, services or works necessary for the performance of this contract.

To this end, a minimum targeted enterprises contract participation goal is specified below, which shall be achieved by the Contractor in the performance of the contract, failing which, penalties as described will be applied.

The specified minimum targeted enterprises contract participation goal (CPG_E) is	**3 %**

The Contractor shall engage targeted enterprises directly or indirectly in the performance of the contract to the extent that the total monetary value of such engagements (exclusive of VAT), expressed as a percentage of the value of the contract, is sufficient to achieve the specified minimum CPG_E.

3.5.4.2 Definitions

For the purposes of the requirements in respect of the participation of targeted enterprises, the following definitions shall apply:

"Target area" means the Atlantis area: Sub-council 1 – Wards 29 and 32.

"Targeted enterprises contract participation goal (CPG_E)" means the value of supplies, services or works (exclusive of VAT), for which the Contractor contracts targeted enterprises, either directly or indirectly, in the performance of the contract, expressed as a percentage of the value of the contract.

"Targeted enterprises" means any sole trader, partnership or legal entity that acts as a supplier, manufacturer, service provider or sub-contractor, and which has its base of operations in the target area.

"Value of the contract" means the contract sum (accepted contract amount) less provisional sums, contingencies and VAT.

3.5.4.3 Achieving the contract participation goal

The contractor may achieve the specified minimum CPG_E as follows:

a) by engaging one or more targeted enterprises to perform commercially useful functions in the performance of the contract;

b) by engaging non-targeted enterprises, who in turn engage one or more targeted enterprises to perform commercially useful functions in the performance of the contract;

c) by a combination of the above.

The Contractor shall, within 5 working days of being requested by the Employer's Agent to do so, submit details of his/her plan to achieve the minimum CPG_E.

3.5.4.4 Contract participation goal credits

Credits towards achieving the minimum CPG_E shall be granted by converting the total monetary value (exclusive of VAT) of the agreements between the Contractor, or Contractor's sub-contractors, and targeted enterprises, to a percentage of the value of the contract.

No credits shall be accorded should the Contractor (or sub-contractors):

a) make direct payment to third parties in connection with the contract on behalf of targeted enterprises, when such payment is recovered by making deductions from payments due to the targeted enterprise;

b) fail to enter into written contractual agreements with the relevant targeted enterprises.

Credits claimed towards the contract participation goal shall be denied where such written contractual agreements contain any of the following:

c) conditions which are more onerous than those that exist in the prime contract (this contract);

d) payment procedures based on a pay when paid system;

e) authoritarian rights given to the employing contractor, with no recourse to independent adjudication in the event of a dispute arising.

No credits may be claimed in respect of targeted enterprises that that do not adhere to statutory labour practices.

No credits shall be accorded in respect of targeted enterprises engaged on work in respect of provisional sums or prime cost items.

In the event that a targeted enterprise sub-contracts to another targeted enterprise, only the value of the higher level sub-contract shall be granted as credit towards achieving the specified minimum CPG_E.

In addition to the form required for contract administration (the Targeted Enterprises Contract Participation Expenditure Report), the Contractor shall furnish the Employer's Agent, upon written request, with documentary evidence that the targeted enterprises have their base of operations in the target area, copies of the contractual agreements with the various targeted enterprises, as well as documentary proof of payments made to the various targeted enterprises.

3.5.4.5 Penalties

The financial penalty to be applied for failing to meet the specified minimum targeted enterprises contract participation goal in the performance of the contract (unless proven to be beyond the control of the Contractor), is as follows:

$$\text{Penalty} = (CPG_E^S - CPG_E^A) \times P^*$$

Where CPG_E^S = the specified minimum targeted enterprises contract participation goal (expressed as a percentage).

CPG_E^A = the targeted enterprises contract participation goal achieved (expressed as a percentage).

P* = the value of the contract.

3.5.5. ENVIRONMENTAL MANAGEMENT PROGRAMME

Particular Specification E: Environmental Management Specification and its Annexures are attached hereto.

3.5.6. HEALTH AND SAFETY

Particular Specification H: Health and Safety Specification is attached hereto.

E: ENVIRONMENTAL MANAGEMENT SPECIFICATION

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E: ENVIRONMENTAL MANAGEMENT SPECIFICATION

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

E1 SCOPE

The Environmental Management Programme (EMP) for the project is comprised of this Environmental Management (EM) Specification and its Annexures, including the "Additional environmental issues deemed to form part of the Environmental Management Specification" attached as Annexure D hereto, which together cover the requirements for controlling the impact on the environment of construction activities.

E2 INTERPRETATIONS

E2.1 Supporting specifications

The following standardised specification shall, *inter alia*, apply to this Contract:

a) SANS 1200A, as may be varied or added to in the Scope of Work

E2.2 Application

This EM Specification contains clauses that are generally applicable to the undertaking of construction works in areas where it is necessary to impose pro-active controls on the extent to which the construction activities impact on the environment.

E2.3

In the event of any difference or discrepancy between the provisions of the Standardised Specifications and the provisions of the EM Specification, the latter shall prevail.

E2.4 Definitions and abbreviations

For the purposes of this EM Specification the following definitions and abbreviations shall apply:

E2.4.1 Environment

The surroundings within which humans exist and that are made up of –

a) the land, water and atmosphere of the earth;
b) micro-organisms, plant and animal life;
c) any part or combination of i) and ii) and the interrelationships among and between them; and
d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

E2.4.2 Potentially hazardous substance

E2.4.3 A substance which, in the reasonable opinion of the Employer's Agent, can have a deleterious effect on the environment.

E2.4.4 Method Statement

A written submission by the Contractor to the Employer's Agent in response to the EM Specification or a request by the Employer's Agent, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, in such detail that the Employer's Agent is enabled to assess whether the Contractor's proposal is in accordance with the Scope of Work and/or will produce results in accordance with the EM Specification.

E2.4.5 Reasonable

Unless the context indicates otherwise, means reasonable in the opinion of the Employer's Agent after he has consulted with a person suitably experienced in "environmental implementation plans" and "environmental management plans" (both as defined in the National Environmental Management Act, 107 of 1998).

E2.4.6
E2.4.7 Solid waste

All solid waste, including construction debris, chemical waste, excess cement/ concrete, wrapping materials, timber, tins and cans, drums, wire, nails, domestic waste, dead vegetation, asphalt products, etc.

E2.4.8 Contaminated water

Water contaminated by the Contractor's activities containing cements, concrete, lime, paint products, thinners, turpentine, chemicals, fuels, oils washing detergents, etc.

E2.4.9 Working area

Any area within the boundaries of the Site where construction is taking place.

E2.4.10 Contractor's camp or construction camp

The area designated for all temporary site offices, storage areas, construction plant parking areas, staff welfare facilities, etc.

E2.4.11 Employer's Agent

The person/firm so named in the Contract Data, whose function is to administer the Contract as agent of the Employer.

E2.4.12 Employer's Agent's Representative (ER)

The natural person appointed by the Employer's Agent in terms of the Contract, who shall observe the execution of the Works, examine and test materials and workmanship, and deliver and receive communications to/from the Contractor.

E2.4.13 Environmental Officer (EO)

Appointed by the Employer's Agent as his environmental representative on Site, with the mandate to enforce compliance with the EMP. The duties of the EO are stipulated in the City's guideline document for the EO and ER.

E2.4.14 Environmental Control Officer (ECO)

An independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EAs), and the EMP for the project.

E2.4.15 Environmental Site Officer (ESO)

Employed by the Contractor as his environmental representative to monitor, review and verify compliance with the EMP by the Contractor. The ESO must ensure that he is involved at all phases of the construction (from site clearance to rehabilitation).

E2.4.16 Abbreviations

The following abbreviations occur in this EM Specification:

EMP - Environmental Management Programme
EM Specification – Environmental Management Specification
EO - Environmental Officer
ECO – Environmental Control Officer
ESO – Environmental Site Officer
ER – Employer's Agent's Representative
MSDS - Material Safety Data Sheets

E2.5 Employer's Agent's authority to delegate

In terms of Clause 3.2.4 of the General Conditions of Contract, Third Edition, 2015 (GCC 2015), the Employer's Agent has the authority to appoint a representative. Other than the Employer's Agent's Representative (ER) in terms of Clause 3.2, this can be in the form of an Environmental Officer (EO), who shall be responsible for monitoring compliance with the EMP. All instructions given by the EO shall go through the ER, who will then convey these to the Contractor, except in the case of an environmental emergency, in which case the EO can issue an instruction directly to the Contractor. An environmental emergency is one which, in the opinion of the EO, would cause serious environmental harm if not addressed immediately.

Depending on the nature/environmental sensitivity of the Contract the following variations in the organisational structure are possible:

a) The ER may work together with an EO; or
b) There may be an ER only (for construction projects with low potential for causing significant environmental impacts). In this case the ER has responsibility for the EO's functions.
c) There may be an independently appointed Environmental Control Officer (ECO) who will fulfil essentially the same functions as the EO. The ECO may work with just the ER (if there is no EO) or may work with both the ER and EO.

The term "Employer's Agent" in this EM Specification refers to the Employer's Agent as defined in Clause E2.3.9 acting through the ER/EO/ECO as delegated.

E3 MATERIALS

E3.1 Materials handling, use and storage

The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the EM Specification. The Contractor shall ensure that these delivery drivers are supervised during off loading by someone with an adequate understanding of the requirements of the EM Specification.

Materials shall be appropriately secured to ensure safe passage between destinations. Loads, including but not limited to, sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.

All manufactured and or imported materials shall, where reasonably possible, be stored within the Contractor's camp and, if so required by the Employer's Agent, out of the rain. The location and method of protection of such materials stored outside of the Contractor's camp and the method of rehabilitation of these areas, shall be subject to the Employer's Agent's approval.

Stockpile areas shall be approved by the Employer's Agent before any stockpiling commences.

E3.2 Hazardous substances

Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances in GN 1179 (25 August 1995)) stored on Site for use during construction shall be stored in secondary containers which are clearly and appropriately marked/signed. The relevant Material Safety Data Sheets (MSDS) shall be available on Site. Procedures detailed in the MSDSes shall be followed in the event of an emergency situation.

If potentially hazardous substances are to be stored on Site, the Contractor shall inform the Employer's Agent of such substances and provide a Method Statement detailing the substances/ materials to be used, together with the storage, handling and disposal procedures of the materials. Hazardous substances shall be stored out of flood risk areas and disposal of these substances shall be at a licensed waste disposal facility.

E4 PLANT (referring to "Construction Equipment" as defined in GCC 2015, and the Contractor's facilities as used in SANS 1200A)

E4.1 Fuel (petrol and diesel) and oil

E4.1.1 Storage

If fuel and oil is to be stored on Site, then the Contractor shall submit a Method Statement covering the procedures for dealing with accidental hydrocarbon spillage and leaks, and detailing how these liquids will be stored, handled and disposed of.

The Employer's Agent shall approve the location of all fuel storage areas. All necessary approvals with respect to fuel storage and dispensing shall be obtained from the appropriate authorities. Symbolic safety signs depicting **"No Smoking", "No Naked Lights"** and **"Danger"** conforming to the requirement of SANS 1186 are to be prominently displayed in and around the fuel storage area. There shall be adequate fire-fighting equipment at the fuel storage area.

The Contractor shall ensure that all liquid fuels and oils are stored in tanks with lids, which are kept firmly shut and adequately secured. The capacity of the tank shall be clearly displayed and the product contained within the tank clearly identified using the emergency information system detailed in SANS 0232 part 1. Fuel storage tanks shall have a capacity not exceeding 9000 litres and shall be kept on site only for as long as fuel is needed for construction activities, on completion of which they shall be removed.

The tanks shall be situated on a smooth impermeable base with an earth bund. The volume inside the bund shall be 110% of the total capacity of the largest storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints, covered by a layer of compacted earth to protect the sheeting. The impermeable lining shall extend to the crest of the bund. The floor of the storage area shall be sloped to enable any spilled fuel and/or fuel-contaminated water to be removed easily.

If any rainwater collects in the bunded areas, it shall be promptly removed and taken off Site to a disposal site approved by the Employer's Agent.

Only empty and externally clean tanks may be stored on the bare ground. Empty and externally dirty tanks shall be sealed and stored on an area where the ground has been protected.

Adequate precautions shall be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. If fuel is dispensed from 200 litre drums, the proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. The dispensing mechanism for the fuel storage tanks shall be stored in a waterproof container when not in use.

E4.1.2 Refuelling

Plant shall be refuelled at a designated refuelling area approved by the Employer's Agent. The surface under the temporary refuelling area shall be protected against pollution to the reasonable satisfaction of the Employer's Agent prior to any refuelling activities. The Contractor shall ensure that there is always a supply of absorbent material (e.g. Spill Sorb or Enretech #1 powder or equivalent) readily available that is designed to absorb, break down and encapsulate minor hydrocarbon spillage. The quantity of such material shall be able to handle a minimum of 200 litres of hydrocarbon liquid spill.

E4.1.3 Treatment and remediation

Treatment and remediation of hydrocarbon spill and leak areas shall be undertaken to the satisfaction of the Employer's Agent. In the event of a hydrocarbon spill the source of the spillage shall be isolated and the spillage contained.

E4.2 Ablution and toilet facilities

Washing, whether of the person or of personal effects, defecating and urinating are strictly prohibited other than at the facilities provided.

The Contractor shall provide ablution facilities for all personnel employed on the Site, including shelter, toilets and washing facilities. The Contractor's personnel will not be permitted to use the City's ablution facilities.

Toilet facilities provided by the Contractor shall occur in a ratio of not less than 1 toilet per 30 workers (1:15 is preferred) for each sex. Toilet facilities shall be located within the Contractor's camp, but also at work areas remote from the camp, all to the satisfaction of the Employer's Agent. All portable toilets shall be adequately secured to the ground to prevent them toppling over as a result of wind or any other cause.

The Contractor shall ensure that the entrances to these toilets are adequately screened from view, that they are maintained in a hygienic state, serviced regularly, that no spillage occurs when they are cleaned and that contents are removed from Site. Toilets shall also be emptied before any temporary site closure for a period exceeding one week. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited. The Contractor shall provide toilet paper at all times.

No ablution facilities shall be located closer than 50m to any water body

A Method Statement shall be provided by the Contractor detailing the provision, location, and maintenance of ablution facilities.

E4.3 Eating areas

The Contractor shall designate eating areas within the approved Contractor's camp. The feeding of, or leaving of food for, animals is strictly prohibited. Sufficient bins, as specified in Clause E4.4 below, shall be present in these areas.

Any cooking on Site shall be done on well-maintained gas cookers with fire extinguishers present. No open fires for cooking purposes shall be permitted, unless for occasional use in facilities specifically provided for this purpose and within the confines of the Contractor's camp.

E4.4 Solid waste management

E4.4.1 Litter and refuse

The site shall be kept neat and clean at all times, littering is prohibited.

No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur. The Contractor shall provide scavenger and weatherproof bins with lids, of sufficient number and capacity to store the solid waste produced on a daily basis. The lids shall be kept firmly on the bins at all times. Bins shall not be allowed to become overfull and shall be emptied regularly, at least once a week. Waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger-proof, and which the Employer's Agent has approved. Wherever possible refuse shall be recycled, and containers for glass, paper, metals and plastics shall be provided and the contents delivered to suitable recycling facilities when necessary.

All other litter and refuse shall be disposed of off Site at an approved landfill site. The Contractor shall supply the Employer's Agent with a certificate of disposal.

E4.4.2 Construction waste

Where possible all construction waste or spoil material shall be recycled, either on Site or elsewhere. As a last resort all construction waste shall be disposed of off Site at an approved landfill site. The Contractor shall supply the Employer's Agent with a certificate of disposal.

E4.5 Contaminated water management

Potential pollutants of any kind and in any form shall be kept, stored, and used in such a manner that any spill or escape can be contained and the water table and/or any adjacent water courses or bodies are not endangered. Spill kits which can be used to contain and/or mop up spills shall be available. Water containing such pollutants as cements, concrete, lime, chemicals, oils and fuels shall be discharged into a conservancy tank for removal from the Site to a licensed disposal facility. This particularly applies to water emanating from concrete batching plants and to runoff from fuel storage, refuelling or construction equipment washing areas. Wash down areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted.

No paint products, chemical additives and cleaners, such as thinners and turpentine, may be disposed of into the stormwater system or elsewhere on Site. Brush/roller wash facilities shall be established to the satisfaction of the Employer's Agent.

A Method Statement shall be provided by the Contractor detailing the management of contaminated water.

Should contaminated water be released into the environment, specifically into a water course, monitoring thereof shall commence in accordance to the National Water Act, 36 of 1998, Section 21(f) – refer to GN 399 (26 March 2004). Contaminated water must not be released into the environment without authorisation from the relevant authority.

The Contractor shall notify the Employer's Agent immediately of any pollution incidents on Site and, at his own cost, take all reasonable measures to contain and minimise the effects of the pollution.

Any rehabilitation of the environment required as a result of such pollution shall be carried out by the Contractor at his own cost in accordance with a Method Statement approved by the Employer's Agent.

E4.6 Site structures

The type and colour of roofing and cladding materials to the Contractor's temporary structures shall be selected to reduce the visual impact.

E4.7 Lights

The Contractor shall ensure that any lighting installed on the Site for his activities does not cause a reasonably avoidable disturbance to other users of the surrounding area.

Lighting installed shall, as far as practically possible, be energy efficient. Lighting utilised on Site shall be turned off when not in use.

E4.8 Workshop, equipment maintenance and storage

No workshops or plant maintenance facilities shall be constructed on Site for performing major or routine maintenance of equipment and vehicles.

The Contractor shall ensure that in those areas where, after obtaining the Employer's Agent's approval, the Contractor carries out emergency or minor routine plant maintenance, there is no contamination of the soil, water sources or vegetation. Drip trays to collect waste oil and other lubricants shall be provided in any areas of the Site where such maintenance takes place. Drip trays must be emptied regularly and after rain, and the contents disposed of at a licensed disposal facility.

All vehicles and plant shall be kept in good working order. Leaking vehicles and plant shall be repaired immediately or removed from the Site.

The washing of vehicles and plant on Site shall be restricted to emergency or minor routine maintenance requirements only. Washing may only be undertaken in areas designated by the Employer's Agent.

E4.9 Noise

The Contractor shall limit noise levels (for example, by installing and maintaining silencers on plant). The provisions of SANS 1200A Clause 4.1 regarding "built-up areas" shall apply.

Appropriate directional and intensity settings are to be maintained on all hooters and sirens.

No amplified music shall be allowed on Site. The use of audio equipment shall not be permitted, unless the volume is kept sufficiently low so as to be unobtrusive. The Contractor shall not use sound amplification equipment on Site, unless in emergency situations.

Construction activities generating output levels of 85 dB(A) or more in residential areas, shall be confined to the hours 08h00 to 17h00 Mondays to Fridays. Should the Contractor need to do this work outside of the above times, he shall do so only with the approval of the Employer's Agent, and the surrounding communities shall be informed prior to the work taking place.

E5 CONSTRUCTION

E5.1 Method Statements

The Contractor shall submit the environmental method statements required within such reasonable time as the Employer's Agent shall specify or as required by the EM Specification. The Contractor shall not commence any activity until the Method Statement in respect thereof has been approved and shall, except in the case of emergency activities, allow a period of two weeks for consideration of the Method Statement by the Employer's Agent.

The Employer's Agent may require changes to a Method Statement if the proposal does not comply with the specification or if, in the reasonable opinion of the Employer's Agent, the proposal may result in, or carries a greater than reasonable risk of, damage to the environment in excess of that permitted by the EM Specification.

E5.2 Approved Method Statements shall be readily available on the Site and shall be communicated to all relevant personnel. The Contractor shall carry out the Works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract.

Changes to the way the Works are to be carried out must be reflected by amendments to the original approved Method Statements, and these amendments require the signature of both the Contractor and the Employer's Agent.

Method Statements shall consider all environmental hazards and risks identified by the Contractor and/or Employer's Agent and shall contain sufficient information and detail to enable the Employer's Agent to assess the potential negative environmental impacts associated with the proposed activity and shall cover applicable details with regard to:

a) construction procedures,
b) materials and equipment to be used,
c) getting the equipment to and from Site,
d) how the equipment/material will be moved while on Site,
e) how and where material will be stored,
f) the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur,
g) the control of fire,
h) timing and location of activities,
i) compliance/non-compliance with the EM Specification,
j) any other information deemed necessary by the Employer's Agent.

The format to be used for the required method statements is bound in Annexure A of this EM Specification. The Contractor (and, where relevant, any sub-contractors) must also sign the Method Statement, thereby indicating that the work will be carried out according to the methodology contained in the approved Method Statement.

E5.1.1 Method Statements to be provided within 14 days from the Commencement Date

a) Layout and Preparation of Contractor's Camp (E5.4).

b) Ablution Facilities: number of, location, cleaning, method of securing to the ground, etc. of portable toilets (E4.2).

c) Solid Waste Management: number of, type, location, cleaning, method of securing to the ground, etc. of bins (E4.4).

d) Environmental Awareness Training: logistics for the environmental awareness courses for all the Contractor's management staff, as well as other employees (E5.2).

e) Emergency Procedures for Accidental Hydrocarbon Leaks and Spillages (E4.1 and E5.8).

f) Asphalt and Bitumen: details of all methods and logistics associated with the use of bitumen and asphalt (E5.11).

E5.2 Environmental Awareness Training

It is a requirement of this Contract that environmental awareness training courses are run for all personnel on Site. Two types of courses shall be run: one for the Contractor's and subcontractors' management, and one for all site staff and labourers. Courses shall be run during normal working hours at a suitable venue provided by the Contractor. All attendees shall remain for the duration of the course and sign an attendance register that clearly indicates participants' names on completion, a copy of which shall be handed to the Employer's Agent. The Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto Site. A Method Statement with respect to the organisation of these courses shall be submitted.

Notwithstanding the specific provisions of this clause, it is incumbent upon the Contractor to convey the spirit of the EM Specification to all personnel involved with the Works.

E5.2.1 Training Course for Management and Foremen

The environmental awareness training course for management shall include all management and foremen. The course, which shall be presented by the Employer's Agent or his designated representative, shall be of approximately one hour duration. The course shall be undertaken prior to the commencement of work on Site.

E5.2.2 Training Course for Site Staff and Labour

The environmental awareness training course for site staff and labour shall be presented by the Contractor from material provided by the Employer's Agent. The course shall be approximately one hour long. The course shall be undertaken not later than 3 working days after the commencement of work on Site, with sufficient sessions to accommodate all available personnel.

All the Contractor's employees, sub-contractors' employees and any suppliers' employees that spend more than 1 day a week or four days in a month on Site shall attend the Environmental Awareness Training Course for Site Staff and Labour

E5.3 Contractor's Environmental Representative (ESO)

The Contractor shall appoint an environmental representative, also called an Environmental Site Officer (ESO), who shall be responsible for undertaking a daily site inspection to monitor compliance with this EM Specification. The Contractor shall forward the name of the environmental representative (ESO) to the Employer's Agent for his approval. The environmental representative (ESO) shall complete Environmental Site Inspection Checklists (Annexure B attached hereto) and these shall be submitted to the Employer's Agent once a week.

E5.4 Site division, demarcation and "no go" areas

The Contractor shall restrict all his activities, materials, plant and personnel to within the Site or any particular working areas specified or indicated on the drawings.

The Contractor shall erect and maintain permanent and/or temporary fences of the type and in the locations specified elsewhere in the Scope of Work or on the drawings. Such fences shall, if so specified, be erected before undertaking any construction activities.

Where environmentally sensitive areas are specified as "no go" areas, the Contractor shall ensure that, insofar as he has the authority, no person, plant or material shall enter the "no go" areas at any time.

A Method Statement detailing the layout and method of establishment of the Contractor's camp (including all offices, shelters, eating areas, storage areas, ablution facilities and other infrastructure required for the running of the project) shall be provided.

E5.5 Access routes/ haul roads

On the Site and, if so required, within such distance of the Site as may be stated by the Employer's Agent, the Contractor shall control the movement of all vehicles and construction equipment, including that of his suppliers, so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic, and that all relevant laws are complied with. In addition, the movement of such vehicles and construction equipment shall be planned and operated so as to minimise disruption to regular users of the routes. As far as possible the Contractor shall use existing access and haul routes. Damage to existing access roads as a result of construction activities shall be repaired to the satisfaction of the Employer's Agent, using material similar to that originally used. The cost of the repairs shall be borne by the Contractor. New temporary access or haul routes may only be established with the prior approval of the Employer's Agent. The rehabilitation of such routes shall be to the Contractor's own cost and to the approval of the Employer's Agent.

Any directional signage required by the Contractor for the purposes of directing the movement of his own vehicles and construction equipment (or that of his subcontractors or suppliers) must be of a design and in a location approved by the Employer's Agent. Directional signage may not be erected in such a manner that it interferes with sight lines or pedestrian movement.

E5.6 Construction personnel information posters

The Contractor shall erect and maintain information posters for the information of his employees, depicting actions to be taken to ensure compliance with aspects of the EM Specification. A2 information posters, printed on white vinyl, shall be erected at the eating areas and any other locations specified by the Employer's Agent.

The specification for the poster is presented in Annexure C of this EM Specification. The symbols shall be black and the circles shall be red lines. The Contractor shall ensure that the construction personnel information posters are not damaged in any way, and shall replace a poster if any part of it becomes illegible.

E5.7 Fire control

Other than for cooking purposes as specified in Clause E4.3, no fires may be lit on Site. Any fires which occur shall be reported to the Employer's Agent immediately.

Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include fuel storage and refuelling areas, and any other areas where the vegetation or other materials are susceptible to the start and rapid spread of fire.

In terms of the National Environment Management: Air Quality Act, 39 of 2004 and Community Fire Safety By-law, burning is not permitted as a disposal method.

The Contractor shall appoint a Fire Officer (who may be the ESO) who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall forward the name of the Fire Officer to the Employer's Agent for his approval.

The Contractor shall comply with Clause 27 of the Construction Regulations, 2014 where applicable, and shall ensure that there is suitable and sufficient fire-fighting equipment available on Site at all times.

The Contractor shall be liable for any costs relating to the rehabilitation of burnt areas, should the fire be the result of the Contractor's activities on Site

The Contractor shall submit a Method Statement to the Employer's Agent covering the procedure to be followed in the event of a fire.

E5.8 Emergency procedures

The Contractor's attention is drawn to the Method Statements required in terms of Clauses E4.1 and E5.7 above. Such Method Statements shall include procedures to be followed by the Contractor in the event of an emergency.

Furthermore, in the event of an emergency the Contractor shall contact the City of Cape Town's Emergency Call Centre by telephoning 107 or 021 480 7700 (from a cell phone).Telephone numbers of emergency services, including the local fire fighting service, shall be posted conspicuously in the Contractor's office near the telephone.

E5.9 Health and safety

The Contractor shall comply with requirements of the Occupational Health and Safety Act, 85 of 1993 and Construction Regulations, 2014, the Health and Safety Specification and relevant clauses of GCC 2015, insofar as health and safety is concerned.

E5.10 Community relations

If so required, the Contractor shall erect and maintain information boards in the position, quantity, design and dimensions specified in the Scope of Work or as directed by the Employer's Agent. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Employer's Agent.

The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, and information regarding the complaint itself.

E5.11 General protections in terms of the National Heritage Resources Act, 25 of 1999

The Contractor shall take cognisance of the provisions of the National Heritage Resources Act, 25 of 1999 in respect of, *inter alia*, structures older than 60 years; archaeology, palaeontology and meteorites; burial grounds and graves; and public monuments and memorials.

E5.12 Protection of natural features

The Contractor shall not deface, paint, damage or mark any natural features (e.g. rock formations) situated in or around the Site for survey or other purposes, unless agreed beforehand with the Employer's Agent. Any features affected by the Contractor in contravention of this clause shall be restored/ rehabilitated to the satisfaction of the Employer's Agent. The cost of restoration/rehabilitation shall be borne by the Contractor.

The Contractor shall not permit his employees to make use of any natural water sources (e.g. springs, streams, open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

E5.13 Protection of flora and fauna

Except to the extent necessary for the carrying out of the Works, as specified by the Employer's Agent, no vegetation shall be removed, damaged or disturbed.

The presence of any wild animals found on Site shall be reported to the Employer's Agent, who shall issue an instruction with regard to their removal or relocation. If a wild animal needs removal from the Site the Cape Nature (Metro Region) Conservation Services Manager may be contacted for assistance (Tel 021 955 9132/9121/3122/9130). Trapping poisoning, injuring or shooting animals is strictly forbidden. No domestic pets or livestock are permitted on Site, with the exception of controlled watchdogs approved by the Employer's Agent.

Where the use of herbicides, pesticides and other poisonous substances has been specified, the Contractor shall submit a Method Statement to the Employer's Agent for approval.

E5.14 Erosion and sedimentation control

The Contractor shall take all reasonable measures to limit erosion and sedimentation due to the construction activities and shall, in addition, comply with such detailed measures as may be required by the Scope of Work. Where erosion and/or sedimentation, whether on or off the Site, occurs, rectification shall be carried out in accordance with details specified by the Employer's Agent. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the Employer's Agent, at the Contractor's cost. In particular, the Contractor shall ensure that the City's stormwater system is kept free from sediment arising from the Works.

Any runnels or erosion channels developed during the construction period or during the vegetation establishment period shall be backfilled and compacted, and the areas restored to a proper condition. Stabilisation of cleared areas to prevent and control erosion shall be pro-actively managed by the Contractor. The method of stabilisation shall be determined in consultation with the Employer's Agent.

E5.15 Aesthetics

The Contractor shall take any requisite measures to ensure that construction activities do not have an undue negative impact on the aesthetics of the area.

E5.16 Temporary site closure

In the event of temporary site closure (for a period exceeding one week), the Contractor's ESO shall carry out checks and ensure that, amongst others, the following conditions pertain and report on compliance with this clause:

a) Fire extinguishers are serviced and accessible.
b) There is adequate ventilation in enclosed spaces.
c) All hazardous substance stores are securely locked.
d) Fencing and barriers are in place.
e) Emergency and management contact details are prominently displayed and available.
f) Wind and dust mitigation measures, e.g. straw, brush packs, irrigation, etc. are in place.
g) Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows.
h) There are sufficient detention ponds or channels in place.
i) Cement and materials stores are secured.
j) Toilets are empty and secured.
k) Central waste area and all refuse bins are empty and secured.
l) Contaminated water conservancy tank empty.

m) Any bunded areas are clean and treated with an approved product where applicable ([redacted].

n) Drip trays are empty and secure

E5.17 Asphalt and bitumen

Bitumen drums/products, if stored on Site, shall be stored in an area approved by the Employer's Agent. This area shall be indicated on the Method Statement for the Layout and Preparation of the Contractor's Camp. The storage area shall be constructed with an appropriate base, bunding and sump to the satisfaction of the Employer's Agent. A Method Statement shall be provided in this regard.

When heating bitumen products, the Contractor shall take cognisance of appropriate fire risk controls. Heating shall only be undertaken [redacted]. Appropriate fire fighting equipment shall be readily available on Site.

E5.18 Dust

The Contractors shall be solely responsible, at his cost, for the control of dust arising from his activities on Site, and for any costs involved in damages resulting from the dust. The Contractor shall take all reasonable measures to minimise the generation of dust

E5.19 Contractor's advertising signage

Any advertising on the Site or any part of the Works shall remain at the sole discretion of the Employer, who reserves the right to order, via the Employer's Agent, its removal, covering or re-sizing, wherever placed, at no cost to the Employer.

Apart from at the Contractor's camp, no signage advertising the Contractor, or any of its subcontractors, manufacturers, suppliers or service providers shall be placed, fixed or erected anywhere on the Site or on the Works without the prior approval of the Employer's Agent. No advertising signage will be permitted on any designated scenic route. Notwithstanding any prior approval given, the Employer's Agent may instruct the Contractor to remove, cover or re-size any advertising signage at any time at no cost to the Employer.

Advertising signage at the Contractor's camp shall be appropriately designed and sized with due consideration to the surrounding environment, views and sight lines.

Branding or identification markings on the Contractor's and subcontractor's vehicles and equipment is generally permitted, although the Employer reserves the right to instruct, via the Employer's Agent, the removal, covering or re-sizing of any branding, markings or signage, on any equipment (scaffolding, for example), which it considers inappropriate in the environment in which it is placed.

No third party advertising (that is, in respect of any person, business or product that is not associated with the Works) shall be permitted anywhere on the Site or Works.

E5.20 Clearance of Site on completion

On completion of the Works, and at final completion when all defects have been remedied or corrected, the Contractor shall, in addition to the requirements for clearance of the Site in terms of the Contract, ensure that he has complied with the following requirements in terms of this EM Specification:

E5.20.1 Clause E3.1

Clean-up of improperly secured transported materials, and rehabilitation of storage areas.

E5.20.2 Clause E4.1.3

Remediation of hydrocarbon spill and leak areas.

E5.20.3 Clause E4.4

Disposal of litter, refuse and Contractor's waste.

E5.20.4 Clause E5.4

Removal of temporary fences and Contractor's camp.

E5.20.5 Clause E5.5

Repair of access roads damaged by the Contractor, and rehabilitation of temporary access routes.

E5.20.6 Clause E5.7

Rehabilitation of burnt areas should a fire be the result of Contractor's activities on Site.

E5.20.7 Clauses E5.11 to 5.13

Rehabilitation of heritage and natural features, including vegetation which is damaged or disturbed, which required protection in terms of these clauses.

E5.20.8 Clause E5.14

Rectification where erosion and/or sedimentation has occurred due to the fault of the Contractor .

E5.20.9 Clause E5.19

Removal of Contractor's advertising signage.

E6 TOLERANCES

E6.1 Fines

Environmental management is concerned not only with the final results of the Contractor's operations, but also with the control of how these operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product, but also to the standard of the day-to-day operations required to complete the Works.

It is thus required that the Contractor shall comply with the EM Specification on an on-going basis and any failure on his part to do so will entitle the Employer's Agent to certify the imposition of a fine. Fines may be issued per incident at the discretion of the Employer's Agent. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications. The Employer's Agent will inform the Contractor of the contravention and the amount of the fine, and will deduct the amount from monies due in payment certificates issued under the Contract.

Maximum fines for the following transgressions by either the Contractor and/or his sub-contractors may be imposed by the Employer's Agent, as follows:

		Maximum fine per incident
a)	Vehicles, plant or materials related to the Contractor's operations, parked or stored outside the demarcated boundaries of the Site.	R 2 000
b)	Persons, vehicles, plant or materials related to the Contractor's operations, found within the designated boundaries of a "no go" area.	R 4 000
c)	Persistent and unrepaired oil leaks from machinery/not using a drip tray to collect waste oil and other lubricants/not using specified absorbent material to encapsulate hydrocarbon spillage/using inappropriate methods of refuelling (the use of a funnel rather than a pump).	R 3 000
d)	Refuelling in areas not approved by the Employer's Agent.	R 3 000
e)	Litter on Site.	R 1 000
f)	Deliberate lighting of fires on Site.	R 5 000
g)	Individual not making use of the Site ablution facilities.	R 1 000
h)	Damage to trees not specified to be removed.	R 5 000
i)	Dust or excessive noise emanating from the site	R 1 000
j)	Not containing water contaminated with pollutants such as cement, concrete, fuel, etc.	R 2 000

For each subsequent similar offence the fine shall be doubled in value to a maximum value of R50 000.

E7 TESTING

Not applicable to this tender.

E8 MEASUREMENT AND PAYMENT

E8.1 Basic principles

Except where separate pay items have been measured in the Bills of Quantities, all costs in respect of complying with the EM Specification are deemed to be covered by the sum tendered for complying with the EM Specification.

ANNEXURE A: ENVIRONMENTAL METHOD STATEMENT

CONTRACT:……... **DATE**:…...……

PROPOSED ACTIVITY (give title of method statement and reference number from the EMP):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works - attach extra information to ensure accurate description given):

WHERE THE WORKS ARE TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:	End Date:

HOW THE WORKS ARE TO BE UNDERTAKEN (provide as much detail as possible, including annotated sketches and plans where possible):

Note: please give too much information rather than too little. Please ensure that issues such as emergency procedures, hydrocarbon management, wastewater management, access, individual responsibilities, materials, plant used, maintenance of plant, protection of natural features, etc. are covered where relevant

DECLARATIONS

1) EMPLOYER'S AGENT'S REPRESENTATIVE/ENVIRONMENTAL OFFICER/ENVIRONMENTAL CONTROL OFFICER

The work described in this Method Statement, if carried out according to the methodology described, appears to be satisfactorily mitigated to prevent avoidable environmental harm:

_____ _____

(signed) (print name)

Dated: _____

2) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the Employer's Agent's Representative/Environmental Officer/Environmental Control Officer will audit my compliance with the contents of this Method Statement. I understand that this method statement does not absolve me from any of my obligations or responsibilities in terms of the Contract.

_____ _____

(signed) (print name)

Dated: _____

3) EMPLOYER'S AGENT

The works described in this Method Statement are approved.

_____ _____ _____

(signed) (print name) (designation)

Dated: _____

ANNEXURE B: ENVIRONMENTAL SITE INSPECTION CHECKLIST
TO BE SUBMITTED TO THE EMPLOYER'S AGENT ONCE A WEEK

CONTRACT:…… **DATE**:……

ENVIRONMENTAL ASPECT	YES/ NO (✓ or X)	COMMENTS
• All new personnel on Site are aware of the contents of the EMP and have been through the environmental awareness course.		
• Contractor's camp is neat and tidy and the labourers' facilities are of an acceptable standard.		
• Sufficient and appropriate fire fighting equipment is visible and readily available in the appropriate places.		
• Waste control and removal system is being maintained.		
• Fences are being maintained.		
• Drip trays are being utilised where there is a risk of spillage.		
• Bunded areas/drip trays are being emptied on a regular basis (especially after rain).		
• No leaks are visible from construction vehicles.		
• Refuelling of vehicles and plant occurs within designated areas, and appropriate refuelling apparatus and drip trays are being used.		
• "No go" areas, natural features, vegetation, etc. have not been damaged.		
• Dust control measures (if necessary) are in place and are effectively controlling dust.		
• Noise control measures (if necessary) are in place and are working effectively.		
• Erosion and sedimentation control measures (if necessary) are in place and are controlling effectively.		
• Material stockpiles are located within the boundary of the Site and are protected from erosion.		
• Other		

Completed by:…… Signed:……

ANNEXURE C: CONSTRUCTION PERSONNEL INFORMATION POSTER

ENVIRONMENTAL MANAGEMENT DO'S AND DON'TS

Workers & equipment must stay inside the site boundaries at all times

Do not swim in or drink from streams
Do not throw oil, petrol, diesel, concrete or rubbish in the stream
Do not work in the stream without direct instruction
Do not damage the banks or vegetation of the stream

Protect animals on the site
Ask your supervisor or Contract's Manager to remove animals found on site

Do not damage or cut down any trees or plants without permission
Do not pick flowers

Put cigarette butts in a rubbish bin
Do not smoke near gas, paints or petrol
Do not light any fires without permission
Know the positions of fire fighting equipment
Report all fires
Do not burn rubbish or vegetation without permission

Work with petrol, oil & diesel in areas marked for this
Report any petrol, oil & diesel leaks or spills
Use a drip tray under vehicles & machinery
Empty drip trays after rain & do not throw this water into a river

Try to avoid producing dust - wet dry ground & soil

Do not make loud noises around the site, especially near schools and homes
Report or repair noisy vehicles

Use the toilets provided
Report full or leaking toilets

Only eat in demarcated eating areas
Never eat near a river or stream
Put packaging & leftover food into rubbish bins

Do not litter - put all rubbish (especially cement bags) into the bins provided
Report full bins to your supervisor
The responsible person should empty bins regularly

Always keep to the speed limit
Drivers - check & report leaks
Ensure loads are secure & do not spill

Know all the emergency phone numbers

Fines of between R1000 and R5000
Removal from site
Construction may be stopped

Report any breaks, floods, fires, leaks and injuries to your supervisor
Ask questions!

ANNEXURE D: ADDITIONAL ENVIRONMENTAL ISSUES DEEMED TO FORM PART OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

Listed below are issues pertaining to the environment that form part of the Contract Document. The clause references relate to the **General Conditions of Contract for Construction Works, Third Edition, 2015 (GCC 2015)**. They are listed here to emphasise that they form part of the environmental considerations and requirements for this project. They must be read together with any Contract Specific Data referring thereto in Part C1.2 Contract Data. The comments made below on the various issues are to be taken as explanatory, in so far as environmental matters are concerned, and do not modify the clauses in any way.

1. **Monitoring**

   Clause 3.1.1 makes provision for the Employer's Agent to administer the Contract in accordance with the provisions of the Contract, including the monitoring of any environmental variables.

2. **Health and safety**

   Clauses 3.1.4, 4.3.1, 4.3.2 and 4.10.1 remind the Contractor of his obligations in terms of the Occupational Health and Safety Act (No. 85 of 1993) and Construction Regulations 2014.

   Clause 5.7 of SANS 1200A reinforces these requirements through the observation of proper and adequate safety arrangements.

3. **Employer's Agent's authority to delegate**

   Clause 3.2.4 gives the Employer's Agent the authority to appoint a representative to act as the Environmental Officer (EO) for the Contract. The EO, who shall be responsible for monitoring compliance with the EMP, may be the Employer's Agent's Representative or any other person accountable to the Employer's Agent.

4. **Employer's Agent's instructions**

   Clause 4.2.1 requires that the Contractor comply with the Employer's Agent's instructions on any matter relating to the Works. Moreover, Clause 4.2.2 ensures that the Contractor only takes instructions from the Employer's Agent, the Employer's Agent's Representative or a person authorised by the Employer's Agent in terms of Clause 3.2.4.

5. **Compliance with applicable laws**

   Clause 4.3.1 requires that the Contractor comply with all applicable laws, regulations, etc. in fulfilling the Contract.

6. **Protection of fossils, etc.**

   Clause 4.7.1 requires the Contractor to take reasonable precautions to prevent any person from damaging, *inter alia* anything of geological or archaeological interest, and requires that he inform the Employer's Agent and follows any instructions issued in this regard.

7. **Housing, food and transport**

   Clause 4.10.1 requires the Contractor to make his own arrangements for payment, housing, feeding and transport for his employees, provided that if he uses any part of the Site for such purposes he shall obtain the Employer's Agent's prior approval.

   Clause 4.2 of SANS 1200A further requires that facilities provided comply with local authority regulations and are maintained in a clean and sanitary condition.

8. **Competent employees**

   Clause 4.11.1 requires that all persons employed on Site are careful, competent, and efficient. These attributes embrace knowledge of the environmental matters and issues dealt with in the EMP.

9. **Removal from Site**

   Clause 4.11.2 makes provision for the Employer's Agent to instruct the removal from the Works and Site of any person who is guilty of misconduct, or is incompetent or negligent, or is an undesirable presence on Site.

Clause 7.1.1 requires that all Construction Equipment be in good working order. Accordingly, the Employer's Agent may order that any Construction Equipment not complying with the environmental specifications be removed from Site.

10. **Unacceptable documentation**

Clauses 5.3.1 and 5.3.2 require the Contractor to provide documentation required before commencement with Works execution, failing which the Employer may terminate the Contract. Such documentation includes the Protection of the Environment Declaration provided for in the Contract Document.

11. **Programme and Method Statements**

Clause 5.6.1 makes provision for the Employer's Agent to request the programmes for carrying out the Works.

Clause 5.6.2 makes provision for the Employer's Agent to request statements from the Contractor for the entire scope of the work. In the case of the environmental specifications, these would be submitted as Method Statements.

12. **Hours of operation**

Clause 5.8.1 restricts the Contractors hours of operation to between sunrise and sunset on working days (usually from Monday to Saturday), unless, *inter alia,* permitted by the Employer's Agent in writing.

Clause 5.7.2 further requires that in the event that permission is granted for night work, then such work shall be carried out without excessive noise and disturbance.

13. **Suspension of Works**

Clause 5.11.1 enables the Employer's Agent to suspend the progress of the Works or any part thereof, which may be as a result of some default or breach of the Contract on the part of the Contractor.

14. **Site clean-up**

Clause 5.15.1 requires that, on completion of the Works, the Contractor shall clear away and remove from the Site all Construction Equipment, surplus materials, rubbish and Temporary Works of every kind and leave the whole of the Site and Works clean and in a safe condition. All streams and watercourses shall be restored to the condition as at the commencement of the Works. Should the Contractor fail to do the work upon notice from the Employer's Agent, the Employer may in terms of Clause 7.8.3, employ others to carry out the work and recover the cost of doing so from the Contractor.

15. **Access to the Works**

Clause 7.3.1 makes provision for the Employer's Agent to authorise the Environmental Officer (EO) to have access to the Works and Site.

16. **Pollution prevention and interferences**

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary noise or pollution, or to interfere unnecessarily or improperly with public services, or the access to, use and occupation of public or private roads and footpaths or properties.

Clause 5.6 of SANS 1200A further requires the Contractor to minimise dust nuisance and pollution of streams and inconvenience to or interference with the public.

17. **Dust**

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary pollution.

Clause 5.6 of SANS 1200A requires that the Contractor take all reasonable measures to minimise any dust nuisance.

18. **Noise**

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary noise.

Clause 4.1 of SANS 1200A requires that when working in built-up areas, the Contractor shall provide and use suitable and effective silencing devices for pneumatic tools and other plant that would otherwise cause a noise level exceeding 85dB.

19. **Protection of existing environment**

Clause 8.1.3 requires that the Contractor uses every reasonable means to prevent any roads or bridges to or in the vicinity of the Site being subjected to damage by excessive loads, or disruption due to excessive traffic, occasioned by his transport arrangements.

20. **Reinstatement**

Clauses 8.2 and 8.4 make provision for the Contractor to repair and make good any damage to the Works in his care (other than “excepted risks”), and bear any costs associated with such reinstatement.

21. **Reporting accidents**

Clause 8.5.1 requires the Contractor to report to the Employer’s Agent every occurrence on the Site which causes environmental damage.

HEALTH & SAFETY SPECIFICATIONS DOCUMENT
&
BASELINE HEALTH & SAFETY RISK PROFILE

PROJECT:

(Upgrade of Witzands Aquifer Recharge Infrastructure)

Basins #6 & #9

Date: 1 Dec 2020

FOREWORD

These health & safety specifications have been compiled in terms of the Occupational Health & Safety Act no. 85 of 1993 and its Regulations as amended (the Act). Note that the Construction Regulations 2014 (CR's) came into effect on the 7th August 2014 for construction work starting after the 7th February 2014.

It must be clear that this document is a management tool and should be used by the Principal Contractor and Contractors in order to comply with the aforementioned Act and regulations.

Should there be any contradiction between this document and the Act, the Act must take preference except where explicitly stated.

Similarly where this document is silent on a specific health & safety requirement, the Act must be used as the minimum requirement.
Some guidelines wrt COVID-19 has been included; however compliance with the National Disaster management Act and DOL Regulations in this regard must be complied with during the various alert levels as amended from time to time.

Should you be unclear about anything set out in this document, please contact this office.

Ensuring you of our best intensions and service at all times.

[redacted]

[redacted]

HEALTH AND SAFETY SPECIFICATIONS
for

Project: (Upgrade of Witzands aquifer recharge infrastructure - Atlantis)
Basins #6 & #9

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1. INTRODUCTION AND BACKGROUND

1.1 Background to the Health and Safety Specifications (also termed These Specifications)

The Construction Regulations 2014 places the onus on the Client (CoCT) to prepare the health & safety specifications, highlighting risks not successfully eliminated during design. The Client (CoCT) also has the opportunity to set the tone and standard of occupational health & safety on the construction site. These specifications must be read in conjunction with the OHS-Act as well as Construction Regulations 2014. In the absence of a particular requirement the CR 2014 shall be the minimum standard.

1.2 Responsibility and Accountability

It is imperative to understand the process of determining legal accountability as the OHS Act is the only criminal Act still administered by the Department of Labour. It *assumes* that the CEO is overall accountable even though he/she may delegate some of his/her responsibilities. This principle is entrenched in Section 37(1) of the Act and is set out below for your benefit. This is generally referred to as the REASONABLE MAN TEST.

SECTION 37: Acts or omissions by Employees or Mandataries

(1) Whenever an employee does or omits to do any act which it would be an offence in terms of this Act for the Contractor of such employee or a user to do or omit to do, then, unless it is proved that -

(a) in doing or omitting to do that act the employee was acting without the connivance or permission of the employer or any such user;

(b) it was not under any condition or in any circumstance within the scope of the authority of the employee to do or omit to do an act, whether lawful or unlawful, of the character of the act or omission charged; and

(c) all reasonable steps were taken by the employer or any such user to prevent any act or omission of the kind in question, *the employer himself shall be **presumed** to have done or omitted to do that act, and shall **be liable** to be convicted and sentenced in respect thereof; and the fact that he issued instructions forbidding any act or omission of the kind in question shall not, of itself, be accepted as sufficient proof that he took all reasonable steps to prevent the act or omission.*

1.3 Purpose of the Health and Safety Specifications

The purpose of the H&S specifications document is to assist in achieving compliance with the Occupational Health & Safety Act 85/1993 (OHS Act), its Regulations and the Construction Regulations (CR's) in order to prevent or as far as possible reduce incidents and injuries. **Note that the CR's 2014 were promulgated on the 7th February 2014 and will be enforceable on this project from start to finish.** These specifications should act as the basis for the drafting of the Principal Contractor and Contractors' construction phase health & safety plans.

The health & safety specifications document sets out the requirements to be followed by the **Principal Contractor and its sub-contractors** so that the health & safety of all persons **(including the public)** potentially at risk may receive the same priority as other facets of the project e.g. cost, programme, environment, quality, etc.

1.4 Implementation of the Health and Safety Specifications (Drafting of the Health & Safety Plan)

These health & safety specifications form an integral part of the contract, and the Principal Contractor is required to use it when drawing up its project-specific construction phase health & safety plan. The Principal Contractor must forward relevant sections of these specifications to all Contractors at their bidding stage so that they can in turn prepare health & safety plans relating to their operations and price accordingly.

The Principal Contractor and Contractors must apart from their own identified hazards, address the hazards identified in this Specifications document and explain: the risk assessment strategy involved; safe work

procedures to be implemented; and associated monitoring / review strategy, to ensure that all hazards identified are successfully managed. Refer to General Safety Regulation 2(1) for more detail on this principle – 'The Spirit of the Law'

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2. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEM ELEMENTS

2.1 Scope of the Project

These Specifications set out the requirements for eliminating or if this is not possible, for minimising as far as reasonably practicable, the risk of incidents and injuries occurring during the construction phase of **the Witzands aquifer recharge upgrade** as detailed in the tender documents. **The health & safety specifications document includes an identification of hazards by the appointed H&S Agent as well as public protection protocols and specific construction related minimum safety and health requirements, control measures and procedures which need to be taken into account when designing and undertaking the construction work: pricing the project; programming your activities; compiling your project-specific health & safety plan; compiling your baseline risk assessment document and activity-specific risk assessments; and compiling your project fall protection plan.**
This specification also includes the designers risk assessment as was supplied by the consulting engineers (iX engineers)

The scope also addresses legal compliance, hazard identification and risk assessment, risk control, and the promotion of a health and safety culture for those personnel working on the project. **The health & safety specifications also make provision for the protection of those persons other than employees i.e. site visitors and members of the public making use of the public spaces surrounding the various construction sites / work areas.**

2.1.1 Project Scope and brief

The extent of the work proposed to improve the quality of storm water run-offs can be summarised as follows:

- Basin #9

  This basin will be provided with a proposed inlet works, consisting of a stilling basin / silt trap, litter trap and contamination pond, including an oil absorbent boom system, before entering the proposed detention pond. From the proposed detention pond water will be further treated in a proposed conditioning pond adjacent to the proposed detention pond before it will be released via the outlet structure towards Basin 6.

- Basin #6

  This basin will also be provided with a proposed inlet works, consisting of a stilling basin / silt trap, litter trap and contamination pond, including an oil absorbent boom system, before entering the proposed detention pond. The proposed detention pond is provided with a formal spillway structure, while the fill embankments are provided with a sand / cement core. From the proposed detention pond water will be further treated in a proposed conditioning pond adjacent to the proposed detention pond before it will be released via the outlet structure towards Basins 7 and 12. The system between Basins 6 and 7 & 12 exists and minimal work is proposed.

2.2 Interpretations

2.2.1 Application

This specifications document is a legal compliance document compiled in terms of the OHS Act and is therefore binding. The document must be read in conjunction with other relevant legislation including: **The Occupational Health & Safety Act 85/1993; Construction Regulations 2014; South African Road Traffic Signs & Accommodation Manual; all relevant codes specific to the operations/activities to be undertaken on this project e.g. the structural engineer's specifications; all engineers drawings, notes and guidelines; project tender documentation; any and all Client (CoCT) requirements and procedures.**

2.2.2 Definitions

The definitions as listed in the OHS Act 85/1993 and **Construction Regulations (2014)** shall apply.

- Contractors include sub-contractors.
- Directs – Any Contractor appointed directly by the construction Client (CoCT).
- Principal Contractor will include any Direct by Client (CoCT) appointment on the project.
- Where the term Principal Contractors (plural) is used this includes Directs appointed on the project, which Directs are all Principal Contractors in their own right.
- Contractor's Construction Manager as defined in the Construction Regulations 2014 [CR 8(1)] as the Construction Manager. This is not the Client (CoCT)'s Construction Manager / site representative.

- **Consequence**

The outcome of an unwanted event (risk scenario) expressed qualitatively or quantitatively. It is usual to consider this in terms of the maximum reasonable potential outcome.

- **Control Measure (or Control)**

An act, object (engineered) or system (combination of act and object) intended to prevent or mitigate an unwanted event (risk scenario).

- **Critical Control**

A control measure that is crucial to preventing an unwanted event (risk scenario) or mitigating the consequences of an unwanted event. The absence or failure of a critical control would significantly increase the risk despite the existence of other control measures. In addition, a control measure that prevents more than one unwanted event or mitigates more than one consequence is usually classified as critical.

- **Hazard**

A source of potential harm in terms of human injury or ill health, or a combination of these. A hazard is typically an energy source.

- **Hierarchy of Controls**

A sequence of control measures, arranged in order of decreasing effectiveness, used to eliminate or minimise exposure to workplace health and safety hazards:

i. Elimination – Completely removing a hazard or risk scenario from the workplace.
ii. Substitution – Replacing an activity, process, substance or energy with a less hazardous alternative.
iii. Engineering Controls – Designing control measures into processes and / or equipment (e.g. mechanical aids, interlocks, pressure relief systems, extraction, and ventilation) or isolating a hazard from persons through the provision of barriers, machine guarding, or insulation.
iv. Administrative Controls – Establishing appropriate policies, procedures and work practices to reduce the exposure of persons to a hazard. This may include the provision of specific training and supervision.
v. Personal Protective Equipment – Providing suitable and properly maintained PPE to cover and protect persons from a hazard (i.e. prevent contact with the hazard).

- **Likelihood**

A description of probability or frequency, in relation to the chance that an unwanted event (risk scenario) will occur.

- **Risk (Rating)**

A combination of the likelihood of the occurrence of an unwanted event (risk scenario) and the severity of injury or ill health that can be caused by the event.

- **Risk Assessment**

A process of evaluating the risk scenarios arising from identified hazards, and identifying control measures that are as effective as possible in order to manage the risks to levels that are as low as is reasonably practicable.

- **Risk Management**

1. The systematic application of management policies, processes and procedures to:
2. Identifying hazards;

3. Analysing and evaluating the associated risks;
4. Controlling the risks through the implementation of control measures; and
5. Monitoring the risks and related control measures on an ongoing basis.

2.3 Minimum Administrative Requirements

2.3.1 Notification of Intention to Commence Construction Work & Construction Work Permit

The requirement for a construction site permit will be applicable due to the contract value being estimated at R75m. The H&S Agent will co-ordinate the application process. See attached Annexure F for the various role-players and their associated documentation that will be required.

2.3.2 Assignment of the Principal Contractor's / Contractors' Responsible Persons to Supervise and Co-ordinate Health and Safety on Site

The Principal Contractor and all Contractors must make supervisory appointments as well as other relevant appointments in writing (as stipulated by the OHSA and Construction Regulations 2014). In addition to the general duties as imposed on the construction supervisor (managers, foremen, leading hands, etc.), they also carry **a legislated responsibility** to ensure the successful implementation and adherence to the: OHS Act; H&S Specifications; and project health & safety plan. It is therefore imperative that these appointed persons have a good general knowledge and understanding of the requirements of the OHS Act and specifically the Construction Regulations 2014.

We strongly advise the Contractor to appoint all foremen and leading hands (direct supervision) in terms of Section 8(2)(i):

> *"ensuring that work is performed and that plant or machinery is used under the general supervision of a person trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented"*

2.3.3 Competence of the Principal Contractor's / Contractors' Appointed Competent Persons

The Principal Contractor's and all Contractors' competent persons for the various risk management portfolios must fulfil the criteria as stipulated under the definition of 'Competent' in accordance with the Construction Regulations (Feb 2014). To this effect it is paramount that the competence of the management structure i.e Section 16(2), CR 8(1) manager, CR 8(5) safety officer and CR 8(7) and CR 8(8) supervisors are proven by means of H&S courses attended. This must be submitted together with H&S plan.
The H&S officer must have the following minimum competence:
Programmes in Occupational health and safety such as Samtrac or Nebosch or similar / Construction H&S (NQF level 3-5)
Linked to that he must also have a four year relevant construction H&S experience in civil construction.
Seeing that the contract starts after August 2015 it must be clear that this person will have to be registered with SACPCMP. **Please Note:** No candidates, web ID or verification letters will be accepted.

2.3.4 Compensation for Occupational Injuries and Diseases Act 130 of 1993 (COIDA)

The Principal Contractor must have in its possession a letter of good standing issued by its Compensation Assuror as proof of registration. Contractors must also hold proof of workman's compensation assurance registration in the form of a letter of good standing and forward a copy to the Principal Contractor before they begin work on site. Contractors must be in good standing at all times while carrying out work on site for the duration of the project.

2.3.5 Preliminary Hazard Identification and Risk Assessments, Progress Hazard Identification and Risk Assessment Reviews (HIRA's)

The P/Contractor's risk assessments must take into account the Client (CoCT)'s baseline health & safety risk profile and designers risk assessment (separate addendum).

Detailed hazard identification and risk assessment processes must be followed for all work to be performed as well as for all associated equipment and facilities.

The contractor must ensure that effective procedures and assessment systems are in place to control hazards and to mitigate risks to levels that are as low as is reasonably practicable.

The risk assessment processes must be applied to:

- The full life cycle of the project;
- Routine and non-routine activities;
- Planned or unplanned changes;
- All employees, sub-contractors, suppliers and visitors; and
- All infrastructure, equipment and materials.

The risk assessment processes and methodologies must be appropriate for the nature and scale of the risks, and must be implemented by competent persons.

The process of analysing and managing risk must include the following:

- Establishing the context of the risk assessment;
- Identifying hazards and determining possible risk scenarios (unwanted events);
- Evaluating risks and assigning ratings (classification);
- Recording the risk analysis in a risk register;
- Managing risks according to their classification (prioritising for action);
- Identifying and implementing control measures (through the application of the Hierarchy of Controls) to ensure that risks are managed to levels that are as low as is reasonably practicable (ALARP);
- Developing action plans for reducing risk levels (where possible);
- Verifying the completion of actions;
- Re-evaluating the risks and classifications as appropriate; and
- Reviewing and updating the risk register.

Baseline Risk Assessments

Prior to site establishment, the contractor must conduct a detailed Baseline Risk Assessment identifying foreseeable hazards and risk scenarios associated with the contractor's scope of work on the project. Details concerning proposed control measures must be included. The risk assessment process must be facilitated by a competent person who has been appointed in writing and must involve the participation of the contractor's site management representatives, health and safety reps, supervisory personnel and technical experts (as required). An attendance register must be completed and retained. The Baseline Risk Assessment must be reviewed by the project management representative.

When carrying out a Baseline Risk Assessment or a Task-Based Risk Assessment, Hazard (Energy) Types must be specified in accordance with the categorisation. Risk scenarios must be described indicating the manner in which a person may come into contact with, or be exposed to, a specific hazard.

An initial risk rating must be assigned to each risk scenario without taking any control measures into consideration. Control measures for managing the risks to levels that are as low as is reasonably practicable must then be identified for implementation on the project.

Risk ratings must be assigned qualitatively using consequence and likelihood scales and descriptors

A Risk Register comprised of all significant risks (i.e. risks rated as high or critical) identified for the project must be compiled using the information contained in the project Baseline Risk Assessment as well as the contractor's Baseline Risk Assessment. Key control measures for managing each of these risks must be specified in the register.

For the significant risks in particular, action plans must be developed for reducing the risk levels (where possible).

The project Risk Register will be reviewed and, if necessary, updated:

- On a six monthly basis during construction;
- When changes are made to a design and / or the construction scope, schedule, methods, etc. that result in a change to the risk profile; and
- Following an incident.

The contractor must ensure that the hazards, risk scenarios and control measures identified in the contractor's Baseline and Task-Based Risk Assessments are taken into consideration when developing, implementing and maintaining the various elements of the contractor's health and safety management system for the project (e.g. competence, training and awareness requirements).

All persons potentially affected must be made aware of the hazards, risk scenarios and control measures identified in the contractor's risk assessments. This must be done through training, Toolbox Talks, and Daily Safe Task Instructions.

Task-Based Risk Assessments

The contractor must carry out detailed project-specific Task-Based Risk Assessments prior to the commencement of any work. The risk assessment process must be facilitated by a competent person who has been appointed in writing. The contractor's site management representatives, H&S Rep, supervisory personnel, technical experts (as required) and workforce personnel directly involved with the task being examined must participate in the risk assessment process. An attendance register must be completed and retained.

Please Note: Under no circumstances may a Contractor's Health and Safety Officer perform a risk assessment in isolation. The active participation of all persons referred to above is mandatory.

A Task-Based Risk Assessment must at least:

- Be accompanied by a Work Method Statement (describing in sufficient detail how the specific job or task is to be performed in a logical and sequential manner);
- Provide a breakdown of the job or task into specific steps;
- Identify the hazards and potential risk scenarios associated with each step;
- Include consideration of possible exposure to noise, heat, dust, fumes, vapours, gases, chemicals, radiation, vibration, ergonomic stressors, or any other occupational health hazard or stressor;
- Describe the control measures that will be implemented to ensure that the risks are managed to levels that are as low as is reasonably practicable; and
- Assign an initial risk rating (without taking any control measures into consideration) to each risk scenario.

A Task-Based Risk Assessment must be reviewed and, if necessary, updated:

- On an annual basis (as a minimum);
- When changes are made to the associated Work Method Statement; and
- Following an incident.

Pre-Task Hazard Assessments

Daily Safe Task Instructions.

Safe Work Procedures

- The contractor must develop, document and implement Safe Work Procedures for all activities involving significant health or safety risk. These procedures must detail the control measures required to effectively manage the health and safety risks associated with the work activities.
- Each Safe Work Procedure must be consistent with the Task-Based Risk Assessment completed for the activity.
- Every person engaged in an activity for which a Safe Work Procedure has been developed must receive suitable training on the procedure.
- Furthermore, the contractor must develop, document, communicate and implement formal procedures, work instructions and / or programmes for the operation, maintenance, inspection and testing of all plant and equipment (including protective systems and devices) brought onto the project site.

Planned Task Observations

All contractor and sub-contractor supervisors must perform Planned Task Observations (PTO's) to verify that the control measures that have been identified in Safe Work Procedures (and associated Risk Assessments) are being adhered to and are being properly implemented, and to provide guidance where deviations are noted.

Each supervisor must complete at least one PTO per week involving one or more employees in his work team.

When an unsafe act or condition is identified, the supervisor must coach the work team to correct the act or condition in line with the Safe Work Procedure.

Where valid changes to the work method are identified, the supervisor must ensure that the Safe Work Procedure and Risk Assessment are updated to reflect the current practice.

It is required on this project that a typical '14-day look-ahead HIRA' be implemented to assure the H&S Agent that up-coming activities have been assessed for risk before they are actually encountered. See annexure 'D' for further assistance in this regard.

2.3.6 General Record Keeping

The Principal Contractor must keep and maintain all the necessary Health and Safety records to demonstrate compliance with these Specifications, with the OHS Act 85/1993, and with the Construction Regulations. Principal Contractors must also ensure that all records of incidents/injuries, emergency procedures, training, planned maintenance inspections, monthly contractor audits, etc. are kept in the health & safety file(s) held in the site office. The Principal Contractor must also ensure that Contractors keep their own health & safety files, maintain the files and make them available on request (the file must include the Contractor's health & safety plan and all relevant records). Such 'Contractor health & safety files' must be audited by the Principal Contractor on a monthly basis with audit reports kept as proof.

2.3.7 Injury / Incident Reporting and Investigation

Injuries are to be categorised into: first aid; medical; disabling (lost time); and reportable (Section 24). When reporting injuries to the Client (CoCT)/H&S Agent, these categories must be used. The Principal Contractor must investigate all injuries, with an annexure 1 investigation report being completed and filed for all injuries requiring treatment over and above first-aid. Principal Contractor must report on the 4 categories of injuries at monthly project progress meetings. Contractors must investigate injuries and incidents involving their employees and forward a copy of the 'annexure 1' investigation report to the Principal Contractor concerned forthwith. The Principal Contractor must report all injuries to the Client (CoCT)/Safety Agent in the form of an injury report, at least monthly (at audits).

All incidents reportable in terms of the provisions of Section 24 of the OHS Act must be reported to the local Dept. of Labour in the prescribed manner (Dept. of Labour contact number: Cape Town 021 441 8000).

2.3.8 Permits

Permits may include the following:

- Work near Escom, Telkom or municipal services
- Closing of public roadways and walkways
- Hot works
- Disposal of hazardous waste material

The Principal Contractor must manage and co-ordinate these permit procedures.

2.3.9 Consolidation of Health & Safety Documentation

It is the duty of the Principal Contractor to ensure that all documentation required to be kept or generated during the construction phase is consolidated into one set of documents that must be handed over to the Client (CoCT) upon completion of the construction work.

These consolidated health & safety file(s) should include all instructions/guidelines/specifications/information from the design team that will be required for the continued safe operation and maintenance of the new structure(s) or part(s) thereof.

2.3.10 Offences and Penalties

Penalties may be imposed on the Principal Contractor and Contractors for ongoing non-compliance with the provisions of the Client (CoCT)'s health & safety specifications, the Principal Contractor's health & safety plan, and site health & safety

procedures and rules, including: **Consultants rules, procedures, and specifications; Client (CoCT)-specific rules/protocols**. **P/Contractors can also impose penalties on their sub-contractors and on other Directs within their areas of responsibility.** Non-compliances identified during H&S Agent audits, inspections, surveys and visits will be categorised into one of three levels based on frequency and severity. These will be as follows:

1. **Life threatening situation** - a prohibition notice/order will be issued by means of a written instruction in the site instruction book or an explanation/detail in an audit report/e-mail. The activity in question must then be seized immediately and corrective measures taken to the satisfaction of the H&S Agent after which permission will be given to resume the activity.
2. **Injury foreseen** – a contravention notice will be issued by means of a written instruction in the site instruction book or an explanation/detail in an audit report/e-mail with a time frame for compliance stipulated. Failure to comply within the time frame may result in up to a R 2 000 penalty per non-compliance item per day that the non-compliance persists. Ongoing non-compliance may also result in a further issue of a prohibition notice or work stop order.
3. **Ongoing contravention for similar non-compliances** - a contravention notice will be issued with a time frame for compliance stipulated. Failure to comply within the time frame may result in up to a R 2 000 penalty per non-compliance item per day that the non-compliance persists. On-going non-compliance may also result in a further issue of a prohibition notice/order.
4. **Minor or no injury foreseen** – an improvement notice will be issued. The corrective measures stipulated in a written instruction in the site instruction book or an explanation/detail in an audit report/e-mail must be taken.

2.4 Principal Contractors, Contractors and Sub-contractors

2.4.1 Principal Contractor and Contractors' Requirements

The Principal Contractor must ensure that all Contractors appointed by it comply with these Specifications as well as the OHS Act, Construction Regulations (Feb 2014), and other relevant legislation that may relate to the activities directly or indirectly. The Contractor, when appointing other Contractors as 'Sub-contractors', shall mutatis mutandis ensure compliance as if they are the Principal Contractor.

The Principal Contractor may only allow a Contractor **to begin work on site after approving the Contractor's health & safety plan in writing.** The Principal Contractor must audit each of its contractors on a monthly basis, with audit reports filed in the health & safety file on site. The audit must include an administrative assessment as well as a physical inspection of the contractor's site activities. **Audit criteria must be provided together with the safety plan submitted for approval.**

*The Principal Contractor **must stop** any Contractor from carrying out construction work that is not in accordance with the Principal Contractor's and/or Contractor's health & safety plan or if there is an immediate threat to the health and safety of persons. **He must show his methodology in this regard together with the H&S plan submission.***

- The Principal Contractor shall take all reasonable steps necessary to ensure co-operation between all contractors to enable each of those contractors to comply with the provisions of these regulations;
- The Principal Contractor shall take all reasonable steps to ensure that each contractor's health and safety plan is implemented and maintained on the construction site: Provided that the steps taken shall include periodic audits at intervals mutually agreed upon between the Principal Contractor and contractors, but at least once every month;
- The Principal Contractor must ensure that where changes are brought about to the design and construction, that sufficient health and safety information and appropriate resources are made available to contractors so as to allow them to execute the work safely;
- The Principal Contractor must ensure that every contractor is registered and in good standing with a recognised compensation fund or with a licensed compensation insurer prior to work commencing on site;
- The Principal Contractor must ensure that potential contractors submitting tenders have made sufficient provision for the cost of health and safety measures during the construction process;
- The Principal Contractor shall discuss and negotiate with the contractor the contents of the health and safety plan and shall finally approve that plan for implementation;

[redacted]

- The Principal Contractor shall hand over a consolidated health and safety file to the Client (CoCT) upon completion of the construction work and shall include a record of all drawings, designs, materials used and other similar information concerning the completed structure (including sub-contractors) ;
- The Principal Contractor may not appoint a contractor to perform construction work unless the Principal Contractor is reasonably satisfied that the contractor he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely.

It must be noted that so-called "suppliers" will be deemed contractors as defined in CR 2014 if they supply labour in conjunction with equipment, active on site.

Please also note that a **labour broker** is **not** deemed to be an **Contractor** in terms of the Occupational Health and Safety Act, and workers supplied by these entities must be treated as if they were your own employees. So called "Labour Only" Contractors will be deemed to be employees of the Principal Contractor and all aspects pertaining to their activities in relation to the OHS Act must be managed by the Principal Contractor concerned. No Mandatory Agreements may be entered into with such Labour Only Contractors.

2.4.2 Principal Contractor / Contractor Competency Assessment

Principal Contractors must be reasonably satisfied that the contractors they intend to appoint have the necessary competencies and resources to safely conduct the work they will be appointed for. This should be established at tender stage and before appointments are made. One of the preferred ways of determining whether a contractor is competent is to ask for a previous safety plan as compiled for another similar project. Once the contractor is appointed, but before it begins work on site a site- specific safety plan must be discussed and negotiated with the Principal Contractor. Such health & safety plan must be approved for implementation by the Principal Contractor.

2.4.3 Pricing for Occupational Health & Safety Compliance

All parties bidding for work on this construction project must ensure that they have made sufficient provision for the cost of complying with this Specifications document as well as with the OHS Act and incorporated Regulations as a minimum requirement in their tender documentation. It must also be taken into consideration that time is money, which implies that sufficient time must be allowed for the implementation of the minimum OHS standards. No additional claims will be entertained at a later stage should a compliance requirement be prescribed in the OHS Act, incorporated regulations or in this Specifications document unless due to design changes which would require additional resources.

The Quantity Surveyors/ Engineers to show a method of assessing this requirement during the tender process. The PC must show proof of this when appointing their sub-contractors as well.

2.4.4 Contractors' Health & Safety Plans

1. Introduction:

- The Construction Regulations aims to improve overall management and co-ordination of Health, Safety and Welfare throughout the **Construction Phase** and reduce the large number of serious and fatal injuries and cases of ill health, which occur every year in the Construction Industry.
- In terms of the Construction Regulations, a Principal Contractor is required to develop a Health and Safety Plan before work commences on site and review it throughout the Construction Phase. The degree of detail required in the Health and Safety Plan and the time and effort in preparing it should be in proportion to the nature, size and level of Health and Safety risks foreseen on the project. Projects involving minimal risks will call for simple, straightforward plans. Larger projects or those involving significant risks such as this project will need substantially more detail.

2. What should the construction health & safety plan cover?

The Construction Health and Safety Plan should set out the arrangements for ensuring the Health and Safety of personnel carrying out the construction work as well as other persons who may be affected by such work.

The contractor must prepare, implement and maintain a coherent site specific Health and Safety Management Plan. The plan must be based on the requirements set out in this specification as well as all applicable legislation. It must cover all activities that will be carried out on the project site, from mobilisation and set-up through to rehabilitation and decommissioning.

The plan must demonstrate the contractor's commitment to health and safety and must, as a minimum, include the following:

- A copy of the contractor's **Health and Safety Policy**;
- Procedures concerning **Hazard Identification and Risk Assessment**, including both Baseline and Task-Based Risk Assessments;
- Arrangements concerning the identification of applicable **Legal and Other Requirements**, measures to ensure compliance with these requirements, and measures to ensure that this information is accessible to relevant personnel;
- Details concerning **Health and Safety Objectives** – a process must be in place for setting objectives (and developing associated action plans) to drive continual improvement;
- Details concerning **Resources, Accountabilities and Responsibilities** – this includes the assignment of specific health and safety responsibilities to individuals in accordance with legal or project requirements, including the appointment of a Project Manager, Health and Safety Officers, Supervisors, Health and Safety Representatives, and First Aiders;
- Details concerning **Competence, Training and Awareness** – a system must be in place to ensure that each employee is suitably trained and competent, and procedures must be in place for identifying training needs and providing the necessary training;
- **Communication, Participation and Consultation** arrangements concerning health and safety, including Safety Observations and Coaching, Toolbox Talks, Daily Safe Task Instructions, project health and safety meetings, and notice boards;
- **Documentation and Document Control** – project-specific documentation required for the effective management of health and safety on the project must be developed and maintained, and processes must be in place for the control of these documents;
- Processes and procedures for maintaining **Operational Control**, including rules and requirements (typically contained in Safe Work Procedures) for effectively managing health and safety risks, particularly critical risks associated with working at heights, confined spaces, mobile equipment and light vehicles, lifting operations, hazardous chemical substances, etc.;
- **Emergency Preparedness and Response** procedures;
- **Management of Change** – a process must be in place to ensure that health and safety risks are considered before changes are implemented;
- **Sub-contractor Alignment** procedures – a process must be in place for the assessment of sub-contractors and suppliers with regard to health and safety requirements and performance (before any contract or purchase order is awarded);
- **Measuring and Monitoring** plans, including a plan for the measuring and monitoring of employee exposure to hazardous substances or agents (e.g. noise, dust, etc.) in order to determine the effectiveness of control measures;
- **Incident Reporting and Investigation** procedures describing the protocols to be followed with regard to incident reporting, recording, investigation and analysis;
- **Non-conformance and Action Management** procedures concerning the management of corrective actions;
- **Performance Assessment and Auditing** procedures concerning health and safety performance reporting, monthly internal audits to assess compliance with the project health and safety requirements, and daily site health and safety inspections; and
- Details concerning the **Management Review** process followed to assess the effectiveness of health and safety management efforts.

Prior to mobilisation, the Health and Safety Management Plan must be forwarded electronically, and as a hard copy, to the nominated project management representative (OHS-Agent/E&A) for review. The plan will be audited for completeness and, if found to be adequate, will be accepted (typically "with comments"). Work may not commence until the plan has been accepted.

Once the plan has been accepted, the contractors must action and resolve any issues within 30 days from the start of work.

If the issues requiring corrective action are not resolved within this 30 day period, the contractor will be required to stop any work related to the outstanding actions until they have been resolved.

Any proposed amendments or revisions to the contractor's Health and Safety Management Plan must be submitted to the nominated project management representative for acceptance.

Should it be identified that the contractor has overlooked a high risk activity, and as a result has omitted the activity and associated control measures from the Health and Safety Management Plan, the plan will not be approved.

2.5 Client (CoCT) identified Hazards and Potentially Hazardous Situations

2.5.1 H&S Agent-identified Hazards / Hazardous Activities

The following items have been identified by the H&S Agent as potential hazards for this construction project and must be incorporated in the Principal Contractors' and Contractors' health & safety plans where applicable to that contractor's operations. This list is not exhaustive and represents only the activities that need to be included by the P/Contractor as a priority in its baseline HIRA. **The P/Contractor, Contractors, and Designers must pay special attention to annexure 'E' herein below – Client (CoCT)'s health & safety risk profile and risk rating matrix.**

1. Site camp/office establishment including the offloading of office containers and the like to the various site office locations.
2. Delivery of materials and equipment to various on-site locations keeping in mind that road traffic safety and pedestrian safety will need to be taken into account.
3. Parking of construction vehicles when visiting sites – contractors and site visitors/professionals.
4. Existing electrical and other underground services as well as overhead electrical power lines.
5. Other services such as communications, irrigation, water, waste water, etc.
6. Public protection – vehicular traffic and pedestrians need to be taken into account during any and all construction work. This must always be a priority and all work must be programmed around this priority.
7. Civil works including trenching and excavations.
8. Mobile plant used during civil works. Enter and exit construction areas into trafficked lanes
9. General use of lifting machines and equipment e.g. truck-mounted cranes to deliver office/store containers, materials, equipment, etc.
10. Portable electrical tools and generators and extension leads.
11. Hazardous chemicals such as solvents, cleaning agents, cement dust, fuels, oils, epoxies, etc. as identified by P/Contractor and contractors.
12. Noise and dust.
13. Fire – including veld fires.
14. Wildlife such as snakes, scorpions, bees, etc
15. Ergonomic related hazards i.e. working above shoulders; bending; heavy lifting; etc.
16. Working in excavations of up to 4.5 m deep in a sandy area with a high water table,
17. Excavating into the water table (dealing with ground water required. Eg. pumping)
18. The possibility of encountering venomous snakes.
19. Biologically Contaminated soil will be excavated/removed
20. COVID-19

These hazards should be used as a starting point by the Principal Contractors and their Contractors so as to elaborate on their own hazard identifications and risk assessments in terms of Section 8 of the OHS Act and General Safety Regulations 2(1).

2.5.2 Unforeseeable Hazards

Principal Contractors must immediately notify Contractors as well as the Client (CoCT)/Safety Agent, in writing, of any hazardous or potentially hazardous situations that may arise during the performance of construction activities so that the necessary precautions may be taken before such work begins.

2.6 Site Operational Requirements

2.6.1 Health and Safety Representative(s)

At least one health & safety representative is required by every Contractor who has more than 20 employees on site. A P/Contractor must ensure that a H&S Rep is appointed as soon as it and its Contractors have 20 workers on

[redacted]

site/project. Principal Contractors must ensure that Health and Safety Representative(s) are appointed under consultation with the employees. The H&S representatives must be competent to carry out their functions. The appointments must be in writing. The Health and Safety Representatives should carry out monthly inspections, keep records of the inspections and report all findings to the Responsible Person or safety officer forthwith and at monthly health & safety committee meetings.

2.6.2 Site Health and Safety Meetings

The Principal Contractor must ensure that site health and safety meetings are held monthly with minutes kept. **Meetings must be chaired by the Principal Contractor's Responsible Person [CR 8(1) person] or suitable CR 8(2) Person and must be attended by all P/Contractor CR 8(7) and 8(8) Persons.** All sub-contractors' Responsible Persons and Health & Safety Representatives must attend the Principal Contractor's monthly health & safety meetings. The Principal Contractor's appointed supervisors should also attend health & safety meetings.
The following topics must be tabled at meetings: management appointments and risk management portfolios; sub-contractor legal compliance issues; injuries and incidents; hazards and risk assessments (present and foreseen); health & safety procedures; method statements for upcoming activities; planned inspections and registers/record keeping, etc.
The committee chairperson must sign off and date the minutes.

2.6.3 Health and Safety Training

2.6.3.1 Induction

The Principal Contractor must ensure that their site personnel including all sub-contractors and all visitors to site undergo a site-specific health & safety induction training session held and managed by the P/Contractor before any worker starts work on the project (termed a 'site-wide' H&S induction session) or the visitor is exposed to any site related hazards. A record of attendance must be kept in P/Contractor's health & safety file. Note that all contractors need to induct their own personnel as to their own activity-specific hazards, risks and safe work procedures. All persons visiting the treatment works will be required to attend the in-house induction session from the plant.

2.6.3.2 Awareness

The Principal Contractor must ensure that, on-site, periodic toolbox health & safety talks take place at least once a week or more often depending on the particular contractor's risk assessment programme requirements. All site personnel including all sub-contractors must attend health & safety talks at such intervals and keep proof thereof. These talks should deal with risks relevant to the construction work at hand i.e. they should be based on the job-specific risk assessments and safe work procedures. Records of attendance must be kept in the health & safety file. All contractors' employees must attend health & safety awareness toolbox talks carried out by their own supervisors, the attendance registers must be copied to the Principal Contractor together with information on the topics/risks discussed at the session.

2.6.3.3 Competence

All competent persons must have the knowledge, experience, training, and qualifications specific to the work they have been appointed to supervise, control and/or carry out. This must be assessed on a regular basis e.g. training, evaluation, periodic audits, progress meetings, etc. Principal Contractors are responsible to ensure that Competent Contractors are appointed by them to carry out construction work on site. **Please ensure that you can proof "competence" to the (b) part of the definition related to OHS-Act knowledge for any specific portfolio.**

2.6.4 Health & Safety Audits, Monitoring and Reporting

The Principal Contractor is obligated to conduct monthly audits on all Contractors appointed by it and keep audit reports in its health & safety file. The principal Contractor must show proof that these reports were issued to subbies and that non-compliance items are being followed up. Contractors have to audit their sub-contractors and keep records of these audits in *their* health & safety files, made available on request where such sub-contractors will be on site for longer than a month. **The principal contractor has to submit the audit criteria intended to be used on sub-contractors together with the H&S plan for approval by the Client**

(CoCT). The H&S Agent will conduct monthly audits on the Principal Contractor's health & safety management plan to ensure that contractors are working in accordance with the agreed safety & health requirements/procedures. Refer to attached **Annexure 'C'** for more details regarding these audits. Further ad-hoc site inspections and visits may also take place.

In addition to the agreed Client (CoCT) H&S audits on the Principal Contractor, the H&S Agent will require a formal written report to be compiled by the Principal Contractor. This will be the official response/action plan to the safety agents report and must be submitted within 3 working days from receipt of the audit report. This report should outline the steps the Principal Contractor has taken or will be taking in order to comply with the noted deviations.
In line with the principal of "anticipated/foreseeable risks" a written report serving as a schedule for upcoming HIRA must be included in the Principal Contractor's progress report, tabled at the monthly site progress meeting(s) with the Client (CoCT). See attached Annexure "D" for more detail in this regard.

The purpose of this requirement is that the Principal Contractor applies the same management principles to health & safety as is already applied to quality, productivity and budget.

2.6.5 Medical Fitness of Personnel

Contractors must ensure that all construction personnel (Construction Regulations 2014) undergo medical fitness assessments. Such assessments must be conducted by a **certified occupational health practitioner** as required by the Construction Regulations.
Proof of these medical fitness assessments in the Annexure 3 format must be available on site in the site H&S file.
Note that the CR's 2014 will require *all* Contractor personnel (everyone carrying out construction work) to undergo medical assessments based on the work they undertake (not merely work in elevated positions). This will need to be proven as from the 7th August 2014 on this project.
It is also required that all workers exposed to noise levels over the recognised 85db(A) levels are sent for hearing tests to determine the baseline audiogram of such workers. Each Contractor must compile a hearing conservation programme in terms of the Noise Induced Hearing Loss Regulations.

2.6.6 Emergency Procedures

The Principal Contractor must prepare an Emergency Procedure prior to commencement on site. The procedure/plan must take into consideration the risks and potential incidents posed by work to be carried out on this project **e.g. road traffic accidents, pedestrian injury, isolation of the various sites- communication with emergency services on the various sites, etc.**
The procedure must detail the response plan including the following key elements:

- List of key competent personnel;
- Details of emergency services;
- Actions or steps to be taken in the event of the specific types of emergencies;
- Emergency protocols for the various sites.

Emergency procedure(s) must include, but shall not be limited to: fire; injury to employees; damage to material/equipment/plant; use of hazardous substances; injury to members of the public, etc. The Principal Contractor must advise the Client (CoCT) in writing forthwith, of any emergency situations, together with a record of action taken/action to be taken. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc.) must be maintained and made available to site personnel. The emergency plan may need to be reviewed from time to time as conditions/environment changes not less than once a month.

2.6.7 First Aid Boxes and First Aid Equipment

The **Principal Contractor must make provision for area-specific (various works areas) first aid equipment** to cater for its personnel as well as for any contractors who will have less than 5 persons on a

particular site/area/location.

All Contractors with more than 5 employees shall supply their own first aid box. Contractors with more than 10 employees must have their own trained, certified first aider on site at all times. Copies of valid certificates are to be kept on site. **First-**

aid provisions must be readily available at the place of work and not merely at the site offices. For specific chemical and biological hazards the first-aider must have relevant training to deal with such incidents.

2.6.8 Fire Prevention and Fire Fighting

The Principal Contractor and its Contractors must provide adequate, regularly serviced fire fighting equipment **located at strategic points, dependant on the risk of fire as assessed by means of a formal fire risk assessment conducted by the P/Contractor**, specific to the classes of fire likely to occur. The appropriate notices and signs must be posted up as required. The P/Contractor is required to **undertake site-specific fire risk assessments before starting work on a particular site/area/zone** and at intervals as agreed with the H&S Agent and must then ensure that the necessary fire fighting equipment is available on the **sites** as per the fire risk assessment and hot works taking place. **Should the H&S Agent not be satisfied with the fire risk assessment, the decision of an external fire prevention officer from the local fire department will be final.**

Any work involving *'hot works' i.e. grinding, cutting, welding, soldering must be suitably hoarded off, screened and enclosed so as to eliminate any risk to other workers and members of the public/site visitors and environment. Hot work permit system must be run by the principal contractor. Suitable firefighting equipment must always be on hand during 'hot works'.

*'**Hot work'** includes all work that generates a spark or flame and which may result in a fire.

In case of electrical fires – water may not be used to fight electrical fires.

2.6.9 Personal Protective Equipment (PPE) and Clothing

The Principal Contractor must ensure that all site personnel and visitors are issued with and wear the appropriate PPE as indicated in its risk assessment documentation. The Contractors must make provision and keep adequate quantities of SANS approved PPE on site at all times according to their risk assessments.

Eye protection must be worn by those working grinders, skill saws, high pressure water cleaners and the like. Even those workers in close proximity to these operations will also be required to wear such eye protection.

Hard hats will be required by those working in areas where there is a risk of head injury due to falling/striking objects.

Safe footwear will be required as decided upon after a risk assessment has been carried out by the respective contractor.

Hand protection must be taken into consideration when assessing the risks associated with certain activities with the aim of minimising the risk of hand injuries.

Hearing protection is required where noise zones are envisaged and/or where activities emit noise higher than 85dB(A).

Personal fall protection equipment will be required by workers exposed to the risk of falling.

Visitor PPE must be available before any visitor is exposed to overhead hazards and other hazards such as construction mobile plant, unsafe ground conditions, etc. The P/Contractor will need to make the necessary arrangements to ensure this.

High visibility vests will be required by all personnel and visitors on sites where interaction between plant and persons is expected

2.6.10 Occupational Health and Safety (OHS) Signage

H&S notices and signs on the various sites should include but not be limited to: 'construction work - no unauthorised entry', 'beware of overhead work', 'beware of excavations', 'hard hat area', 'report to site office/foreman', – to be posted up where required in terms of the Contractor's risk assessment. **Emergency contact telephone numbers must also be posted up on each site entrance and/or site office, and/or on the actual work area.**

Signs are also required as per legislation e.g. scaffolding (safe/unsafe); excavations; and other potential risk areas/operations. Health & safety signage must be well maintained including weekly inspections, cleaning, replacement and/or repair.

2.6.11 Public and Site Visitor Health & Safety

The construction work will take place in remote and mostly isolated areas. At the treatment plants it will have to be fenced off from the other existing buildings to prevent unauthorised access.

Public walkways and roadways must be kept clean and free of excessive construction materials so as to prevent any negative impact on the public (**vehicular traffic and pedestrians**) – inspections to be conducted by the Principal Contractor with action to be taken without delay.

Site visitors must be briefed on the hazards they may be exposed to as well as what measures are in place or should be taken to control these hazards. The Construction Regulations require that a record of these 'inductions' be kept on site. **It is advised that a site visitors' book and induction leaflet be available at certain central points or with each foreman /engineer.**

Construction work where there is a risk to the public will need to be demarcated or hoarded off with controlled access points. Pedestrian walkways will need to be maintained. Where diversions are required, signage must be posted up and adequate walkway diversions constructed and maintained.

As construction work progresses, the Principal Contractor must ensure that a hazard identification and risk assessment is carried out for all areas where construction work interfaces with public such as roads, intersections and existing occupied buildings/factories. The safe work procedures must be drafted and conveyed to the workers before each of these activities start on site. Measures to separate construction from public could include safety signage, bollards, strobe lights, delineators ready fence panels with shade cloth, drums, cones and orange plastic webbing (snow fencing). **Hazard tape on its own will not be permitted.**

2.6.12 Access to Site

The P/Contractor must ensure that safe access to each and every work site is created and maintained for personnel and visitors. Personnel, sub-contractors and visitors must be informed of the procedures during site induction. The road surface of all public and private roadways and pavements/pedestrian walkways must remain in a clean state, free of sand, stone, water or other construction related materials. **Access to the various sites must be controlled depending on the types of hazards. Site risk assessments done by the P/Contractor must determine the exact hoarding or traffic accommodation measures and demarcation requirements at any given interface with the public.**

2.6.13 After-hours Work (including night work)

The Principal Contractor must abide by the working time prescriptions as set out by the Client (CoCT).

Adequate lighting must be provided to allow for work to be carried out safely at all times **on all work sites**. **Additional precautions and provisions will be required to ensure that night works doesn't negatively impact on members of the public or on site personnel i.e. traffic and pedestrian safety.**

2.6.14 Transport of Workers

The Principal Contractor and sub-contractors may not transport persons:

- together with goods or tools unless there is an appropriate separate area or section to store the tools or equipment;
- in a non-enclosed vehicle, e.g. truck unless there is a canopy (properly covering the back and top) with suitable seating area. Workers shall not be permitted to stand or sit at the edge of the transporting vehicle;
- in bakkies unless they are closed/covered and have the correct number of seats for the passengers being transported.

2.6.15 Construction Health & Safety Officer

The principal contractor must appoint a part-time registered SACPCMP Health and Safety Officer for the duration of the contract. The Health and Safety Officer must be on site when work commences at the start of the day and must remain on site until all activities for that day (including the activities of sub-contractors) have been completed. A Health and Safety Officer must be present during all shifts, so if work is carried out over more than one shift per day, the contractor must make provision for an additional Health and Safety Officer. **Safety officer must spend at least one full day per week on site.**

Each Contractor Health and Safety Officer shall be responsible for:

- Reviewing all applicable legal and project health and safety requirements and providing guidance to contractor and sub-contractor personnel (particularly the contractor's Project Manager) to help ensure compliance at all times;
- Assisting with the implementation of effective hazard identification and risk management processes for all work to be carried out by the contractor;
- Participating in the Baseline Risk Assessment for the contractor's scope of work (prior to site establishment) and ensuring that identified control measures are implemented;
- Participating in all Task-Based Risk Assessments conducted for the work to be carried out by the contractor and ensuring that identified control measures are implemented;
- Conducting contractor health and safety induction training for all contractor and sub-contractor personnel;
- Compiling and maintaining all health and safety related documents and records required of the contractor;
- Communicating relevant health and safety information to contractor and sub-contractor personnel (e.g. incidents and lessons learnt, leading practices, hazards, risks and control measures, etc.);
- Carrying out Safety Observations and Coaching;
- Evaluating (on a daily basis) the content of the Daily Safe Task Instructions (DSTI's) conducted by the contractor's appointed supervisors, and attending at least one DSTI each day;
- Attending monthly Contractor and Site Health and Safety Meetings;
- Assisting with the implementation of the contractor's Health and Safety Management Plan and associated Safe Work Procedures;
- Carrying out Planned Task Observations on an ad hoc basis;
- Assisting with the implementation, testing and maintenance of an effective Emergency Response Plan for all contractor and sub-contractor activities;
- Responding to workplace incidents (as appropriate);
- Participating in incident investigations;
- Maintaining accurate health and safety statistics (for the contractor and all sub-contractors), and compiling health and safety performance reports as required;
- Auditing the health and safety management system and workplace activities of the contractor and each sub-contractor on a monthly basis to assess compliance with the project health and safety requirements; and
- Tracking and reporting on the implementation of corrective actions (arising from incident investigations, audits, inspections, etc.).

The contractor must ensure that each Health and Safety Officer is adequately equipped to enable him to perform his duties effectively.

A Health and Safety Officer must be computer literate, fluent in English, and must have the following minimum qualifications, training and experience:

- At least 3 years' experience as a Health and Safety Officer on civil construction projects;
- Registered with the SACPCMP
- Experience and appropriate training with regard to implementing and maintaining a health and safety management system compliant with national legislation or an international standard;
- Experience and appropriate training with regard to construction related hazard identification and risk management processes;
- Competence, experience and relevant training with regard to incident investigation procedures and causation analysis;
- Health and safety auditing experience and training;
- Fire prevention and protection training; and

2.7 Physical Requirements

2.7.1 Earthworks (including trenching and excavations)

The Principal Contractor and relevant Contractors must make provision in their tender for the shoring of excavations where the soil conditions warrant it or if this is not possible cut back such excavations to a safe angle of repose. Geotech report to be consulted in this regard.

The Principal Contractor has the following options: (first option) is to shore or brace the excavation, should this not be practical then such excavation must be battered back to the safe angle of repose **(second option)**, should the first two options not be deemed necessary by the contractor, then only if the excavation is in stable material permission must be given in writing by the appointed competent excavation supervisor that option 1 & 2 may be omitted **(third option)**. Where

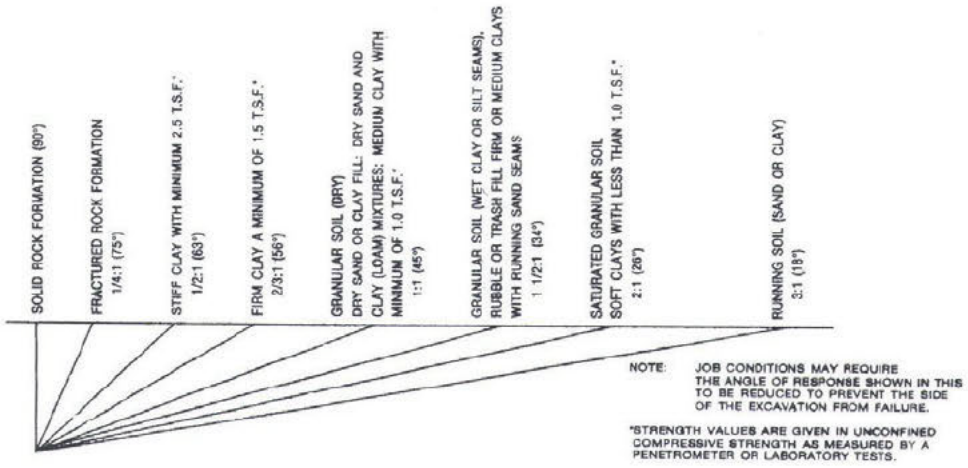
[redacted]

uncertainty pertaining to the stability of the soil exists, the decision of a professional engineer or professional technologist competent in excavations shall be decisive.

The following requirements are deemed to be minimum requirements in terms of the Construction Regulations:

- Excavations/trenches are inspected before every shift and a record of these inspections is kept;
- Safe work procedures have been communicated to the workers;
- The safe work procedures are enforced and maintained by the Principal Contractor's and Contractors' responsible persons at all times;
- Excavations next to permanent or temporary roadways - ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it is likely to cause its collapse and thereby endangering the safety of any person, **unless** precautions such as the provision of sufficient and suitable shoring or bracing are taken to prevent the sides from collapsing;
- Ensure that where the stability of an adjoining building, structure or road is likely to be affected by the making of an excavation, steps are taken that may be necessary to ensure the stability of such building, structure or road as well as the safety of persons;
- Cause convenient and safe means of access to be provided into every excavation in which persons are required to work and such access shall not be further than 6m from the point where any worker within the excavation is working;
- Ascertain as far as is reasonably practicable, the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed. The necessary steps must then be taken to render the circumstances safe for all persons involved;
- Cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or where the safety of persons may be endangered, to be-
  (i) adequately protected by a barrier (for vehicles) or fence (for pedestrians) of at least one meter in height and as close to the excavation as is practicable; and
  (ii) provided with warning illuminants or any other clearly visible boundary indicators at night or when visibility is poor;
- Cause warning signs to be positioned next to an excavation within which persons are working or carrying out inspections or tests.
- In the absence of any other specifications the excavations shall be battered back as per table one below.

TABLE 1
MAXIMUM ALLOWABLE ANGLE OF REPOSE FOR THE SIDE OF AN EXCAVATION IN EXCESS OF 5' DEPTH



The design engineers to advise on the results of the geo-tech report any shoring requirements and approve the designs for the same.

2.7.2 Deliveries, Waste Removal, Stacking/Storage of Materials

The Principal Contractor and other relevant contractors must ensure that there are appointed stacking supervisors and all materials, plant and equipment is stacked and stored safely. No construction materials or equipment may be stacked or stored in public areas unless authorised by the Client (CoCT) and fenced off as per the Client (CoCT)'s requirements. Waste

[redacted]

materials must be kept within designated construction zones (**waste skip/area fenced off using orange barrier netting**) and removed on a regular basis.

Vehicles delivering materials and equipment as well as workers to the various job sites must do so taking the traffic and pedestrians into account and no obstruction of traffic or pedestrian walkways is permitted unless flagmen are in position and traffic flow is altered accordingly.

The Principal Contractor will be responsible for co-ordinating and managing this function.

2.7.3 Existing Structures

Any existing structures that may be affected by construction work must be deemed safe by means of a structural inspection and report compiled by a competent person and forwarded to the Client (CoCT) and Principal Contractor before any persons are exposed to the risk. Inspections of these existing structures must be conducted in compliance with the recommendations of the same competent person. All relevant health & safety information must be brought to the attention of the Principal Contractor and contractors by the relevant parties forthwith.

2.8 Plant, Machinery and Equipment

2.8.1 Pressure Equipment and Gas Bottles

The Principal Contractor must comply with the Pressure Equipment Regulations, including:

- Providing competency and awareness training to the operators/users;
- Providing the relevant PPE and clothing;
- Inspecting equipment regularly (every 3 months) and keeping records of these inspections;
- Providing appropriate fire fighting equipment (Fire Extinguishers) on hand;
- Ensuring that oxygen and acetylene bottles are secured in an upright position, do not show signs of corrosion or damage and have flash back arrestors fitted on both torch & bottle ends of hoses.

2.8.2 Plant and Machinery

The Principal Contractor must ensure that any plant and machinery, including hired plant and machinery used on site is safe for use and complies with the minimum legislated requirements. The necessary requirements as stipulated by the OHS Act and Construction Regulations shall apply. The Principal Contractor shall ensure that operators hired with machinery are competent and that competency and medical certificates are kept on site in the health & safety file. Any load test requirements and inspections in terms of legislation must be complied with and copies of load test certificates and inspections must be kept in the health & safety file. All relevant contractors must ensure the same when they hire plant and machinery.

The Principal Contractor must ensure compliance with the Driven Machinery Regulations, which includes carrying out risk assessments on the machines, inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE and relevant clothing, and training those who use machinery.

2.8.3 Lifting Machines, Tackle and Lifting Operations (mobile crane, truck mounted cranes, etc.)

The Principal Contractor and all contractors shall ensure that lifting machinery and tackle are inspected before use and thereafter in accordance with the Driven Machinery Regulations 18 and the Construction Regulations (Regulation 20). It must be a **competent lifting machines inspector (registered with the Department of Labour, Gazette number 27305)** and a competent lifting tackle inspector who must inspect the equipment, taking into account that:

- All lifting machinery and tackle has a safe working load clearly indicated;
- Regular inspection and servicing is carried out (3-monthly (competent person) inspections and records for tackle and 6-monthly (LMI) inspections and records for lifting machines);
- Records are kept of inspections and of service certificates;
- There is proper supervision in terms of guiding the loads that includes a trained banks man to direct lifting operations and check lifting tackle and attachments daily;
- Rigging of loads to be done in accordance with acceptable safe work practices;

- Annual load test certificates for lifting machines are in place(LMI);
- The load test authority used by the P/Contractor or Contractor must be registered with the Department of Labour and the lifting machine inspectors (LMI's) must be registered with the Engineering Council of South Africa (ECSA);
- **The operators are certified competent to operate the specific machine (valid certificate to be on site);**
- **The operators are physically fit to work and in possession of a medical certificate of fitness to be available on site**.

The Principal Contractor must be aware of the fact, due to the high-risk nature of lifting operations it could be halted if the above-mentioned requirements are not being met at all times.

The Principal Contractor must ensure that safe lifting operations are adhered to. This must include the following:

- Mortar bins, waste bins and any other receptacle must be deemed to be a lifting attachment and must be designed to carry the required load. Such attachments must be on register and inspected every 3 months by the competent lifting tackle inspector;
- Formwork may only be lifted by using purpose designed and manufactured lifting tackle – **eight-gauge wire and the like is prohibited**;
- A competent banks man must be in control of all rigging, slinging and lifting operations and must wear a high visibility vest
- Guy ropes (tag lines) must be used when lifting large shutters, long bundles of re-bar and other similar loads. This must be detailed in the Principal Contractor's and Contractors' crane risk assessment.
- Lifting operations must be re-evaluated once wind speeds reach 40km/h unless otherwise specified by the lifting machine manufacturer.
- **No sling may be attached to the teeth of an earth moving machine, tlb, etc.**
- **If earthmoving equipment such as digger loaders, front end loaders, excavators, tlb's is use to lift objects other than earth it will be deemed to be a lifting machine and must comply with DMR18**

The use of nylon sugar bags or equivalent are prohibited for overhead lifting operations.

2.8.4 Ladders and Ladder Work

The Principal Contractor must ensure that all ladders are: inspected daily with monthly records kept; in good safe working order; the correct height for the task; extend at least 1m above the landing; fastened and secured; and at a safe angle. Stepladders must be safe for use, must be the **correct height for the task and the top two rungs may not be used**. Records of inspections must be kept in a register on site. Contractors using their own ladders must ensure the same. Take note of the ladder regulation promulgated under the General Safety Regulations.

2.8.5 Existing Underground/Overhead Electrical Cables and Installations

Way-leaves will be required from the local authorities. Such applications will be the responsibility of the P/Contractor. The Principal Contractor must notify the engineer concerned should it not be sure of the location of any particular service. The P/Contractor must implement a cable detection procedure so as to clearly identify the exact location of electrical cables, even those on drawings and way-leaves. Hand digging must then take place until cables have been located and exposed. Cable detection personnel must be trained. The above operations must be undertaken under a written method statement. All personnel trained and informed of the requirements.

2.8.6 Electrical Installations and Portable Electrical Tools

The Principal Contractor and contractors must comply with the Electrical Installation Regulations, the Electrical Machinery Regulations and the Construction Regulations (CR 22), as well as SANS 100142.

The Contractor responsible for the installation of temporary electrics must keep a copy of the Certificate of Compliance (CoC) for its temporary electrical power supply and installation at the site offices. A revised CoC is required whenever the installation is altered or changed in any way. All temporary electrical installations must be inspected at least weekly by a competent person appointed in writing with records kept. Portable electrical tools and equipment must be visually inspected daily before use with records kept.

The various job sites will more than likely run off petrol generators. Such generators will need to be inspected daily and records kept as proof.

Portable electrical tools, extension leads, and petrol generators will have to be inspected daily before use and records kept by each contractor as proof thereof. All tools must be fitted with the required guards and safety devices.

2.8.7 Construction Vehicles & Mobile Plant

"Construction Plant" includes all types of plant including but not limited to, trucks, cranes, piling rigs, excavators, construction vehicles, compaction plant, batch plants and lifting equipment.

The Principal Contractor must ensure that such plant complies with the requirements of the OHS Act, Construction Regulations (Feb 2014) and any manufacturers specifications. The Principal Contractor and all relevant contractors must inspect and keep records of inspections on construction vehicles and mobile plant used on site. Only authorised/competent persons in the possession of the necessary training certificates and in possession of a **certificate of medical fitness may operate construction vehicles and mobile plant.** Appropriate PPE and clothing must be provided and maintained in good condition at all times.

Reverse alarms must be installed on construction vehicles i.e. trucks, digger loaders, etc.

The appropriate speed limit should be indicated at the site entrance and at strategic locations on site. Speed limit in the construction areas should be set at 40km/hr. **All construction vehicles must be fitted with rotating/flashing amber lights.**

Vehicles and pedestrian traffic must be safely separated, preventing any unnecessary interfacing.

Any vehicle or mobile plant using any public road must be roadworthy and carry a certificate proving this, likewise any operator of such construction vehicle or mobile plant will have to carry the necessary drivers' license.

2.8.8 Hired Plant and Machinery

The Principal Contractor shall ensure that any hired plant and machinery used on site is safe for use and complies with the minimum legislated requirements. The necessary requirements as stipulated by the OHS Act and Construction Regulations (Feb 2014) shall apply. The Principal Contractor shall ensure that operators hired with machinery are competent and that certificates are kept on site in the health & safety file. Any load test requirements and inspections in terms of legislation must be complied with and copies of load test certificates and inspections must be kept in the health & safety file. All relevant contractors must ensure the same. **The same will go for delivery trucks/vehicles of your suppliers.**

2.9 Occupational Health

2.9.1 Industrial Hygiene (exposure to physical and chemical stress factors)

Exposure of workers to occupational health hazards and risks is very common in any work environment, especially in construction. Occupational exposure is a major problem and all Contractors must ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards. Prevent inhalation, ingestion, and adsorption through the skin of hazardous chemical substances.

2.9.1.1 Noise induced hearing loss is a highly underrated occupational condition. Occupational noise emitted by construction machinery and power tools must be controlled as far as possible by implementing engineering solutions such as noise dampening, regular maintenance, servicing and inspection, screening off the noise, and reducing the number of persons exposed. Personal protective equipment such as earmuffs and earplugs must also be used in conjunction with engineering controls so as to reduce noise exposure to below the acceptable levels. Each and every contractor is required to identify sources of noise which could impact on its personnel, to then assess the levels of noise, followed by implementing the necessary control measures to reduce the noise to acceptable levels. This must be clearly set out in the Contractor's hearing conservation programme contemplated in the NIHL Regulations. **It is also required that all workers exposed to noise levels over the recognised 85db(A) levels are sent for hearing tests to determine the baseline audiogram of such workers. Each Contractor must compile a hearing conservation programme in terms of the Noise Induced Hearing Loss Regulations.**

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2.9.1.2 Ergonomics is the study of how workers relate to their workstations. We advise the Principal Contractor and Contractors to take this into consideration when conducting risk assessments, thereby improving the worker-task relationship, which will in turn improve productivity and reduce chronic conditions such as back strains, joint problems and mental fatigue, amongst others.

2.9.1.3 Respiratory hazards (fumes, dust control) – The Principal Contractor must ensure that dust control measures are implemented and enforced with the aim of preventing exposure to its personnel and to members of the public.

Plant and machinery may only be serviced and repaired in designated areas where control measures can be effectively implemented to prevent spills, leaks and other environmental contamination. Drip trays must be used.

2.9.2 Welfare Facilities

The Principal Contractor must ensure that sufficient toilets (1 toilet per 30 workers), hand washing facilities, soap, toilet paper, and hand drying material are made available at the site in accordance with the Construction Regulations. **Note that welfare facilities will need to be provided at convenient, strategic locations. Toilets not further than 500m from a workplace.**

Workers must not be exposed to hazardous materials/substances while eating and must be provided with adequate, sheltered eating areas complete with benches and tables. Stores may not double up as change rooms or mess areas.

Showers may be required dependant on the contact with HBA's or BCS's. This must be determined through a risk assessment.

2.9.3 Hazardous Chemical Substances (HCS)

The Principal Contractor and other relevant contractors must provide the necessary training and information as far as the use, transport, and storage of HCS. **The Principal Contractor must ensure that the use, transport, and storage of HCS are carried out as prescribed in the HCS Regulations**. A risk assessment in terms of HCSR 5(3) must be conducted. The Principal Contractor and contractors must ensure that all hazardous chemicals on site have Material Safety Data Sheets (MSDS) on site and the users are made aware of the hazards and precautions that need to be taken when using the chemicals. The First Aiders must be made aware of the MSDS's and how to treat HCS incidents appropriately. Copies of the MSDS's must be kept in the first aid box and in the store.

Flammable substances must be stored separately, away from other materials, and in a well-ventilated area (appropriate cross ventilation). A competent person should be appointed to be in control of this portfolio.

Stores must be well ventilated, preventing the build up of flammable and toxic gases/vapours.

Fuel storage tanks must conform to the general environmental legislation and Environmental Management Plan. The necessary safety signage must to be posted up on the tanks – 'no naked flames', 'no smoking'.

Two 9kg DCP fire extinguishers must be placed near to the fuel tanks and or LPG gas bulk storage, but not within 5m of the tanks. These extinguishers are over and above the minimum six required for the offices and stores.

2.9.4 Biological Hazards

The soil may be contaminated with biological substances. The contractors will have to comply with Hazardous Biological Agents Regulations. A risk assessment ito Regulation 6(3) will be your starting point.

2.9.5 Alcohol, Drugs, Cigarette Smoking

No alcohol and/or other drugs will be allowed on site. No person may be under the influence of alcohol or any other drugs while on the construction site. Any person on prescription medication must inform his/her superior, who shall in turn report this to its Principal Contractor forthwith. Any person suffering from any illness/condition that may have a negative effect on his/her /anyone else's health or safety performance must report this to his/her superior, who shall in turn report this to its Principal Contractor forthwith. Any person suspected of being under the influence of alcohol or other drugs must be sent home immediately, to report back the next day for a preliminary inquiry. The Contractor concerned must follow a full disciplinary procedure and a copy of the disciplinary action must be forwarded to the Principal Contractor for its records.

2.9.6 COVID - 19

Compliance with Disaster Management Act, 2002 Gazette number 43258 and DoL Gazette number 43257 dated 29 April 2020 as amended

Due to the perceived high risk nature of the virus in question with regard to its apparent contagiousness and relatively high morbidity and mortality rate, as well as its spread on construction sites, we believe that contractors need to revise their project specific health & safety plans and the assessment of their activity risks so as to integrate the associated control measures into the daily management of the project.

The following guidelines serve to assist contractors with devising project plans to minimise the spread of the virus.

1. **Training and information:**
   As with general 'site-wide' H&S induction which is carried out by the principal contractor, it would be expected that all site personnel are informed of the COVID-19 site management procedures by the principal contractor in the form of formal information sessions held with small groups at a time. The 1st sessions are to be held on the day that the site commences its operations after lockdown. The observation of the 2m social distancing protocols would need to be enforced. It is then also required that daily info sessions are held by each subcontractor, reminding its personnel of the risks and health/ hygiene protocols to be implemented and enforced.
2. **Travel:**
   It is requested that employees are provided with face masks to be used by them during travel whether it be public or private. The restrictions on social distancing during commuting after lockdown are not yet known however these would need to be explained to employees.
3. **Site access control and screening on entry:**
   It is advised that site access is formalised so as to include a screening station manned by a site clerk or other suitable person who will question persons on entry and as far as possible make use of a non-touch thermometer as a form of screening. Social distancing would need to be maintained at 2m as advised by best practise information available currently. Such screening would apply to all persons entering site, including site visitors. Note that it is required for visitors to site to be limited to only those necessary e.g. inspections by the appointed consultants and the like.
   It is advised that personnel remain on during the day do not visit shops and other public places unnecessarily.
   The use of breathalysers and biometric readers need to be taken out of service during the next while so as to minimise the contact transmission risks associated therewith.
   Question screening would need to ascertain whether the person has come into contact with a 'positive case' and/or whether the person is suffering any of the classic symptoms i.e. cough, flu-like sore muscles, fever, night sweats or shivering, shortness of breath, sore throat.
   The temperature screening would be to ascertain whether the person has a potential fever i.e. two readings of more than 37.5°Celsius, 15 minutes apart. After the 1st elevated reading, the person would need to be sent to the isolation zone to undergo the 2nd temperature screening and further questioning. A person with a temperature of over 38°Celcius would need the National Institute of Communicable Diseases (NICD) to be contacted. Contact them on 0800 029 999.
   The site would need to identify an isolation area/zone in which such potential infected employees would be kept before deciding on transport to a health facility for further assessment or for dispatch to their home for self-isolation. Note that the assistance of the NICD will assist with the decision as to seek further assessment or to send home for self-isolation. Persons waiting at the isolation zone would need to wear a face mask and have properly sanitized hands and arms.
   Persons having passed the screening would need to sanitise their hands and lower arms properly at the screening station and then move to their change areas where they would need to collect their personal protective equipment.
4. **General site areas – touch/contact points**
   Common touch points such as balustrades, door handles, electrical equipment, chair arm rests, clock machines/cards, and the like would need to be cleaned/sanitised regularly. It is thus advised that dedicated cleaning staff be employed where necessary to ensure such things as replenishing sanitising stations and soap dispensers, cleaning elevators, balustrades, etc., and cleaning toilets and associated surfaces.
   The use of elevators where at all possible should be limited as these are small, enclosed spaces. Should they need to be used, the number of personnel must be limited based on the size of the elevator. Push button panels and the like need to be sanitised regularly. A sanitising station also needs to be located within the elevator.

5. **Social distancing:**
   Social distancing is advised to be at 2m. This would need to be implemented and enforced by site management.
   The principal contractor would need to identify 'hot spots' on site where high volumes of personnel gather such as changing areas, mess areas, stores and the like. These would need to be reviewed and perhaps even reconfigured so as to reduce such gatherings to the 2m distancing and to smaller groups.
   It is further required that gatherings on site such as meetings, info sessions, task discussions and the like are minimised to essential persons and that distancing is observed at all times. The reason for the distancing is simply to minimise the transmission of the virus through the air (sputum droplets due to coughing, sneezing, spitting while talking) from one person to the next.
   Social distancing also needs to be implemented on public transport and at home i.e. away from the workplace. This is easier said than done however we await the next set of instructions from our Government wrt post lock-down or lockdown easing social distancing, travel, and gatherings.
6. **Personal hygiene:**
   Apart from the sanitising station on entry to site, the principal contractor would need to ensure that other strategic sanitising stations are set up allowing for regular sanitising of persons' hands. Such stations also need to be set up outside offices, stores, meeting rooms and the like. It is advised that sanitising be done at least once per hour.
   Adequate numbers of ablution facilities and hand washing basins need to be provided with soap and hand drying paper or similar. Hands need to be washed before eating, after eating, after using the ablutions, on entry to site, and before exiting site, as well as the regular sanitising of hands during the day.
   Info posters need to be posted up at ablutions and at sanitising stations reminding personnel of the risks and hygiene measures to be implemented and enforced, on site, during travel, at home, and in public spaces.
7. **Personal protective equipment and clothing:**
   It is advised, in line with common practise now, that personnel wear face masks as far as possible especially in areas where distancing is difficult and where work is in enclosed spaces. We also await further direction from our Government on this control measure. It is however advised that personnel making use of transport, whether public or private, wear face masks at all times.
   Face masks and gloves should be sanitised at the end of each day and stored adequately. Overalls would also need to remain at work.
8. **Ventilation:**
   Workplaces would need to be adequately ventilated so as to minimise the concentration of viral loads in such areas. Small, enclosed spaces such as elevators would require the use of face masks.
9. **Meetings and other forums:**
   Meetings and other gatherings would need to be limited to the very necessary and should limit the number of persons so as to observe the social distancing requirements. We await further guidance from our Government wrt numbers that form a gathering as per definition. The use of face masks would be a consideration if not a requirement in the short-term during meetings and the like.
10. **Management of persons suspected of having been exposed to the virus:**
    Persons who have contracted the disease -
    This is someone who has tested positive to the COVID-19 strain of the virus. Such person will need to be isolated for at least 14 days after which a medical certificate needs to be attained to show that such person may return to work.
    Persons who may have come into contact with such person, especially those involved on site need to be tracked, traced, and screened so as to decide on self-isolation or testing.

    Suspected exposure -
    A person who has an elevated temperature of over 37.5°Celcius i.e. two successive screenings 15 minutes apart needs to be sent home for self-isolation. Such person needs to wear a mask and must be contacted by his employer (contractor) before the end of the day to assess the person's condition and to advise the person as to whether further health assessment is necessary. A person with a temperature of over 38°Celcius needs the NICD to be contacted for assistance i.e. whether a health assessment is required or whether the person needs to go directly home for self-isolation. This person's contacts need to be tracked and recorded.
    Should a person have come into contact (within 2m) with a confirmed positive case, even if such case only became positive after such contact, the person needs to call the NICD hot line and go directly home for isolation or follow other directions from the NICD which could include a screening or even a test.

2.10 Duties of Designers

Any person that satisfies the definition of designer must ensure that he/she complies with the requirements of Construction Regulation 6). The designers have a duty both to assist in health and safety during the design phase, during construction as well as post construction for the occupants. This will include informing the contractor in writing of any known or anticipated dangers or hazards relating to the construction work, and make available all relevant information required for the safe execution of the work upon being designed or when the design is subsequently altered.

Ensure that the following information is included in a report and made available to the contractor-

i) a geo-science technical report where appropriate;

ii) the loading the structure is designed to withstand; and

iii) the methods and sequence of construction process.

Please note that CR 6(1)(d) must be given to the Client (CoCT) before the H&S specification is given to the Contractor.

Designers:

You are mandated by the Client (CoCT) to carry out the necessary inspections at appropriate stages to verify that the construction of the relevant structure is carried out in accordance with his design

You are also mandated as contemplated in paragraph (g), stop any contractor from executing any construction work which is not in accordance with the relevant design's health and safety aspects.

You are further mandated as contemplated in paragraph (g), in your final inspection of the completed structure in accordance with the National Building Regulations, include the health and safety aspects of the structure as far as reasonably practicable, declare the structure safe for use, and issue a completion certificate to the Client (CoCT) and a copy thereof to the contractor

Also pay specific attention to the duties of temporary works designers in CR 6(2).

1. Anticipated or known dangers or hazards
   The major part of the design involves three different basins (Basins 5, 6 and 9), which include concrete inlet structures, concrete outlet structures, mass earthworks, deep and large diameter pipelines, deep excavations for manholes, as well as deep excavations for subsurface drainage.

   The deepest excavations vary between 4,0m and 5,0m and the sides of the excavations will have to be shored or sloped at an inclination close to the material's angle of repose. Dewatering of excavations will be required to ensure that excavations are performed to the correct lines and levels.

   The concrete inlet structure at each basin consists of a silt trap, litter trap and a contamination pond with high vertical walls, up to 4,5m in height. For the construction of these high vertical scaffolding, sufficient working space and temporary fences should be erected to safeguard workers and public from falling down. After the construction of these walls permanent hand rails will be installed to safeguard the structure against people getting injured and vehicles getting damaged.

2. Dangerous substances / materials
   No dangerous materials are foreseen to be used during the construction stage, but dangerous contaminants discharged into the basins via the stormwater systems from the industrial areas could be encountered.

3. Dangerous procedures

[redacted]

The water table in the area can be assumed as naturally high, which could pose the danger of collapsing trench walls during excavations.

Materials to be removed from the existing basins during excavations shall be tested for contamination and the degree thereof. This will determine whether the excavated material should be removed to the hazardous landfill site at Vissershok or whether it can be used as ordinary spoil / fill of low-lying areas.

4. Hazards and risks relating to the subsequent maintenance
In order to perform maintenance as safe as possible and to minimize risks to injury, handrails are provided where necessary to prevent maintenance personnel from falling down structures. Other aspects that were taken into account during the design are the ease and safety of access for maintenance and monitoring purposes.

   The necessary road signs on the dam crest of Basin 6 have been provided to warn maintenance personnel of dangerous areas and turning areas have been provided.

   Safety fencing will be provided around the perimeter of each basin. The fencing will serve a dual purpose, namely to prevent the public from entering the basin areas and also to prevent dumping within the perimeter of the basins.

5. Site inspections
The design team will conduct monthly site inspections to ensure that the works are carried out in accordance to their design. A site instruction book will be used as record for these inspections. A RE will be on site full time to monitor the works on a daily basis.

6. Stoppage of contractors
Should the contractor not perform work according to the health and safety plan, the Employer's Health and Safety agent must stop the contractor from executing particular construction work until the contractor has remedied the situation to the satisfaction of the Employer's Health and Safety agent.

7. Application of ergonomic principles during design
Ergonomic design principles during the design process were applied as far as possible to cause the least inconvenience to maintenance personnel and the highest degree of ease of access to all maintenance positions on site.

8. Design of temporary works
The design of temporary works such as formwork and support work, back-propping, lateral support, shoring and bracing of excavations, scaffolding, etc., will fall under temporary works which is the contractor's responsibility to appoint a separate party for the safe design thereof.

9. Loading that a structure can withstand
Aspects that could influence the loading on the concrete structures, include water pressures and ground conditions.

10. Geotechnical science aspects
A geotechnical report was done to assist the design of the structures and included aspects such as soil conditions, bearing capacity and subsoil water levels.

11. Pricing
The impact of the water levels to be maintained in the detention and conditioning ponds on the stability of the inlet structure is substantial to ensure stability.



PRIMARY HEALTH AND SAFETY COMPLIANCE

Project: Witzands Aquifer Recharge Basins Upgrade

ANNEXURE A

The Principal Contractor and their Contractors must submit compliance with Annexure 'A' before commencing work on site. **Compliance with Annexure 'A' must be maintained and proven to the H&S Agent at audits.**

HSS Item No.	Requirement	Legal Reference	Compliance required:
A1	Health & Safety Plan (H&S plan)	Constructions Regs.	H&S Plan to be sent to Client (CoCT) for assessment two weeks before start of construction work. Comment and final approval to be in place before construction work may commence.
A2	Notification of Intention to Commence Construction / Building Work	Complete Schedule 1 (Construction Regs)	Before commencement of construction work.
A3	Application for Construction Permit	Construction Regs	Required as from 7th August 2015. Thus applicable for this project as it is over R40m
A4	Assignment of Responsible Persons to Supervise Construction Work	OHS Act ~ Section 16(2) appointee ~ Construction Manager, Alternate Manager; Assistants, Activity, and Section Supervisors.	Construction Manager and Alternate required before commencement of construction work.
A5	Appointment of Construction Safety Officer	Construction Regs	Contractor to make an assessment of the project complexity and then decide on part-time or full-time safety officer.
A6	Compensation for Occupational Injuries and Diseases – proof of registration	COIDA	Before commencement on site
A7	Occupational Health and Safety Policy	OHS Act	To be held in safety file in site office and posted up on site
A8	Health and Safety Organogram showing all safety management portfolios and positions	Client (CoCT) Requirement	Together with H&S plan

A9	Initial Hazard Identification and safe work procedures – **Contractor's baseline HIRA**	Construction Regs.	Together with H&S plan
A10	Fall protection plan (first draft) as defined in the Construction regulations	Construction Regs.	Together with H&S plan
A11	Provide the criteria you intent to use for the monthly audits on Sub-contractors	Construction Regs.	Together with H&S plan
A12	Provide the methodology the principal contractor will be using when it comes to the stopping of dangerous activities on site	Construction Regs.	Together with H&S plan
A13	Provide the criteria the principal contractor will be using to access the competency of sub-contractors in terms of H&S	Construction Regs.	Together with H&S plan

HSS = health & safety specifications

OHS Act = occupational health & safety Act

CR = construction regulations

COIDA = compensation for occupational injuries and diseases Act

ASSIGNMENT OF PRINCIPAL CONTRACTOR'S AND CONTRACTORS' RESPONSIBLE PERSONS

Project: Witzands Aquifer Recharge Basins Upgrade

ANNEXURE B

The Principal Contractor must make all the management appointments as set out below.
Compliance with annexure 'B' to be maintained and proven to the safety agent at audits
(Further appointments could become necessary as the project progresses e.g. construction vehicles).

Item	Appointment	Legal Reference	Requirement
B1	CEO Assignee	OHA Act, Section 16(2)	A competent person to assist the CEO in achieving compliance with the OHS Act – P/Contractor's / Contractor's Responsible Person.
B2	Construction Manager	CR 8 - 2014	A full time competent person to supervise and be responsible for all site matters including health & safety on site. The person is appointed by the Section 16(2) assignee.
B3	Alternate Construction Manager	CR 8 - 2014	A full time competent person(s) to take control when the CR 8(1) appointee is not on site.
B4	Section and Activity Supervisors	CR 8(7) and 8(8)	The appointment of supervisors specific to trades, activities, sections, areas on site. The various risk assessments must detail the supervision requirements.
B5	Demolitions supervisor	CR 14 - 2014	A competent person to prepare the demolition method statement and supervise the work.
B6	Incident Investigator	GAR 9	A competent person to head up the investigation team and co-ordinate incident/injury investigations on site.
B7	Risk assessment co-ordinator	CR 9 - 2014	A competent person to co-ordinate the drafting/ reviewing/distribution of risk assessments on behalf of the Principal Contractor. The same applies to Contractors.
B8	Fall protection plan co-ordinator	CR 10 - 2014	A competent person to co-ordinate the drafting/ reviewing/distribution the fall protection plan. The same applies to Contractors.
B9	First Aider(s)	GSR 3	A certificated person to address first aid situations and take charge of injuries.
B10	Excavation Supervisor and inspector	CR13 - 2014	A competent supervisor and inspector to be appointed to ensure the safety of all excavations on site.
B11	Construction Vehicle and Mobile Plant Inspectors	CR 23 - 2014	A competent person to inspect construction vehicles and mobile plant daily and ensure they are safe for use, keeping daily records.

[redacted]

B12	Portable Electrical Tool Inspector	CR 24 - 2014	A competent person to co-ordinate / inspect portable electrical tools, leads and plugs.
B13	Scaffolding inspector	SANS 10085 – 2004; CR 16 – 2014	A competent person to inspect scaffolding before use and every time after bad weather, etc.
B14	Scaffold supervisor (P/Contractor employee)	SANS 10085 – 2004; CR 16 - 2014	A competent P/Contractor employee to supervise all scaffolding on site, ensuring that scaffolds are safe for use, inspected, extended/altered, repaired when required and that all trades are co-ordinated and authorised to work on such scaffolds.
B15	Scaffolding erector	SANS 10085 – 2004; CR 16 - 2014	A competent person(s) to erect scaffolding – leader of the scaffold team.
B16	Ladder inspector	GSR 13A	A competent person to inspect ladders daily and ensure they are safe for use, keeping monthly record.
B17	Explosive powered tools inspector/supervisor	CR 21 - 2014	A competent person to inspect & clean the tool daily, store the tool in a safe location, ensure that cartridges are signed out and in, and control all operations thereof.
B18	Temporary electrical installations inspector	CR 24 - 2014	A competent person to inspect all temporary electrical installations. Including weekly inspections and record keeping.
B19	Fire-fighting equipment inspector Person(s) trained in the use of fire fighting equipment	CR 29 - 2014	A competent person to co-ordinate & inspect fire-fighting equipment. Including ad-hoc checks and monthly inspections with records kept.
B20 B20 (b)	Temporary works designer Temporary works supervisor	CR 12 - 2014	A competent person to design all temporary work erection & dismantling. This person must also ensure that the equipment is safe and that all the necessary inspections (pre, during, post & every day thereafter) are carried out & records kept by the competent inspectors. Design drawings must be available to this supervisor.
B21	Lifting machine and lifting tackle supervisor	DMR 18	A competent P/Contractor employee to co-ordinate the management of lifting machines and tackle, ensuring that such equipment is safe for use at all times, inspected when necessary and repaired when required. The operators, banks men and contractors to liaises with this person.
B22	Stacking supervisor	CR 28 - 2014	A competent person to supervise all stacking and storage operations.
B23	Construction safety officer (full time)	CR 8(5) - 2014	A competent person to fulfil the functions as set out in these HSS.

GENERAL COMPLIANCE REQUIREMENTS
Project: Witzands Aquifer Recharge Basins Upgrade

ANNEXURE C

The Principal Contractor and Contractors must comply with but not be limited to the requirements tabled below: Prove compliance with annexure 'C' at audits conducted by the safety agent.

Item & Weight	What	When	Output	Reviewed by Client (CoCT)
C1 **1**	List of Contractors	List to be updated weekly	Compile a list of Contractors: Name, supervisor, company tel. numbers and trade.	
C2 **2**	Construction-phase Health & Safety Plan	Monthly review	Principal Contractor to indicate the status of Contractors' health & safety plans.	
C3 **1**	Health & Safety File(s)	Open file when construction begins and maintain throughout.	Have file on hand at audits. Contractors to report on their file at monthly health & safety audits by the Principal Contractor.	
C4 **1**	OHS Act and relevant Regulations	Monthly review	To be kept in the health & safety file on site.	
C5 **2**	Induction training	Every worker before he/she starts work.	Attendance registers to be kept.	
C6 **1**	Awareness Training (Tool Box Talks)	At least weekly	Attendance registers to be kept.	
C7 **1**	Health & Safety Meetings	Monthly	Meeting minutes to be kept.	
C8 **2**	Health & Safety Reports	Monthly	Report covering: • Incidents / injuries and investigations • Non conformances by employees & Contractors - reports • Internal H&S audit reports	
C9 **4**	Audits on contractors	Monthly	Report covering • H&S File/Plan • WCA status • Appointment letters • Section 37(2) agreements • Risk assessment and method statements	

			• Physical site inspection • Any other contractor specific requirements	
C10 **1**	Emergency procedures	Monthly evaluation of procedure	Compile written procedure as well as tel. numbers.	
C11 **4**	Risk assessments & fall protection plan	Updated and signed off at least monthly.	Documented risk assessments to be available.	
C12 **4**	Method statements (Safe work procedures)	Drawn up and distributed before workers are exposed to the risks.	Documented set of safe work procedures (method statements) reviewed and signed off.	
C13 **3**	General Inspections	Daily	Report OHS Act compliance: • Excavations • Portable electrical tools • Formwork & support work • Explosive powered tools • Mobile Plant • Hoarding • Stacking & Storage	
C14 **3**	General Inspections	Weekly	• Scaffolding • Temporary Electrical Installations	
C15 **2**	General Inspections	Monthly	• Fire fighting equipment • Ladders • First-aid box(es)	
C16 **3**	General Inspections	3-monthly	• Lifting tackle • Oxy-acetylene cutting & welding sets • Fall prevention and arrest equipment	
C17 **4**	General Inspections	6-monthly	• Lifting machines	
C18 **4**	Load tests / performance tests	Annually / once erected, before use	• Lifting machines	
C19 **1**	Workman's Compensation	Ongoing	Compile a list of Contractors' workman's compensation proof of good standing.	
C20 **1**	Construction site rules & Section 37(2) Manadatary Agreements	Ongoing	Compile a list of all signed up Mandataries. Proof of agreement documents to be kept in H&S file.	
C21 **2**	Medicals	Annual renewal Update monthly	Compile a list of workers who was subjected to medical examinations for activities specific to their work on annexure 3	

HIRA: 14 Day look-ahead by Principal Contractor
Project: Witzands Aquifer Recharge Basins Upgrade

ANNEXURE D

The Principal Contractor must report the health and safety status of the upcoming activities to the H&S Agent at audits in writing using the following advised format.

14 Day Look-ahead programme – Hazard Identification Risk Assessment (HIRA)

Project: …… Contractor: ……

Look-ahead period: from …….. to ……..

No.	Activity description **and** Contractor involved	When is activity due to start (date)?	Risk assessment (HIRA) & method statement to be done by (date)?	HIRA done and in file (date)	Workers trained / informed of the SWP's (date done)	Comments by contractor if required
1.						
2.						
3.						
4.						
5.						
6.						
7.						

Notes:
Why is it so important to identify hazards, assess the potential risks associated with the hazards and implement effective safe work procedures (SWP's) to eliminate the risks?

1. It is a legal requirement that every Employer (Company) creates a safe and healthy working environment for its workers – Section 8 of the OHS Act (Occupational Health & Safety Act 85/1993).
2. It is the duty of Employers (Companies and their managers/supervisors) to identify the hazards/hazardous activities which could potentially cause harm to their workers and to other persons e.g. site visitors, members of the public outside the site and other contractors (Construction Regulations 2003).

Definitions that you need to understand:
Danger: means anything which may cause injury or damage to persons or property e.g. a machine; electrical installation; portable electrical tool; chemicals, etc.
Hazard: means a source of or exposure to danger e.g. operating a machine; working with/on electricity on site; operating or being close to an angle grinder.
Risk: means the probability that injury or damage will occur. In other words what is the chances that injuries/damage could result from exposure to the particular danger/hazard (usually indicated by a rating level e.g. high, medium, low)

Finally, in the case of an injury or property damage, if you cannot prove that an assessment of risk was undertaken, you could be found guilty of contravening the OHS Act and/or Construction Regulations which is a criminal offense. As a supervisor/manager you have the implied duty and responsibility to identify hazards, determine what could potentially go wrong, and then put the necessary safety/health measures/procedures in place. This means you have to carry out a formal hazard identification and risk assessment (in writing). Then you need to inform your workers of the hazards, risks and safe work procedures. Finally you have the legal duty of enforcing these safe work procedures – you need to check that the procedures are in fact being implemented by the workers.

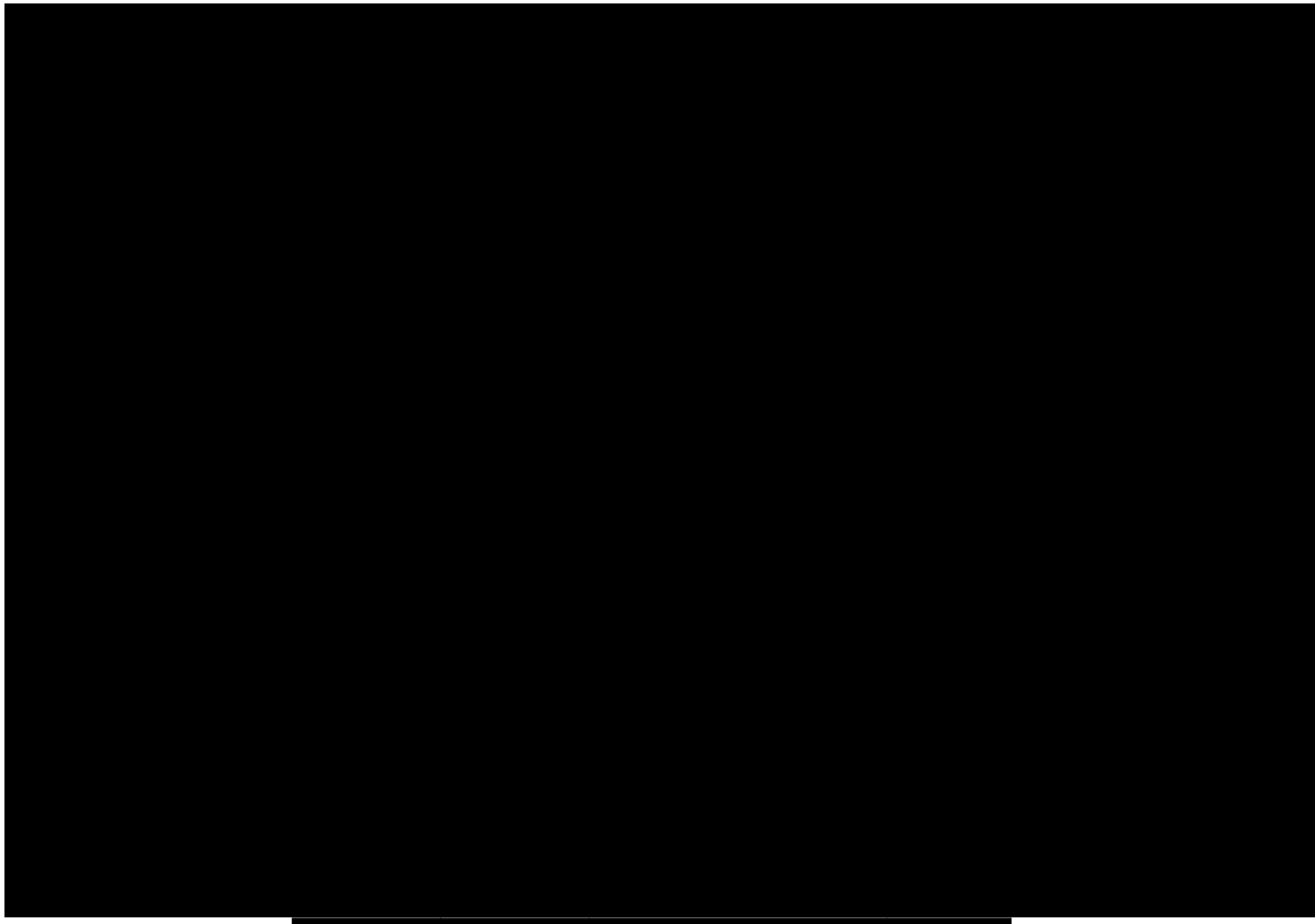
Make use of the above spreadsheet table to identify up-coming activities/hazards so as to be ahead of the construction programme at all times – this is called effective planning for injury/property damage prevention.

[redacted]











Documentation Required for Construction Permit Application to DoL

Section 1 – Annexure 1 application form to be completed by **Pr.CHSA**.

Section 2 – Baseline risk assessment (**Pr.CHSA**).
H&S Specifications Document (**Pr.CHSA**).
Principal Contractor's H&S Plan and preliminary risk assessments (**P/Contractor**).

Section 3 – Appointment of Pr.CHSA (Appointment letter from **Client (CoCT)**).

Section 4 – CR 3(5)(b)(ii). Principal Contractor proof of workman's compensation good standing (**P/Contractor**).
CR 5(1)(k) . Appointment of Principal Contractor(s) **(Client (CoCT) – not letter of intent)**

Section 5 – CR 5(3)(c). Proof that H&S Specifications were provided to designers (letter from each **designer**).

Section 6 – CR 5(1)(d). Proof that Designers will take H&S spec into account (letter from each **designer**).

Section 7 – CR 5(1)(e). Proof that designers will carry out their CR 6 duties (Design reports or letter from each **designer**). The designers could each compile a report with all three of the above criteria detailed in it.

Section 8 – CR 5(1)(f). Proof that H&S Specifications was included at tender (Letter or similar proof from **PQS**)

Section 9 – CR 5(1)(g). Proof that P/Contractor allowed sufficient for the cost of H&S (**PQS** to make provision for this in the BoQ – a line item or similar).

Section 10 – CR 5(1)(h). Proof that P/Contractor has the necessary competence and resources. **P/Contractor** must complete the Pr.CHSA's 'competence and resources' questionnaire which must be included as part of the tender document).

ANNEXURE G

Project: Witzands Aquifer Recharge Basins Upgrade

Acknowledgement of receipt:

I, _____ representing

_____ Principal Contractor /

Contractor

have received the Health and Safety Specifications in good order and shall ensure that the Principal Contractor / Contractor and its personnel comply with all obligations / requirements / specifications in respect thereof. This document is legally binding in terms of the Construction Regulations (2014).

_____ _____

Signature of Principal Contractor / Contractor Date

_____ _____

Signature of Client (CoCT) / Client's Agent Date

Comments:

CONSTRUCTION PROJECT COMPLEXITY PROFILE

Atlantis Recharge Basins #6 and #9

1. Number of Principal Contractors, including Direct Contractors? **[Weighted] 20**	2. Number of Sub-Contractors/ Trades? **[Weighted] 20**	3. Number of Structures and/or buildings (this includes civil structures)? **10**	4. Multi-level/Height of structure(s) and/or buildings? **[Weighted] 20**	5. Bulk Excavations? **10**	6. Deep Trenches? **10**
A	A	A	A/NA	A/NA	A/NA
i) 1 x = Low	i) < 10 = Low	i) 1 x = Low	i) Ground floor structure (up to 3 meters) = Low	i) Bulk Excavation – one level = Low	i) Up to one meter = Low
ii) 2 x = Medium	ii)11 – 20 = Medium	ii) 2 x = Medium	ii) Double storey up to 5 levels (>3-15 meters) = Medium	ii) Bulk excavation >1 level = Medium	ii) From 1 meter to 2.0 meters = Medium
iii) > 2 = High	> 20 = High	iii) >2 = High	iii) Above 5 levels, from 5th floor including ground (>15 meters) = High	iii) Bulk excavation – piles lateral support = High	iii) Deeper than 2.0 meters = High
RATING: L = 6.6	RATING: L = 6.6	RATING: H = 10	RATING: L = 6.6	RATING: L = 3.3	RATING: H = 10

7. Demolition work required **10**	8. Are the following applicable? • HCS/Asbestos work required • Blasting • Diving **10**	9. Government Interventions/Stipulations e.g. local labour CPG, emerging contractor targets? **10**	10. Project Environment/ Location/Surroundings? **10**	11. Tenants/Persons occupying premises during construction? **10**	12. Size of the project? • Notification of DoL only • CHSA appointed • Permit Required **10**
A/NA	A/NA	A/NA	A	A/NA	A
i) Internal soft demolitions = Low	i) Asbestos work (lagging) = High	i) Interventions/stipulations = High **Local labour & CPG**	i) Urban interface: site not adjacent to public walkways, roadway and/or settlements = Low	i) Tenants/Persons occupying premises during construction period = High	i) Notification only - Low
iii) Ground floor only) = Low	ii) Diving = High	-	ii) Site immediately adjacent to public walkways, roadway and/or settlements = High	ii) Other construction work taking place adjacent to project = High	ii) Notification but opting to appoint CHSA – Medium
iv) Double story to 5 levels (3-15 meters) = Medium	iii) Blasting = High	-	-	-	iii) Permit required - High

v) Above 5 levels including ground (>15 meters) = High	iv) Asbestos removal (asbestos-containing materials) = Medium	-	-	-	-
RATING: n/a	RATING: n/a	RATING: H = 10	RATING: L = 3.3	RATING: n/a	RATING: H=10

13. Has a CiDB rating been specified? **10**	14. Will any of the following will be required? • Tower Crane(s) • Fall protection Plan/Roof plan • Temporary works **[Weighted] 20**				
A/NA	A/NA				
i) Level 1 - 3 = Low	i) 1 x = Medium				
ii) 4 - 6 = Medium	ii) 2 x = High				
iii) >6 = High	iii) All three = High				
RATING: n/a	RATING: M = 13.2	RATING:	RATING:	RATING:	RATING:

WEIGHTED CATEGORIES TO BE MULTIPLIED BY A FACTOR OF 2

COMPLEXITY RATING SCALE:		OVERALL RATING SCALE:		CALCULATED AS FOLLOWS:
LOW	= 1/3	LOW	= 0 to 43%	Score achieved divided by max. possible score for the categories rated = %
MED	= 2/3	MED	= 44% to 76%	
HIGH	= 3/3	HIGH	= 77% to 100%	

A = Always applicable; A / NA = Applicable or not applicable
Eppen-Burger & Associates (E&A)

Rating achieved = 6.6+6.6+10+6.6+3.3+10+10+3.3+10 = 79.6/140 = **56,8%**

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Part C3.6 Annexes

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Annex 2: B-BBEE Sub-contract Expenditure Report

Annex 3: Joint Venture Expenditure Report

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ANNEX 1

CITY OF CAPE TOWN
MONTHLY PROJECT LABOUR REPORT

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Instructions for completing and submitting forms

General

1 The Monthly Project Labour Reports must be completed in full, using typed, proper case characters; alternatively, should a computer not be available, handwritten in black ink.

2 Incomplete / incorrect / illegible forms will not be accepted.

3 Any conditions relating to targeted labour stipulated in the Contract (in the case of contracted out services or works) shall apply to the completion and submission of these forms.

4 This document is available in Microsoft Excel format upon request from the City's EPWP office, [redacted]

Project Details

5 If a field is not applicable insert the letters: NA

6 Only the Project Number supplied by the Corporate EPWP Office must be inserted. The Project Number can be obtained from the Coordinator or Project Manager or from the e-mail address in point 4 above.

7 On completion of the contract or works project the anticipated end date must be updated to reflect the actual end date.

Beneficiary Details and Work Information

8 Care must be taken to ensure that beneficiary details correspond accurately with the beneficiary's ID document.

9 A new beneficiary is one in respect of which a new employment contract is signed in the current month. A certied ID copy must accompany this labour report on submission.

10 Was the beneficiary sourced from the City's job seeker database?

11 The contract end date as stated in the beneficiary's employment contract.

12 Where a beneficiary has not worked in a particular month, the beneficiary's name shall not be reflected on this form at all for the month in question.

13 Training will be recorded separately from normal working days and together shall not exceed the maximum of 23 days per month

14 Workers earning more than the maximum daily rate (currently R450 excluding any benefits) shall not be reflected on this form at all.

Submission of Forms

15 Signed hardcopy forms must be scanned and submitted to the City's project manager in electronic (.pdf) format, together with the completed form in Microsoft Excel format.

16 Scanned copies of all applicable supporting documentation must be submitted along with each monthly project labour report. Copies of employment contracts and ID documents are only required in respect of new beneficiaries.

17 If a computer is not available hardcopy forms and supporting documentation will be accepted.

PROJECT DETAILS

Numbers in cells below e.g (6) refer to the relevant instruction above for completing and submitting forms

CONTRACT OR WORKS PROJECT NAME: (6)		EPWP SUPPLIED PROJECT NUMBER: (6)	
DIRECTORATE:		DEPARTMENT:	
CONTRACTOR OR VENDOR NAME:		CONTRACTOR OR VENDOR E-MAIL ADDRESS:	
CONTRACTOR OR VENDOR CONTACT PERSON:		CONTRACTOR OR VENDOR TEL. NUMBER:	CELL WORK

PROJECT LABOUR REPORT CURRENT MONTH (mark with "X")

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR				

ACTUAL START DATE (yyyy/mm/dd)								ANTICIPATED / ACTUAL END DATE (yyyy/mm/dd) (7)							

TOTAL PROJECT EXPENDITURE / VALUE OF WORK DONE TO-DATE (INCLUDING ALL COSTS, BUT EXCLUDING VAT)

R														

ANNEX 1 (continued)

MONTHLY PROJECT LABOUR REPORT

BENEFICIARY DETAILS AND WORK INFORMATION

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CONTRACT OR WORKS PROJECT NUMBER:		Year	Month	Sheet		
				1	of	

	(8)	(8)	(8)	(9)			(10)		(11)	(12)	(13)	(14)
No.	First name	Surname	ID number	New Beneficiary (Y/N)	Gender (M/F)	Disabled (Y/N)	Job seeker database (Y/N)	Contract start date (DDMMYY)	Contract end date (DDMMYY)	No. days worked this month (excl. training)	Training days	Rate of pay per day (R – c)
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
										0	0	R -

Declared by Contractor or Vendor to be true and correct:	Name		Signature	
	Date			

Received by Employer's Agent / Representative:	Name		Signature	
	Date			

ANNEX 2 CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

B-BBEE SUB-CONTRACT EXPENDITURE REPORT BASED ON PAYMENT CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (**P***)	R	B-BBEE Status Level of Prime Contractor	

Name of Sub-contractor (list all)	**B-BBEE Status Level of Sub-contractor[1]**	**Total value of Sub-contract (excl. VAT)[1]**	**Value of Sub-contract work to date (excl. VAT)[1]**	**Value of Sub-contract work to Sub-contractors with a lower B-BBEE Status Level than Prime Contractor**
Sub-contractor A		R	R	R
Sub-contractor B		R	R	R
Sub-contractor C		R	R	R
			Total:	R
			Expressed as a percentage of **P***	%

[1]Documentary evidence to be provided

Signatures

Declared by Contractor to be true and correct: ..... **Date:** .....

Verified by Employer's Agent/ Employer's Agent's Representative: _____ **Date:** .....

ANNEX 3

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

JOINT VENTURE EXPENDITURE REPORT BASED ON PAYMENT CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (**P***)	R	B-BBEE Status Level of Joint Venture	

Name of Joint Venture partner (list all)	**B-BBEE Status Level of each JV partner as at contract award**	**Percentage contribution of JV partner per JV Agreement[1] A**	**Total value of JV partner's contribution (excl. VAT)[1] B = A% x P***	**Value of JV partner's contribution to date (excl. VAT)[1] C**	**Value of JV partner's contribution as a percentage of the work executed to date D = C/P*x100**
JV Partner A		%	R	R	%
JV Partner B		%	R	R	%
JV Partner C		%	R	R	%

[1]Documentary evidence to be provided

Signatures

Declared by Contractor to be true and correct: ..... **Date:** .....

Verified by Employer's Agent/ Employer's Agent's Representative: ..... **Date:** .....

ANNEX 4 CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

TARGETED LABOUR CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (**P***)	R

Specified Targeted Labour Contract Participation Goal	%

Name of Contractor/Sub-contractor (list all)	**Total previous expenditure on wages in respect of targeted labour**	**Net Amount for this month[1]**	**Total expenditure on wages in respect of targeted labour**
Contractor	R	R	R
Sub-contractor A	R	R	R
Sub-contractor B	R	R	R

[1]Documentary evidence to be provided

Total:	R
Expressed as a percentage of **P***	%

Signatures

Declared by Contractor to be true and correct: ..... **Date** .....

Verified by Employer's Agent/ Employer's Agent's Representative: _____ **Date** _____

ANNEX 5 CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

TARGETED ENTERPRISES CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (**P***)	R	Specified Targeted Enterprises Contract Participation Goal	%

Name of targeted enterprise (list all)	**Total previous expenditure (excl. VAT) to targeted enterprises**	**Net Amount for this month[1]**	**Total expenditure (excl. VAT) to targeted enterprises**
Targeted Enterprise A	R	R	R
Targeted Enterprise B	R	R	R
Targeted Enterprise C	R	R	R

[1]Documentary evidence to be provided

Total:	R
Expressed as a percentage of **P***	%

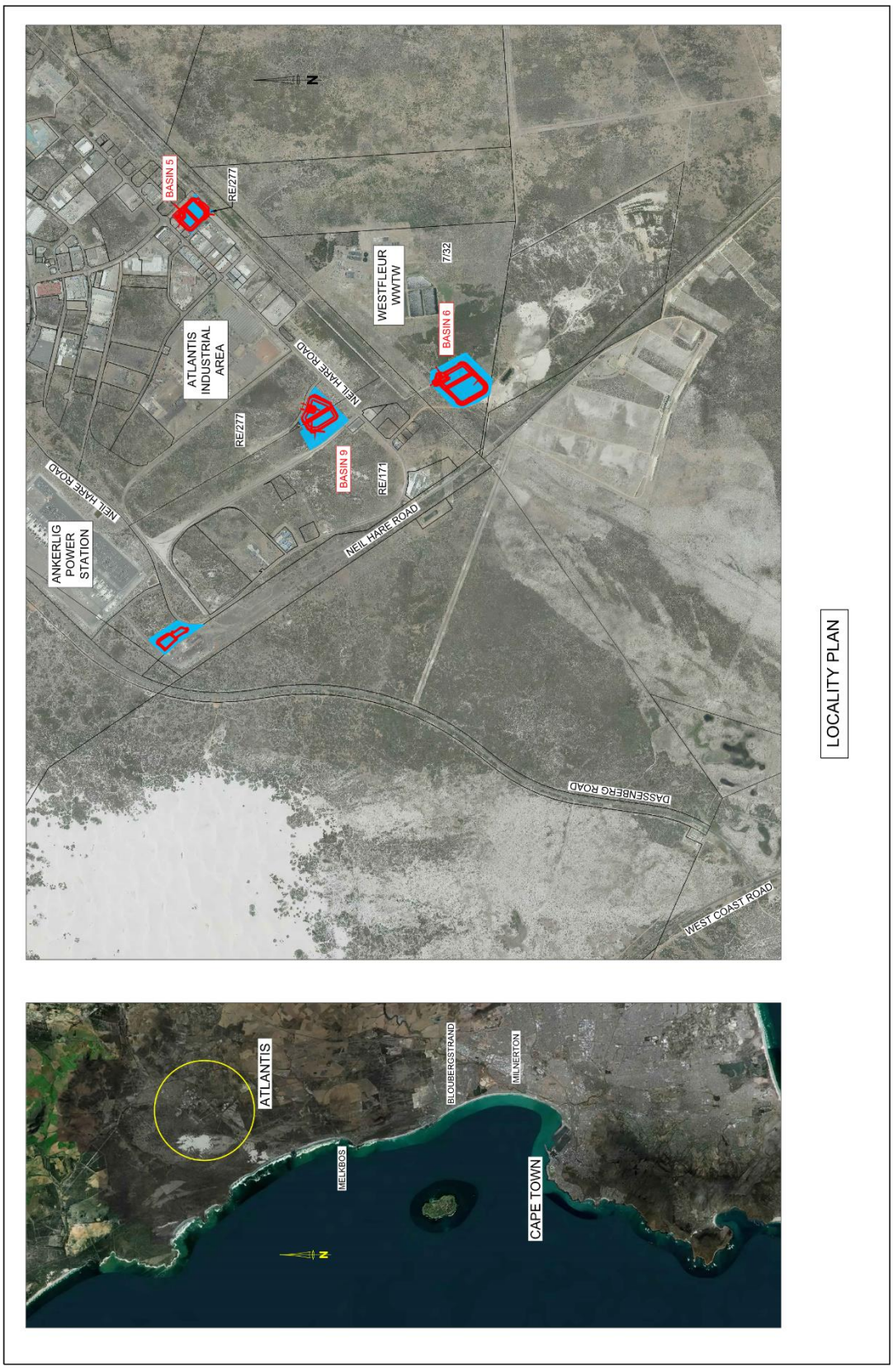
Signatures

Declared by Contractor to be true and correct: _____ **Date** .....

Verified by Employer's Agent/ Employer's Agent's Representative: ..... **Date** _____

ANNEX 6 CITY OF CAPE TOWN

LOCALITY PLAN



ANNEX 7 CITY OF CAPE TOWN

ENVIRONMENTAL MANAGEMENT PROGRAMME

Water Resilience Projects

Environmental Management Programme

City of Cape Town

Version: Final 1

Date: 10/11/2017

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List of Terminology and Definitions

Terminology	Explanation
Activity	Any action needed for the design, construction and completion of a development.
Alien species	• species that is not an indigenous species; or

	• an indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention;
Best practicable environmental option	The option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.
Borehole (as defined in the NWA, 1998)	Includes a well, excavation or any artificially constructed or improved underground cavity which can be used for the purpose of a) intercepting, collecting or storing water in or removing water from an aquifer; b) observing or collecting data and information on water in an aquifer; or c) recharging an aquifer.
City of Cape Town	The Client / Employer
Communication register	A register aimed at tracking all communication activities within the development.
Competent Authority (as defined in the NEMA, 1998as amended)	In respect of a listed activity or specified activity, means the organ of state charged by the Act with evaluating the environmental impact of that activity and, where appropriate, with granting or refusing an environmental authorisation in respect of that activity;
Contaminated water	Water contaminated by pollutants from on- or off-site activities; e.g. concrete-laden water and runoff from plant / personnel wash areas. Contaminated water must be treated to ensure that water released into the receiving environment meets minimum standards and guidelines. Treated water should be recycled where possible (e.g. used for dust suppression).
Construction	The building or erection of structures or infrastructure.
Department of Environmental Affairs & Development Planning	Provincial Authority responsible for approval of the Environmental Management Programme (EMPr) and required Method Statements.
Department of Environmental Affairs: Oceans and Coasts	The National Authority responsible for the management of the marine environment and any land-based effluents / discharges into the marine environment.
Department of Water and Sanitation	The authority responsible for water management.
Design	Drawing or plan to show layout or plan of the development.
Development (as defined in the NEMA EIA Regulations, 2014, as amended)	The building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.
Effluent (as defined in the NEM: ICMA, 2008)	Any liquid discharged into the coastal environment as waste and includes any substance dissolved or suspended in the liquid; or liquid which is a different temperature from the body of water into which it is being discharged.
Emergency situation	A situation posing an immediate risk to health and safety; environment and property.
Environment	The surroundings in which humans exist and which comprise: • the land, water and atmosphere of the earth; • micro-organisms, plant and animal life; • any part or combination and interrelationships; and

	• the physical, chemical, aesthetic, historical, cultural and economic properties and conditions of the foregoing that can influence human health and wellbeing.
Environmental aspect	A product's or production process's environmental impact or important issues in the environment that an organisation should take into consideration
Environmental audit	Systematic, documented, regular and objective evaluation to see how well an organisation or facility is operating in terms of the Environmental Management Programme and is complying with statutory requirements and the organisation's Environmental Policy.
Environmental Authorisation	The authorisation by a competent environmental authority for commencement of listed activities in terms of the National Environmental Management Act (Act 107 of 1998).
Environmental Compliance Review	Due diligence review of the environmental authorisation, EMPr and other applicable permits / licenses in relation to evolving engineering design, to determine continued applicability of assessed impacts / permits / licenses; and possible identification of new impacts / permits / licenses.
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially that results from an organisation's environmental aspects.
Environmental Management Inspector	A person designated as an environmental management inspector in terms of Section 31B or 31C of the National Environmental Management Act (Act 107 of 1998).
Environmental Management Programme	A tool used to prescribe management mechanisms or methods for the prevention of undue or reasonably avoidable adverse environmental impacts and for the enhancement of the positive environmental benefits of a development.
Environmental objectives	The overall environmental goal arising from the Environmental Policy that an organisation sets itself to achieve, and is quantified where practicable.
Fauna	All living biological creatures, usually capable of motion, including insects and predominantly of protein-based consistency.
Fire danger index	A relative number denoting an evaluation of rate of spread or suppression difficulty for specific combinations of fuel, fuel moisture and wind speed.
Fire hazard	The relative combination of fuel, oxygen and heat that will lead to the start and spread of a potential fire.
Fire Protection Association	An association registered in terms of the National Veld and Forest Fire Act for the purposes of predicting, preventing, managing and extinguishing veld fires.
Flood line	The line or mark to which a flood could rise every 50 (1:50 year flood line) or 100 (1:100 year flood line) years.
Flora	All living plants, grasses, shrubs, trees, etc. that are typically incapable of easy natural motion and capable of photosynthesis.
Groundwater	Water that fills the natural openings in below-surface rock or unconsolidated sands.
Hazardous waste	Waste that, because of its chemical reactivity, toxic, explosive, corrosive, radioactive or other characteristics, causes danger or is likely to cause danger to health or the environment.
Heritage resources	Any place or object of cultural, archaeological or paleontological significance in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).
Induction training	The training provided to new / existing employees to (re)acquaint them with the company structure, their specific job requirements,

	practical or organisational issues and occupational health, safety and environmental considerations required on the development.
Integrated Environmental Management	• the promotion of the integration of the principles of environmental management as set out in Section 2 of the National Environmental Management Act (Act 107 of 1998) in making decisions that may have a significant effect on the environment; • the identification, prediction and evaluation of the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts and maximising benefits; • ensuring that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them; • ensuring an adequate and appropriate opportunity for public participation in decisions that may affect the environment; • ensuring the consideration of environmental attributes in management and decision making, which may have a significant effect on the environment; and • identifying and employing the modes of environmental management best suited to ensure that a particular activity is pursued in accordance with the principles of environmental management as set out in Section 2 of the National Environmental Management Act (Act 107 of 1998).
Interested and Affected Parties (I&AP) / Stakeholder	Any person or group of people concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, customers and consumers, environmental interest groups, and the general public (after the Environmental Impact Assessment Regulations of September 1997 and Guideline Document: Environmental Impact Assessment Regulations of April 1998).
Key Performance Indicator	A quantifiable measure that demonstrates how effectively the Contractor is achieving prescribed outcomes.
Land Use	The arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it. This definition establishes a direct link between the land cover and the actions of people in their environment.
Marine Protected Areas	An area of sea and coastline that is dedicated to the protection of biodiversity and natural and cultural resources and is managed in a structured and legal manner. Different levels of MPAs exist, ranging from complete no-take zones (where nothing may be disturbed, caught or removed) to partial-take MPAs which have a suite of regulations that determine what activities may take place in which zone.
Materials	All kinds of items (other than Plant) intended to form or forming part of the permanent Works and temporary works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.
Mitigate	The implementation of practical measures to reduce any adverse impacts or to enhance the beneficial impacts of an action.
No-go area	An area where construction activities are prohibited.
Non-conformance	Failure to comply with the requirements of *inter alia* the EMPr and environmental authorisation.
Non-conformance report	A report outlining a deviation from process, procedure or compliance specifications.

Operation	The act of controlling a function / system.
Outcome	Specific result to be achieved within a prescribed timeframe and with available resources.
Planning	Defining the scope of the development.
Plant	The apparatus, machinery and vehicles used during the Permanent Works.
Pollution	Any change in the environment caused by substances or noise, malodours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, where that change has an adverse effect on human health or wellbeing or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.
Potentially hazardous substance	A substance that can have a deleterious effect on the environment. Hazardous chemical substances are defined in the Regulations for Hazardous Chemical Substances, published in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).
Precautionary principle	The basic principle that, when in doubt or when there is insufficient or unreliable information, actions must be undertaken that have minimum risk.
Pre-construction	Activities associated with the period preceding construction.
Programme	A deliverable from the Contractor to the Employers Representative as part of the documents required before commencement of the Works. An initial programme of carrying out the works in order to meet the Due Completion Date.
Quality management system	A set of interrelated or interacting elements that organisations use to direct and control how quality policies are implemented and quality objectives are achieved.
Rehabilitation	Re-establishment or restoration to a healthy sustainable capacity or state.
Resource recovery	Recycling of waste, water or the recovery of energy.
Sensitive receptors	Locations or areas that are likely to experience an impact more than other locations or areas; for example, schools and residential areas.
Site clearance	Clearing and grubbing activities.
Solid waste	All solid waste, including construction debris, chemical waste, excess cement / concrete, wrapping materials, timber, steel, drums, wire, nails, food and domestic waste (e.g. plastic bags and wrappers).
Target	The detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental outcomes and that needs to be set and met in order to achieve those outcomes.
Watercourse (as defined in the NWA, 1998)	Means a river, spring; a natural channel in which water flow regularly or intermittently; a wetland, lake or dam into which, or from which water flows and a reference to a water course includes, where relevant, its bed and banks
Waste minimisation	The reduction of the volume of waste during construction by means of different processes or clean technology.
Waste prevention	The prevention and avoidance of the production of a waste.
Wastewater	Water containing cement washings, oil, fuel or other contaminants.
Water resource	Includes a watercourse, surface water, wetland, estuary, or aquifer.

Wetland	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which in normal circumstances supports, or would support, vegetation that is typically adapted to live in saturated soil (as defined in the National Water Act (Act 36 of 1998)).
Works	Means the Permanent Works and the Temporary Works, or either of them as appropriate.

List of Acronyms and Abbreviations

Acronym / Abbreviation	Explanation
CAR	Corrective Action Request
CLO	Community Liaison Officer
DEA&DP	Department of Environmental Affairs and Development Planning
DOL	Department of Labour
DW&S	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ECO	Environmental Control Officer

EMD	Environmental Management Department, City of Cape Town
EO	Environmental Officer
EMPr	Environmental Management Programme
ESMP	Environmental and Social Monitoring Programme
FDI	Fire Danger Index
FPA	Fire Protection Association
GCC	General Conditions of Contract
HDI	Historically disadvantaged individuals
H:WC	Heritage Western Cape
I&AP(s)	Interested and Affected Party(ies)
IMS	Integrated Management System
ISO	International Organisation for Standardisation
MPA	Marine Protected Areas
MSDS	Material Safety Data Sheet
NCR	Non-Conformance Report
NEMA	National Environmental Management Act (Act 107 of 1998)
NEM: ICMA	National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act 25 of 1999)
NWA	National Water Act, 1998 (Act 36 of 1998)
PCO	Pest Control Officer
PPE	Personal Protective Equipment
PSEM	Performance Specifications: Environmental Management
PSP	Professional service provider
QA/QC	Quality Assurance and Quality Control
QMS	Quality Management System
RAM	Responsibility assignment matrix
SAHRA	South African Heritage Resource Agency
SANAS	South African National Accreditation System
SAQA	South Africa Qualifications Authority
SEMP	Site Environmental Management Plan
WRECO	Water Resilience Environmental Compliance Officer
WRP	Water Resilience Project (or Programme when referring to the entire suite of projects)

1. Introduction

1.1. Background and Scope of this EMPr

An Environmental Management Programme (EMPr) is a proactive environmental management tool used to prescribe management methods to prevent or reasonably avoid adverse environmental impacts, and strengthen the positive environmental benefits of a development. It also places a Duty of Care on those who cause, have caused or may in future cause significant pollution or degradation of the environment. This requirement is according to Section 28 (1) of the National Environmental Management Act (Act No. 107 of 1998) (NEMA).

Furthermore, this Generic EMPr is drafted in compliance with NEMA Section 24N (Environmental Management Programme) requirements and the scope is to set conditions for the implementation of the environmental management component for all personnel involved with the City of Cape Town Emergency Water Resilience project. As such, the EMPr outlines how individual projects related to the Emergency Water Resilience Programme will be managed through its planning, design, pre-construction, construction, operation, rehabilitation and decommissioning lifecycle and is designed to mitigate negative environmental impacts; whilst enhancing positive impacts. The programme includes desalination, groundwater abstraction, wastewater re-use and any other construction activities associated with the Section 30A Directive.

Apart from the Environmental Specifications provided to the Contractor(s) as part of the tender documentation, this EMPr will be provided to the Contractor(s) and becomes legally binding on the Contractor(s) and anyone acting on behalf of the Contractor(s) or the City of Cape Town during the development life-cycle process activities.

1.2. Outcomes of the EMPr

This EMPr covers systems, strategies and procedures to ensure proposed developments within the City of Cape Town meet the environmental outcomes and targets as prescribed herein.

The below outcomes, targets and execution are to ensure the development is undertaken in an environmentally responsible manner (please refer to Table 1).

Table 1: EMPr Outcomes

Outcomes	Targets	Execution
Compliance with legislative requirements	100% compliance with all requirements	Review of audit reports
Compliance with Competent Authority (i.e. DEA&DP, HWC and SAHRA) conditions	100% compliance with all requirements	Review of audit reports
Avoidance of environmental harm	Compliance with EMPr, environmental authorisation and best practicable environmental option	– Implementation of development based environmental management system – Implementation of monitoring environmental controls – Environmental reporting, auditing and recording – Environmental Awareness training

Conformance with best practicable environmental option	– Conduct environmental inductions (at project commencement and every six months thereafter) and provide for weekly environmental toolbox talks – Achieve performance indicators and targets – Undertake environmental inspections – Undertake environmental audits as per prescribed audit schedule – Report and record all environmental incidents and non-conformances – Assign and complete corrective actions within the prescribed timeframes	– Training of personnel in EMPr measures – Environmental monitoring and audits – Review of nonconformance register – Review of environmental reports
Maintain commitments to surrounding stakeholders and community potentially affected by the project.	– Minimal grievances – Respond to all grievances within the prescribed timeframes	Review of Communications Register

1.2. Adaptive management and review of EMPr

As part of an adaptive management strategy, this Generic EMPr is a "living" document that shall be reviewed prior to each development phase or commencement of site specific projects to ensure appropriateness and applicability. This approach shall allow for:

- monitoring data gathered being used to evaluate impact management and mitigation;
- assumptions being tested and uncertainties reduced; and
- EMPr efficacy being determined and whether reviews are required.

Such review can provide for:
- revision of monitoring because of iterative learning;
- the determination of performance indicators and target success; and
- revision of performance targets and target actions.

Therefore the EMPr may be revised due to:
- policy change;
- management review;
- audit recommendations;
- grievances or non-conformance reports; and
- legislative changes.

The following Official must be notified if there a substantial amendment to this generic EMPr document is proposed.

[redacted]

2. Project Description

The City of Cape Town is currently experiencing the worst drought since 1904 and the Premier of the Western Cape has declared the City and other areas in the Western Cape as a disaster area, as gazetted on 24 May 2017.

As a result of the drought, the city's dam levels have dropped substantially and the City of Cape Town needs to augment the city's potable water supply by using non-surface water sources, such as desalination sea water, surface water re-use and ground water, to produce between 100 to 500 mega litres of potable water per day (Ml/d).

Subsequently the DEA&DP issued a Directive in terms of Section 30A of the NEMA, 1998 in respect of the current emergency situations and to ensure adequate water supply within the jurisdiction of the City of Cape Town. The Section 30A directive shall remain in effect for the duration that the City of Cape Town is declared a disaster area as defined under Section 1 of the Disaster Management Act, 2002 (Act No. 57 of 2002).

Water Resilience Implementation Programme

The City has developed an initial Water Resilience Implementation Programme which is intended to deliver 500 Ml/day. Based on stakeholder input the, the City has finalised the Water Resilience Implementation Programme to include the following components:

- *Ground water abstraction;*
- *Waste water re-use;*
- *Marine based sea water desalination plants; and*
- *Land based sea water desalination plants.*

The objective of this Generic EMPr document is to guide the Contractor in implementing environmental best practise during the execution of the above mentioned projects and ensure that management measures are enforced during the pre-construction, construction, operational and decommissioning phases of the specific project to lessen potential environmental and social impacts.

3. Management

3.1. Leadership by Senior Management

Leadership by senior management is essential in developing a culture that values health, safety and environmental protection. Therefore, senior managers shall be required to demonstrate their commitment in their actions and decisions regarding environmental compliant conduct during the implementation of the Water Resilience project.
The City of Cape Town aims to create and sustain a culture within both the development; and all role players, to drive the commitment of zero harm to all people, to protect the environment and enhance the local communities.
To achieve this aim, personnel in leadership roles shall be suitably qualified and competent to provide leadership in health, safety and environmental management and will be required to:

- *know and understand the health, safety and environmental risks associated with their specific activities related to the implementation of the Water Resilience project, how these risks are managed, and the corrective actions to mitigate them;*
- *visibly demonstrate health, safety and environmental management leadership through measurable actions (e.g. communicating the Health, Safety and Environmental Management Policy and Standards, undertaking health, safety and environmental worksite visits, engaging personnel and Contractors, and leading or participating in health, safety and environmental activities e.g. audits, investigations and campaigns;*
- *motivate, coach and develop personnel in effective health, safety and environmental management by acting as a role model for compliance and reporting of issues and incidents, and encourage personnel to do the same; provide constructive health, safety and environmental feedback and celebrate success including health, safety and environmental management behaviours and performance in staffing decisions; and develop the team's health, safety and environmental management competencies;*
- *ensure that all relevant personnel have undertaken induction training prior to working on site;*
- *hold individuals accountable for their health, safety and environmental management behaviours and performance by insisting on compliance with applicable laws, regulations and development commitments; and*
- *apply consistent consequence management to those who breach Health, Safety and Environmental Standards and procedures whilst rewarding correct health, safety and environmental behaviours.*

3.2. Legislation, Permits, Standards and Guidelines

The Water Resilience project shall be implemented within the framework of the NEMA and other relevant environmentally related legislation, including national acts, provincialordinances, municipal by-laws and/or guideline documents as referenced in Table **2**. It is expected that the Contractor is conversant with all environmental legislation pertaining tothe project.

Table 2: List of Applicable Legislation and Guidelines

Legislation	Sections	Relates to
The Constitution Act (No 108 of 1996)	Chapter 2	Bill of Rights
	Section 24	Environmental rights
	Section 25	Rights in property
	Section 32	Administrative justice
	Section 33	Access to information
National Environmental Management Act (No 107 of 1998) (NEMA) as amended	Section 2	Defines the strategic environmental management goals, principles and objectives of the government. Applies through-out the Republic to the actions of all organs of state that may significantly affect the environment
	Section 24	Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.
	Section 28	Duty of care and remediation of environmental damage. The scheme owner has a general duty to care for the environment and to institute such measures as may be

Legislation	Sections	
		needed to demonstrate such care. The duty of care has been amended to include significant pollution or degradation that occurred before the commencement of NEMA that arises or is likely to arise at a different time from the actual activity that caused the contamination or that arises through an act or activity of a person that results in a change to pre-existing contamination. A criminal sanction may be imposed on the responsible person for failure to comply with the reporting requirements and obligations to address the Duty of Care.
	Section 30	Control of emergency incidents. Responsible person's duties relating to reporting and remediation actions regarding emergency incidents. A criminal sanction may be imposed on the responsible person for failure to comply with the reporting requirements and obligations to address any emergency incidents.
Environment Conservation Act (No 73 of 1989) (ECA) and regulations		The Act has been substantially repealed by NEMA. However, there are certain regulations under the Act which are still in operation such as the National Noise Control Regulations.
National Environmental Management: Waste Act (No 59 of 2008) (NEM: WA)	Section 16	General duty in respect of waste management
	Section 17	Reduction, re-use, recycling and recovery of waste
	Section 26	Prohibition of unauthorised disposal of waste.
	Section 27	Littering
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEM: BA)	Sections 65-69	These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species
	Sections 71 and 73	These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species.
National Environmental Management: Air Quality Act (No 39 of 2004) (NEM: AQA) and Regulations	Section 22A	Section 22A Consequences of unlawful conduct of Listed Activity
	Section 23	Controlled Emitters
	Section 32	Control of dust National Dust Control Regulations National Ambient Air Quality Standards
	Section 34	Control of noise
	Section 35	Control of offensive odours
	Schedule 2	Ambient air quality standards
	Section 21(1)b	GN 893. Listed Activities and Minimum Emission Standards
National Environmental Management: Integrated Coastal	Section 58	Duty to avoid causing adverse effects on coastal environment
	Section 60	Repair or removal of structures within coastal zone
	Section 63	Environmental authorisations for coastal activities
	Section 69	Discharge of effluent into coastal waters

Legislation	Sections	Relates to
Management Act (No 24 of 2008) (NEM: ICMA)	Section 70	Prohibition of incineration or dumping at sea
	Section 71	Dumping permits
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947) and regulations	Sections 3 - 10	Control of the use of registered pesticides, herbicides (weed killers) and fertilisers. Special precautions must be taken to prevent workers from being exposed to chemical substances in this regard. Workers handling these remedies must also be registered in terms of the Act.
Conservation of Agricultural Resources Act (No 43 of 1983) and regulations	Section 5, 6	Implementation of control measures for alien and invasive plant species.
National Heritage Resources Act (No 25 of 1999)	Section 34	No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.
	Section 35	No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site.
	Section 36	No person may, without a permit issued by the South African Heritage Resource Agency (SAHRA), or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority. "Grave" is widely defined in the Act to include the contents, headstone or other marker of such a place, and any other structure on or associated with such place.
	Section 38	This section provides for Heritage Impact Assessments (HIAs), which are not covered under the NEMA. The HIA will be approved by the authorising body of the provincial directorate of environmental affairs, which is required to take the provincial heritage resources authorities' comments into account prior to making a decision on the HIA.
Occupational Health and Safety Act (No 85 of 1993) and regulations	General Administration Regulations GN R1449 (Section 7)	General Administration Regulations GN R1449 (Section 7)
	Section 8	General duties of employers to their employees.
	Section 9	General duties of employers and self-employed persons to persons other than their employees.
		Asbestos Regulations
National Water Act (No 36 of 1998) and	Section 19	Prevention and remedying the effects of pollution of a water body.
regulations	Section 20	Control of emergency incidents
Legislation	Sections	Relates to
	Section 21	General principles for regulating water use
	Chapter 4	Use of water and licensing.

Hazardous Substances Act (No 15 of 1973) and regulations		Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances.
Minimum requirements for storage, handling and disposal of Hazardous Waste, DWAF guidelines, 1998	Section 10	Temporary hazardous waste storage: time, volume and other requirements.
National Road Traffic Act (No 93 of 1996) and regulations	Section 54	Transportation of dangerous goods.
Fencing Act (No 31 of 1963)	Section 17	Any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5 metres on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to the protection of flora.
National Veld and Forest Fires Act (No 101 of 1998)	Chapter 2	Promotes and regulates the formation of fire protection associations which aim to manage and coordinate fire protection and fire services in an area.
	Chapter 4, 5	Organizations are required to make and maintain firebreaks and fire-fighting equipment and personnel should a risk exist that a fire may start or spread from the premises.
Construction Regulations (GnR 84 of 2014)	Regulation 2 (1)	Provides for Regulations which are applicable to all persons involved in construction work.
DEA Integrated Environmental Management		DEA Integrated Environmental Management Information Series: Environmental Management Plans: DEA Guideline on compiling EMPs.
SANS 10103		The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication.
SANS 10128		Bunding of fuel storage tanks.
SANS 10232		Transportation of dangerous goods
SANS 10400		The application of the National Building Regulations
SANS 1072		Safe Handling of Pesticides
SANS 1089: Part 1		The petroleum industry: storage of petroleum products in aboveground bulk installations
SANS 10228		The identification and classification of dangerous substances and goods
SANS 10103		South African National Noise Standard
SANS 4866; SANS 7631: Part 1		Mechanical vibration and shock
SANS 10328		Methods for environmental noise impact assessments
SANS 1186		Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger".
SANS 10083		The measurement and assessment of occupational noise for hearing conservation purposes

Table 3: Applicable By-Laws

CoCT By-Laws	Section	Relates To
CoCT Air Quality Management Bylaw 2016 as amended	Section 4	**Duty of Care** This section calls upon everybody to exercise duty of care to prevent air pollution from occurring. Pollution must be mitigated to remedy air pollution. Failure to do this may empower the Council to take serious actions against that person.
	Section 8	**Declaration of Air Pollution Control Zone** The whole area within the jurisdiction of the Council is declared an air pollution control zone. The Council has power within the control zone to issue notices in the provincial gazette to prohibit and restrict activities that may pollute air.
	Chapter 5	**Smoke emissions from premises other than dwellings** Dark smoke may not be emitted for an aggregate period exceeding three minutes during a continuous period of 30 minutes. Installation, alteration, extension or replacing of fuel burning equipment must be authorised by the Council. Operation of fuel burning equipment without the Council's authorisation is an offence. The owner or occupier of premises may be required to install at own costs, the obscuration measuring equipment. Records and monitoring results must be kept and maintained.
	Chapter 7	**Emissions caused by open burning** Open burning of any material without a written authorisation from the Council is an offence.
	Chapter 8	**Emissions from compressed ignition powered vehicles** Vehicles using compressed ignition power and emitting dark smoke may not be used.
	Chapter 9	**Emissions that cause a nuisance** Emissions that cause a nuisance are an offence. A compliance notice may be served on any person who is or is likely to cause air pollution to abate the nuisance, prevent it and comply with conditions set in the notice.
CoCT Water By-law, 18 February 2011	Section 8	**Duties of the public** All members of the public, upon becoming aware of any emergency or situation that may give rise to wastage of water or water pollution must, immediately inform the Director: Water.
	Section 12	**Unauthorised use of water** No person may use water from the water supply system

CoCT By-Laws	Section	Relates To
		without an agreement with the municipality and only through a communication pipe and metered water supply point installed by the municipality.
	Section 36	**Water restrictions** Whenever there is scarcity of water available for distribution and supply to consumers, or for any other good cause prohibit or restrict the consumption of water in the whole or part of the City; in general or for specified purposes; and in a specified manner.
	Section 37	**Wastage of water** No person may cause or permit the wastage of water such as permitting leaking pipes or insufficient use of water.
	Section 38	**Water conservation and demand management** All consumers of water must comply with good water conservation and demand management practices.
	Section 54	**Prevention of pollution of water** An occupier of premises must prevent the entry of any substance which may be a danger to health or adversely affect the potability of water into the water supply system or any part of the water installation on his/her property.
	Section 58	**Wells, wellpoints, boreholes and excavations** An owner of premises on which there is a well, wellpoint, borehole or any other excavation must ensure that it does not create a health nuisance or is filled in a way or with material which may cause an adjacent well, borehole or underground source of water to become polluted.
	Section 59	**Supply of non-potable water by the municipality** Non-potable water supplied by the municipality may not be used for domestic purposes or any other purpose which may give rise to a health hazard.
	Section 61	**Warning notices** Sources of non-potable water must be clearly marked with a weatherproof notice.
Community Fire Safety By-Laws, as amended	Section 26	Combustible waste and refuse
	Section 34	Combustible material fire hazards
	Section 37	Storage and use of flammables
	Section 48	Reporting of accidents
CoCT Environmental Health By-Laws, LA13333, 30 June		– Land open to the public may not be used for the purpose of storing and stacking or for keeping any material likely to cause a health nuisance. – No premises may be allowed to be overgrown with

CoCT By-Laws	Section	Relates To

2003		bush, weeds or grass to such an extent that it may be used as a shelter by vagrants, wild animals or vermin which may threaten public health or safety. – The sanitation system on any premises may not be of such nature or condition that it may cause a health nuisance. – No person may commit any act which may cause a public health nuisance. – No person shall occupy any premises for habitable purposes so as to be a health nuisance. – No factory or trade premises may cause or give rise to smells that will cause a health nuisance. – The occupier of premises must take all possible measures to prevent the occurrence of mosquitoes, flies, fleas, bugs, cockroaches or other vermin or pests. – Filth, rubbish, refuse, manure or any material likely to be a health nuisance may not be kept or deposited on any premises. – Any person who fails to comply with or contravenes any provision of Section 1 of these by-laws will be guilty of an offence and may be liable to a fine. – Medical waste must be handled and stored in a safe manner that poses no threat to human health or the environment. – Any person convicted of an offence under these bylaws shall be liable to a penalty.
CoCT Stormwater Management By-Laws , LA 31420, 23 September 2005	Section 3	**Prohibited discharges** No person may discharge anything but stormwater into the storm water system without written consent from the Council.
	Section 4	**Protection of storm water system** No person may commit any act which may damage, endanger or destroy the stormwater system or interfere with the operation thereof or contaminate or pollute the water therein without written consent from the Council.
	Section 5	**Prevention of flood risk** No person may undertake any activity which may cause an increase in flood levels or create a potential flood risk without written consent from the Council.
	Section 6	**Studies and assessments** The City may impose terms: for the establishment of flood lines; impact assessment; and environmental impact studies.
	Section 7	**Water pollution incidents** Should a stormwater pollution incident occur, the owner of the property on which the incident took place or the person responsible for the incident must inform the Council of the incident immediately and take all reasonable measures to minimise the effects of the pollution.

COCT By-Laws	Section	Related To
	Section 8	**Storm water systems on private land** No owner of property on which a private stormwater system is located may carry out an activity which may cause the system not to function properly. The owner must also keep such stormwater system functioning properly.
	Section 11	**Offences and penalties** Any person who contravenes or fails to comply with any provision of these by-laws will be guilty of an offence and may be liable, upon conviction, to a penalty.
CoCT Public Places and Nuisances By-Laws	Section 2	**Prohibited behaviour** No person may intentionally block or interfere with the safe and free passage of a pedestrian or vehicle.
	Section 6	**Trees causing an interference or obstruction** The City may give notice to the owner or occupier of any property on which a tree or other growth which interferes with overhead wires or is a source of danger or nuisance to persons using a public road to prune or remove the tree or growth.
	Section 8	**Goods, building materials, motor vehicle wrecks and dangerous objects** No person may cause any broken glass or other potentially dangerous objects to be placed in a public place.
	Section 23	**Offences and penalties** Any person who contravenes or fails to comply with any provision of these by-laws will be guilty of an offence and may be liable, upon conviction, to a fine.
CoCT Wastewater and Industrial Effluent By-Laws GN 6378, 1 September 2006	Section 2	**Duties of owners of properties** Owners of premises must construct their own private sewer installations on their premises.
	Section 3	**Protection of municipal sewers** No person may interfere with the municipal sewer system in any way or discharge into the system any substance other than sewage without the approval of the council.
CoCT Integrated Waste Management By-Law, 2009	Section 4	**Obligations of Waste Generators** A waste generator must: – "avoid the generation of waste or where it cannot be avoided minimise the toxicity and amounts of waste generated"; – "re-use, recycle or recover waste where possible"; – "manage waste so that it does not endanger health or the environment or create a nuisance"; – "maintain suitable cleanliness and hygiene standards on their premises as required by the City's

CoCT By-Laws	Section	Relates To
		Environmental Health By-law"; – "conclude a contract with the City, its service provider or an accredited service provider, as the case may be, for the storage and collection of waste". A waste generator generating industrial waste shall submit an integrated waste management plan to the City and comply with the terms and conditions set out by the City for the generation, minimisation, storage, recycling, collection and disposal of such waste. Any person who directly or indirectly generates building waste or the owner of the property on which such building waste is generated shall not store such waste in containers provided by the City for residential waste and shall remove and dispose of it at a licensed crushing plant or landfill site or any other licensed building waste disposal facility. The waste generator or the owner of the property on which waste is generated who deposits or stores waste on property of the City may be fined for failure to have or produce a permit for such deposit or storage.
	Section 7	**Priority Waste** Where special measures are required for management of waste because it poses a significant threat to health or the environment, it is not biodegradable, contains or could foster pathogens or communicable diseases or has been declared a priority waste in terms of other applicable legislation it can be prioritised according to this By-law.
	Section 12	**Storage and Transportation of Waste** Any person who stores or transports waste must ensure that: – "suitable measures are in place to prevent accidental spillage or leakage"; – "the waste cannot be blown away"; – "nuisances such as odour, visual impacts do not arise"; and – "pollution of the environment and harm to health are prevented".
		Prohibition of Unauthorised Disposal of Waste No person may: – Dispose of waste in a manner likely to cause pollution or have a negative impact on the environment or to be harmful to health; – Dispose of waste other than in accordance with this By-law or National and Provincial legislation; – Burn waste, especially hazardous waste except in approved incinerators; – Deal with waste in a manner that causes dust, spillage or litter.

A list of Authorities and their contact details (within the Cape Town and Western Cape area) which govern the above mentioned legislation and By-laws is provided in **Annexure 2.**

3.2. Staffing

3.3.1 Organisational chart of City of Cape Town, Employers Agent, Contractor Roles and responsibilities

3.3.2 Institutional and Functional Arrangements

The institutional and functional arrangements detailed in the schematic below (Figure 1) indicate the role players and institutional linkages involved in the implementation of the Water Resilience Project. The arrangement is dictated by the contract with the City of Cape Town.

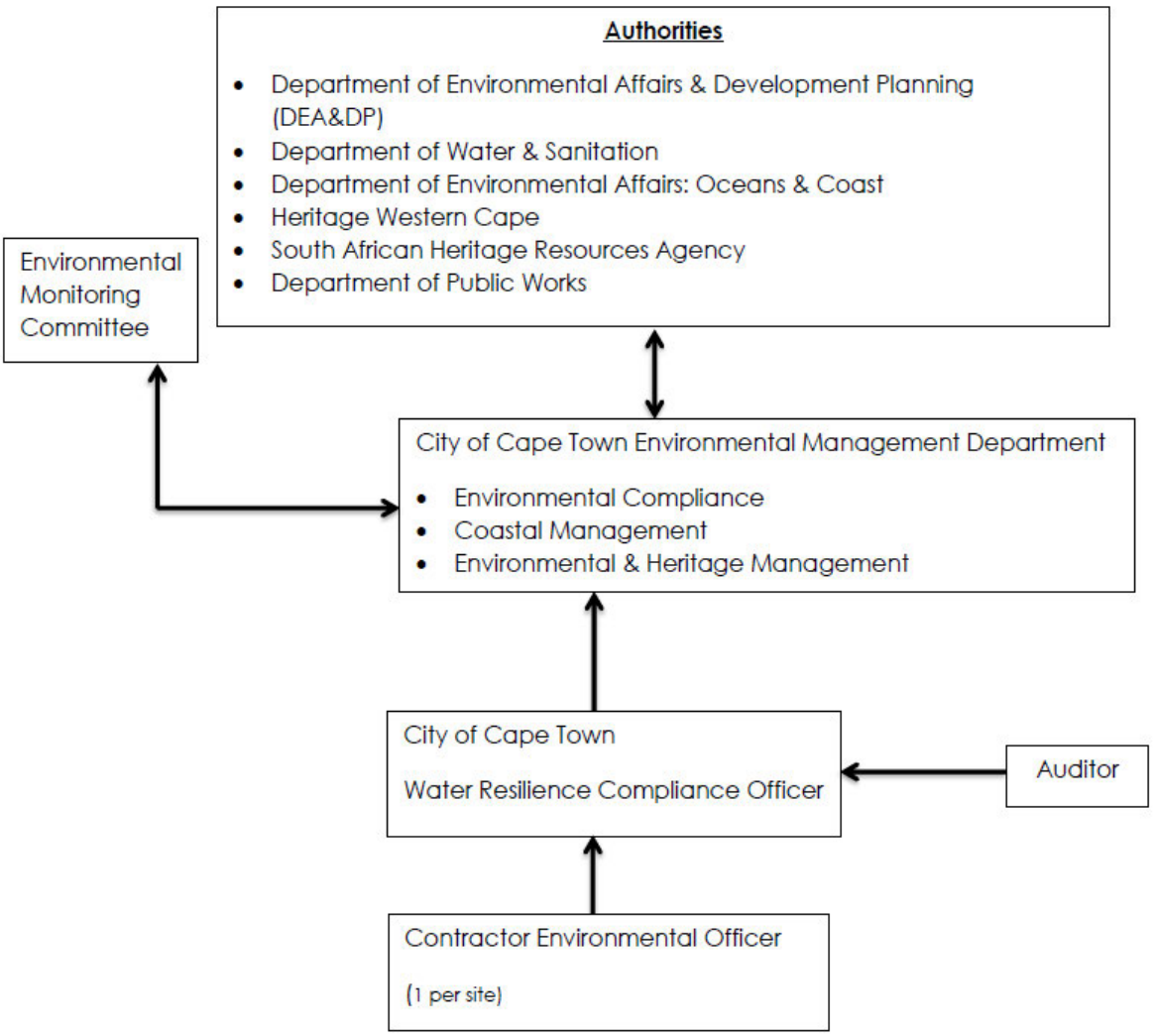


Figure 1: Environmental Staffing Arrangement for the Water Resilience Projects

3.3.3 Roles and Responsibilities

3.3.3.1 Authorities

The relevant Authorities overseeing the correct implementation of the Water Resilience Project would comprise of the following:

- *Department of Environmental Affairs & Development (DEA&DP)*
- *Department of Environmental Affairs: Oceans & Coast*
- *Department of Water & Sanitation*
- *Heritage Western Cape*
- *South African Heritage Resources Agency*
- *Department of Public Works*

3.3.3.2 Environmental Monitoring Committee

The Environmental Monitoring Committee (EMC) will consist of representatives from the above mentioned State Departments and the City of Cape Town. The objective of the EMC would be to monitor the Contractor and Supplier's environmental compliance with permit conditions and the adequate implementation of this EMPr document during the construction, operational and decommissioning phases of the specific Water Resilience

Project.

3.3.3.3 City of Cape Town

The City of Cape Town (comprising the Environmental Compliance, Coastal Management and Environment & Heritage Management sections of the Environmental Management Department) shall be responsible for overall environmental control during all development phases of the Water Resilience Project.

Consequently the City of Cape Town's responsibilities shall include:

- *consultation with the internal departments regarding changes in the development that results in significant environmental impacts;*
- *ensuring appropriate environmental resources are assigned to each development phase;*
- *being fully familiar with the EMPr;*
- *forwarding audit reports (prepared by the Environmental Auditor) to the Competent Authority (namely DEA&DP);*
- *notifying the Competent Authority of changes the development that results in significant environmental impacts;*
- *notifying the Competent Authority within 30 days of change of ownership or as the Environmental Authorization/Permit requirement;*
- *notifying the Competent Authority of any change of address of the owner;*
- *the overall implementation of the EMPr;*
- *implementing corrective and preventive actions, where required;*
- *preventing pollution and actions that will harm or may cause harm to the environment;*
- *notifying the Competent Authority within 30 days that construction activity willcommence,*
- *notifying the Competent Authority 14 days, prior to commencement of the operational phase.*

3.3.3.4 Water Resilience Environmental Compliance Officer

The Water Resilience Environmental Compliance Officer (WRECO) will report to the City of Cape Town and is responsible for the day-to-day management of environmental performance on the development. The WRECO is ultimately accountable for the implementation of the requirements contained within this EMPr.

The WRECO is responsible for:

- *assisting in the preparation of the EMPr;*
- *instructing development personnel on how to comply with environmental policy and procedures;*
- *ensuring the Contractor's Environmental Officer is aware of and complies with the environmental obligations as detailed within this EMPr;*
- *ensuring that Employees, Contractors and Sub-contractors are aware of, and comply with, the conditions of approval and requirements of the EMPr relevant to their respective activities;*
- *arranging periodic monitoring and inspection by suitably trained personnel;*
- *regular (weekly) site inspections and the active pursuit of opportunities to enhance environmental outcomes;*
- *tracking and reporting environmental performance;*
- *tracking and compliance against the conditions of approval for the scope of works being performed;*
- *monthly evaluation of how effectively environmental controls are performing;*
- *initiating remedial measures when environmental deficiencies are observed or in response to grievances;*
- *restriction of construction activities affected by an environmental deficiency until remedial action has been taken;*
- *maintaining environmental performance records;*
- *compiling reports for and participating in the Water Resilience Environmental Monitoring Committee (EMC).*
- *engaging consultants where required to provide support in relation to implementing the EMPr; and*
- *investigating any incidents or grievance and ensuring necessary corrective action is implemented (in consultation with City of Cape Town for significant incidents / grievances).*
- *decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the WRECO*.

3.3.3.5 Auditor

An Environmental Auditor is an unaffiliated, independent party who shall undertake environmental compliance audits at prescribed timeframes for the duration of the construction, operational and decommissioning activities related to the Water Resilience project.
The Environmental Auditor shall present environmental audit reports in compliance with Regulation 34 of the EIA Regulations, 2014 (as amended).

3.3.3.6 Contractor

The Contractor is the successful tenderer, appointed by the City of Cape Town to undertake the Works as specified in the Contract. It is the responsibility of the Contractor to do whatever is necessary from his side to ensure that he or an appointed advisor is well versed in environmental studies so that he may accurately and efficiently carry out the requirements of the Environmental Specification.
The Contractor shall be liable for any and all remedial work required in terms of the Environmental Specification, resulting from his environmental negligence, mismanagement and / or non-conformance.
The Contractor will:

- *be responsible for the construction related activities for the duration of the contract (so will Sub-Contractors and contract workers);*
- *be responsible for ensuring work conducted is done within the framework of the EMPr and applicable legislation;*
- *ensure that all Sub-Contractors have a copy of and are fully conversant with the contents of the EMPr;*
- *be required to provide Method Statements setting out, in detail, how management actions contained in the EMPr will be implemented;*
- *be required to monitor construction related impacts upon the surrounding environment; and*
- *appoint an Environmental Officer (EO) and Community Liaison Officer (CLO).*

3.3.3.7 Contractor's Environmental Officer

The Contractor's Environmental Officer (EO) shall be responsible for managing the day-today on-site implementation of the Performance Specifications contained within this EMPr document, and for the compilation of regular Monitoring Reports. In addition, the Environmental Officer shall act as liaison and advisor on all environmental and related issues, seek advice from the WRECO when necessary and ensure that any complaints received from the public are duly processed and addressed and that conflicts are resolved in an acceptable manner.
The Contractor's Environmental Officer shall:

- *be well versed in environmental studies;*
- *understand the relevant environmental legislation and processes;*
- *understand the hierarchy of Environmental Compliance Reporting, and the implications of non-conformance;*
- *know the background of the development and understand the implementation programme; and*
- *be able to resolve conflicts and make recommendations on site in terms of the requirements of the Performance Specifications.*

3.4. Communications & Liaison

3.4.1 Contractual

The communication protocol shall be determined by contractual requirements. Such protocol shall be agreed to at the inception meeting where a responsibility assignment matrix (RAM) will be developed detailing the main communications or actions and the authorized staff responsibilities for initiation, preparation, review, approval and issue.

3.4.2 Local Government & Public Liaison

The Contractor shall direct all communication via the City of Cape Town; or as directed by the Employers Agent.

3.4.3 After hours work

The Project/Site Manager and the City of Cape Town must develop a mechanism to inform the public of construction activities which will proceed after 'normal' working hours.
It is expected that such a request from a contractor must be submitted to the Project/Site Manager and City of Cape Town and approved before the commencement of the afterhours construction activities. Where construction is authorised by means of a building plan approved in terms of the National Building Regulations and Building Standards Act, a permit to build after hours can be issued by the City's Building Control Officer. Where no building plan is required, the City Health Environmental Health Officer can authorise a noise exemption in terms of the Western Cape Noise Control Regulations.

3.5. Identification of development Aspects, Impacts and Risk Assessment

This EMPr provides a system and set of procedures to ensure that the City of Cape Town establishes and maintains sound and effective controls to manage potential environmental impacts throughout the implementation of the Emergency Water Resilience project, and wherever practicable, realise opportunities for enhanced environmental outcomes.

Therefore, for environmental management to be effective, it needs to be proactive rather than reactive. The Contractor shall identify environmental risk(s) as part of its health and safety assessment; and method statement compilation.

The assessment shall identify the significance of environmental risks and potential impact using the following four-step approach:
i. identify each **element** with the potential to interact with the environment (e.g. characteristics and sensitivity of the environment);
ii. determine the potential **impacts** resulting from the activity including their duration, intensity and degree to which they can be **mitigated**;
iii. rank **risks** based on the likelihood of adverse impacts and the severity of the consequence, using the 'worst case scenario', as defined by the 'likelihood and consequence probability' risk matrix ; and
iv. identify the **level of mitigation** required for each environmental aspect (e.g. the higher the potential severity of adverse environmental effects and the greater the consequence of those unmanaged effects the higher the degree of environmental management required).

Typical aspects include: aesthetics, dust, earthworks, erosion, flora and fauna, fire, hazardous substances, heritage, land owner liaison, noise, rehabilitation, social, soil, sustainability, traffic, training, waste and water.

Please refer to Annexure 3 - Typical Aspects and Impacts Table associated with the Emergency Water Resilience project.

3.6. Emergency Preparedness and Incident Management

'Incidents' are defined as unplanned events with undesirable consequences. The consequences of such incidents may result in human injury, environmental damage or asset loss. 'Near misses' are extraordinary events that could have reasonably resulted in an

incident.
Using an Impact/Aspect Risk register, the Contractor shall identify the types of environmental incidents that are likely to occur on site and ensure measures are put in place to prevent or mitigate the effects of such incidents.
Consequently the Contractor shall submit an Emergency Preparedness and Incident Management Plan for approval to the WRECO prior to the commencement of construction related activities. This shall be reviewed and updated annually.
The Emergency Preparedness and Incident Management Plan shall ensure that:
- *construction employees are adequately trained in terms of incidents and emergency situations;*
- *details of the organisation (manpower) and responsibilities, accountability and liability of personnel are recorded;*
- *a list of key personnel and contact numbers are provided;*
- *details of emergency services (e.g. the fire department, spill clean-up services) are listed;*
- *internal and external communication plans, including prescribed reporting procedures are provided for;*
- *actions to be taken in the event of different types of emergencies are described;*
- *incident recording, progress reporting and remediation measures to be implemented are prescribed;*
- *information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release are described; and;*
- *significant risks using the aspect & impact register are identified and addressed.*

All incidents that occur during construction related activities shall be recorded and managed in accordance with the Contractors Emergency Preparedness and Incident Management Plan. All environmental incidents and near misses shall be reported to the WRECO, particularly:
- *any loss of containment incidents or releases of liquids, solids, or gas;*
- *any dangerous goods or hazardous substance spills (any volume or weight);*
- *complaints by regulatory authorities;*
- *regulatory breaches – directives, fines, breaches of authorisation / licence conditions;*
- *stakeholder complaints;*
- *all incidents of third party property damage or loss; and*
- *any loss or damage to flora and fauna of significance that has not been previously approved.*

The WRECO shall then report these incidents to the City of Cape Town who in turn shall notify any relevant government authority, if required.

3.6.1 Incident Reporting

Once the incident has been stabilised and initial notifications have been issued to the relevant parties, a full incident investigation shall be required with detailed corrective and preventative measures. A formal report shall be submitted within seven days to the WRECO, including all remediation measures undertaken to repair any damage caused and to prevent the incident from re-occurring.
Information recorded for all incidents shall include:
- *nature of incident;*
- *damages, injuries or fatalities sustained and the parties involved;*
- *any risks such incident poses;*
- *toxicity of the substances involved;*
- *steps taken to avoid or minimise the effects of the incident and any future incidents / re-occurrence; and*
- *clean-up procedures, remedial actions and assessment of immediate and long*

term effects.

3.6.2 Reportable Environmental Incidents

Reportable incidents are those:

- *that cause substantial damage to the environment, or*
- *that have significant potential impact on the environment.*

These can include:

- *any spill to a watercourse and marine environment, including drains as defined under relevant legislation;*
- *loss of hydrocarbons or chemicals greater than 20L in volume to land;*
- *spills or releases, including soil movement, which has moved offsite and has a negative impact;*
- *death or injury of livestock, wildlife or fauna of any kind caused by the construction activities;*
- *interference with any previously undetected sites of cultural significance without obtaining the appropriate approval;*
- *transfer of known alien invasive vegetation and diseases as a result of construction related activities;*
- *fires;*
- *traffic incident;*
- *damage to property outside the development footprint;*
- *unresolved landowner issues whereby agreement cannot be reached;*
- *an incident that is likely to cause regional or widespread negative publicity;*
- *serious environmental damage or imminent risk of serious environmental damage;*
- *significant environmental degradation, pollution or non-conformance of this EMPr or any other legislative requirement.*
- *Exceedances of prescribed dust fall standards where dust fall monitoring is required.*

3.6.3 Emergency Response Procedure

Appropriate risk management and the prevention of emergency situations is fundamental to all construction related activities and the implementation of the EMPr is aimed at anticipating, preventing and mitigating foreseeable risks associated with the project. Part of the risk management strategy is to ensure that in the event of an emergency situation, plans have been developed so that pre-planned response, notification and recovery activities can be initiated.

The Contractor's Emergency Preparedness and Incident Management Plan shall establish the structures of emergency teams, the communication processes and the resources, which may be required for managing the emergency. The Emergency Preparedness and Incident Management Plan shall therefore comprise the following:

- *general responsibilities;*
- *incident management and notification structure;*
- *event classification and notification; and*
- *resources and training requirements.*

The objectives of the Emergency Preparedness and Incident Management Plan shall be to:

- *decrease the level of risk to life, property and the environment;*
- *describe how an emergency response is initiated and how the emergency teams are activated;*
- *specify command, control and communication arrangements between the City of Cape Town, WRECO, Contractor, external response and government authorities;*
- *identify the roles and responsibilities of all personnel likely to be at the location of the emergency or involved in the response;*
- *identify emergency response equipment required;*
- *identify training requirements for response personnel; and*
- *provide the basis for training of all people who could be involved in an emergency.*

3.6.4 Contact Information

The following key incident reporting numbers relevant to construction related activities shall be included within the Emergency Preparedness and Incident Management Plan:

- *City of Cape Town Representative;*
- *WRECO;*
- *Engineers Representative;*
- *Construction Contractor;*
- *Construction Manager;*
- *Environment Control Officer;*
- *Health and Safety Manager;*
- *Environmental Officer;*
- *Community Liaison Officer;*
- *24 hour Grievance Contact;*
- *Fire Department;*
- *Hospitals / clinics;*
- *South African Police Services;*
- *Air Quality Officer;*
- *Disaster Management;*

Director: Development Management (Region 1): Dep*artment of Environmental Affairs and Development Planning;*

- *Department of Water and Sanitation;*
- *City of Cape Town*
  - *Environmental Health Department;*
  - *Water Demand Management;*
  - *Environmental and Heritage Management*

3.7. Method Statements

It is a statutory requirement to ensure the wellbeing of employees and of the environment. Therefore, the Contractor shall provide method statements to the Employers Agent for approval prior to the commencement of construction related activities associated with the Emergency Water Resilience project.

The Contractor shall be required to undertake various tasks / activities in order to fulfil the conditions as stipulated in the contract. Therefore, in order for the Employers Agent to be satisfied that the Contractor has a comprehensive understanding of the requirements of the task / activity, the Contractor shall submit method statements to the Employers Agent for approval prior to the commencement of the activity. The method statement is a dynamic document integrating all facets of the activity, thereby giving the reader a comprehensive understanding of the actions associated with implementing the activity.

The method statement shall be submitted to the Employers Agent for approval at the agreed timeframe prior to the commencement of the activity. During this period, the Employers Agent shall consult with other members of the project management team to ascertain the Contractors knowledge and understanding of the requirements. Should the Employers Agent ascertain that the detail of the method statement is not sufficient, the method statement shall be returned to the Contractor for review and re-submission.

Upon acceptance of the method statement, both the Employers Agent and the Contractor shall sign the method statement denoting mutual agreement that the contents thereof meet the minimum requirements to successfully complete the activity. By signing the method statement, the Contractor commits to working in accordance with the agreed method.

Due to the method statement being a dynamic document, regular amendments may be required to ensure the implementation thereof corresponds with how the task / activity is actually being implemented; and in accordance with potentially changing requirements.

The following method statements, where applicable, are considered typical for every development and shall thus be submitted to the WRECO prior to commencement of construction related activities:

- *Environmental awareness training*
- *Site Development Plan / Layout*
- *Vegetation clearing and Rehabilitation*
- *Erosion Control*
- *Marine (including beach) environment activity management, including anchors, tidal pool dredging.*
- *Pipeline routes including location, construction and stabilisation, decommissioning and rehabilitation*
- *Concrete management*
- *Dust management*
- *Fire Control and Hazardous Materials Management*
- *Settling Ponds and Sumps.*
- *Solid & Liquid Waste Management.*
- *Traffic management including access roads.*
- *Water management.*
- *Environmental Monitoring*
- *Heritage*
- *Noise*
- *Rehabilitation*
- *Earthworks*
- *Training*
- *Wash Areas*
- *Site Closure*

Please refer to Annexure 4 – Method Statement for a complete list of potential method statements.

Method Statements may also be reviewed by the City of Cape Town Environmental Management Department: Environment and Heritage Management Branch. The City of Cape Town will submit the relevant Method Statements to the DEA&DP for approval as required in the Section 30A Directive. Construction associated with method statements which must be approved by DEA&DP may not commence until such approval has been received in writing.

3.8. Planning & Design

3.8.1 Planning

Planning is typically undertaken by the City of Cape Town at development outset and sets out prescriptive measures to achieve desired results. These measures are typically conceptual at this stage and become more refined with time.

The City of Cape Town typically calls for detailed (engineering). This process may contribute to the determination of feasibility, but does not do so exclusively.

3.9. Implementation of Controls & Mitigation Measures

The City of Cape Town has adopted an outcomes based approach for this Generic EMPr as it believes there are various ways to achieve good environmental outcomes. This approach allows the setting of outcomes based conditions, against which the development is to achieve compliance, without prescribing how that outcome is to be achieved.

3.9.1 Why outcomes based conditions?

According to the 'Outcomes-based conditions policy—Draft, Commonwealth of Australia July 2015', it provides "Flexibility" "*in the methods used to deliver those outcomes is both necessary and desirable to:*

focus the project's resources on achieving outcomes rather than complying with

prescriptive requirements;

- *encourage innovation in environmental management strategies;*
- *enhance transparency of outcomes being sought;*
- *focus regulatory effort on verifying that the development is achieving environmental compliance;*
- *build public trust and confidence in environmental regulation;*
- *acknowledge good environmental and regulatory compliance records to foster behaviour changes;*
- *streamline assessment and approval processes; and*
- *improves knowledge and data about matters of environmental significance".*

Outcomes-based conditions do not mean that actions with unacceptable impacts will be approved. Outcomes required as conditions of approval shall be achievable and measurable to provide certainty for the City of Cape Town, the Competent Authority and the community.
Outcomes based conditions allow the Contractor to innovate; draw on company expertise; and consider site specific conditions when planning how task / activity specific methods shall be undertaken in order to achieve the outcome. Consequently greater emphasis shall be upon WRECO to review and approve Contractor's method statements;.

3.9.2 Outcomes

The outcomes contained within Section 6 (Performance Specification tables) prescribe the "what" that shall be achieved; and shall therefore drive the auditing process.
These outcomes shall be auditable.

3.9.3 Performance Indicators & Targets

The Performance Indicators contained within **Section 6 (Performance Specification table)** prescribe specific targets which the Contractor shall attain. The Contractor shall be cognisant of both the outcomes and targets when compiling method statements.
Complying with the Environmental Specification Targets shall ensure compliance to the EMPr Outcomes. These targets shall be auditable.

3.9.4 Mitigation measures

The Risks / Impacts contained within **Section 6 (Environmental Management table)** may be managed by the proposed mitigation measures proffered, and are thus not auditable. These mitigation measures shall merely guide the Contractor towards achieving the prescribed outcomes as contained within Section 7 Performance Specifications Environmental Management.
The Contractor's attention however shall be drawn to their responsibility to provide appropriate management measures to adequately mitigate any potential risk / impact. These mitigation measures shall not be auditable.

3.9.5 Failure to Comply

Should the Contractor fail to comply with achieving the prescribed targets, the WRECO shall instruct the Contractor to do so. Failure to comply or adequately rectify the non conformance shall result in the WRECO retaining five percent (5%) of the payment certificate amount until such rectification has been achieved, where after payment shall be effected.
Non-compliance by the Contractor is the sole responsibility of the Contractor and the City of Cape Town shall not be jointly & severally liable.

3.10. Corrective & Preventive Measures (follow-up monitoring and audits)

The Contractor shall initiate a process to correct and prevent future occurrences occurring.

Table 4: Correction Action

Corrective action(s)	Action	Timeframes	Responsibilities
	Initiate corrective and preventative measures	Immediate	City of Cape Town, Employers Agent (WRECO) / and
	Control source and or reduce impact upon the environment / community	Within 1 day of occurrence being identified	
	Manage incident / accident / grievance in accordance to approved procedure.	Within 3 days of occurrence being identified	
	Monitor to verify no further occurrence takes place.	Within 5 days of occurrence being identified	
	Re-train all staff to prevent future re-occurrence.	Within 7 days of occurrence being identified	

3.11. Environmental Awareness Training

Environmental responsibility requirements for all role players are contained within the respective Position Descriptions. Consequently all recruitment shall be undertaken with the aim of engaging personnel with the appropriate levels of competency and experience.

Furthermore, all personnel shall receive environmental awareness training of the type and level appropriate to their role and responsibility.

The Contractor's environmental awareness training programmes shall be targeted at the two levels of employment: management and labour.

The Contractor's Environmental Officer shall manage and implement all the requirements associated with presenting the training programme before the Commencement Date. The Contractor's Environmental Officer shall be required to initiate Environmental Awareness Training within 7 days of construction commencing. Staff shall be trained prior to commencement of working. Proof of training shall be submitted to the WRECO.

It is a requirement of this contract that environmental awareness training courses are run for all personnel on site. All employees who spend more than one (1) day a week or four days in a month on site must attend the training. Two (2) types of courses shall be run: one for the Contractor and Subcontractors management and one for all site staff and labourers. Courses shall be run during normal working hours at a suitable venue provided by the Contractor. All attendees shall remain for the duration of the course and sign an attendance register that clearly indicates participant's names on completion, a copy of which shall be forwarded to the WRECO. The size of each session shall be limited to the numbers shown in the Project Specification and the Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto site. A Method Statement with respect to the organization of these courses shall be submitted. Conduct revised training as and when required.

Notwithstanding the specific provision of this clause it is incumbent upon the Contractor's Environmental Officer to convey the sentiments of the EMPr to all personnel involved with the works.

i. Training course for management and foremen: The environmental awareness training course for management shall include all management and foremen, and shall be presented by the Contractor's Environmental Officer or his designated representative for duration of approximately half an -hour. The initial course shall be undertaken not more than five (5) days prior to commencement of work on site.
ii. Training course for site staff and labourers: The environmental awareness training shall be presented by the Contractor's Environmental Officer with material provided by the WRECO. The course shall run mot more than five (5) days after the commencement of work on site with sufficient sessions to accommodate all ava*ila*ble personnel.

The Contractor may be requested to provide additional training (in the trainee's first language) on-site regarding environmental aspects that are unclear to the construction personnel. A translator may be required and requested to assist in this additional training. The cost for the translator will be borne by the Contractor. The Contractor shall implement the training programme at own cost.

All staff shall:
- *be inducted prior to commencing work;*
- *receive task based / skills training;*
- *receive weekly environmental toolbox talks;*
- *undergo six monthly refresher (environmental) training; and*
- *be retrained as per corrective action outcome(s).*

The Contractor shall keep records of personnel experience, qualifications and training undertaken, including inductions, in a training register. The training register shall include the following details:
- *who was trained;*
- *when the training took place;*
- *name of the trainer;*
- *a general description of the content of the training; and*
- *effectiveness of training programmes.*

3.12. Grievance procedure (Social)

A grievance procedure is a management tool used to prescribe management mechanisms or methods to address grievances arising from affected stakeholders on a development.

The Contractor shall adhere to the grievance management procedures as agreed with the WRECO.

3.13. Resource Allocations

Financial implications for items and activities prescribed in the EMPr shall be recognised by the Contractor (for the construction phase) and provision for these costs shall be made. Such costs can include (but may not be limited to) mitigation actions, environmental awareness training, monitoring and auditing requirements and measures for rectification and rehabilitation, management of archaeological / heritage findings unearthed during construction, including any equipment or specialists required for these items.

4. Monitoring

4.1. Monitoring Approach
Monitoring shall be carried out by the respective WRECO and Contractor.

4.2. Inspections
Site inspections shall be carried out on a daily basis by the Contractor's Environmental Officer to ensure measures implemented are effective in mitigating impacts.

The WRECO shall undertake weekly site inspections in order to provide an account of environmental compliance with the EMPr during construction, operational and the decommissioning phase.

4.3. Receptor monitoring
The Contractors Environmental Officer shall undertake receptor monitoring to verify that construction related activities are not negatively impacting upon the environment; health of employees and members of the surrounding community; nor local economy.

4.4. Compliance monitoring
The Contractors Environmental Officer or professional service provider shall undertake compliance monitoring to verify construction related activities are not exceeding prescribed thresholds.

The Contractor shall submit environmental compliance monitoring data to the WRECO on a monthly basis.

4.5. Auditing (internal and external)
The WRECO (acting as the Employer's Agent) shall undertake monthly internal audits to verify the measures implemented by the Contractor to suitably mitigate identified risks / impacts.

The Environmental Auditor shall undertake external audits at the frequency prescribed by the relevant Competent Authority.

4.6. Time Programme
All monitoring shall be undertaken as per the monitoring programmes, where prescribed either by law or by the WRECO.

4.7. Quality control system (for monitoring)
Quality Assurance and Quality Control (QA/QC) addresses both the management of construction related activities and the "development" being constructed. QA includes the documented processes required to ensure that the development satisfies the needs for which it was undertaken; and will meet the development specifications and data quality outcomes. It also includes all activities of the overall management function that are required in meeting the outcomes of the development including planning, QC elements and any scope changes. The overall QA/QC program of the development shall be the foundation upon which the City of Cape Town can assure itself that the work is being, and has been adequately performed.

The Contractor's Environmental Officer (shall in consultation with the WRECO) develop and maintain an integrated management system (IMS) made up of both a quality management system (QMS) based on ISO 9001; and an environmental management

system based on ISO 14001.

All environmental / social monitoring shall follow accepted monitoring protocols / norms and standards; and shall be informed by the outcomes of any baseline studies.
All analysis of samples shall be done at a SANAS 17025 accredited laboratory; unless specified in the Contractors method statement and approved by the WRECO.

Furthermore, the Contractor shall submit detailed terms of reference for the appointment of a professional service provider (PSP) to undertake the environmental monitoring programme for water and sediment quality, dust and noise monitoring. The PSP shall meet minimum professional requirements for:

- *qualifications;*
- *professional registration;*
- *experience and track record;*
- *demonstrated proficiency in use of relevant monitoring and sampling equipment;*
- *equipment requirements and tolerances for detection limits;*
- *reporting and analysis; and*
- *confirmation of laboratory accreditation, capacity, delivery and performance within reasonable timeframes.*

5. Assurance

5.1. Reporting

Reporting is the process of measuring actual performance or how well the mitigation measures have been implemented, including the format, timing and responsibility for reporting.

5.1.1. General Reporting

Reporting by the various role players shall be undertaken in accordance with Table 5 below.

Table 5: Periodic Reporting

Report	Timing	Prepared by	Reviewed by
Weekly	On the first day of the following week	Environmental Officer	WRECO (acting as the Employers Agent)
Monthly	Within 7 days of completion of reporting period	Environmental Officer	WRECO
Change Management	Whenever required	WRECO	CCT Environmental Management Department (EMD) Environmental Compliance Officer
Close-out Report	Within 30 days of completion of construction related activities	Environmental Officer	WRECO
Audit Report - Internal	Within 7 days of completion of reporting period	WRECO	CCT Environmental Management Department environmental compliance officer

Audit Report - External	Within 7 days of completion of reporting period	Environmental Auditor	Competent Authority (DEA&DP)
Grievance	Within 7 days of grievance	Environmental Officer	WRECO
Management Review	Within 7 days of management review	Contractors Senior Management	WRECO

5.1.2. Incident Reporting
The Contractor shall undertake incident reporting in accordance to the below table. Please note that NEMA Section 30 and 30A have prescriptive timeframes in which a Competent Authority is to be notified.

Table 6: Incident Reporting

Reporting	Action	Responsibility	Timeframe
	Report incident to WRECO / Engineer	City of Cape Town, WRECO / Engineer and Contractor	Immediate notification
	Incident report submitted to the WRECO / Engineer		Within 7 days of incident
	Contractor to select appropriate remedy to rectify non-conformance and provide revised method statement to the WRECO for approval.		Within 10 days of incident

5.2. Implementation (Contractor)

5.2.1. Weekly environmental and social monitoring reports[1];
The Contractor's Environmental Officer shall undertake daily site inspections, the outcomes of which shall be submitted in a weekly report to the WRECO (acting as the Employers Agent). Such reports shall include:

- *a summary of the results of the daily and weekly inspections;*
- *any non-conformances and corrective actions taken;*
- *work status and tasks to be completed;*
- *environmental activities undertaken;*
- *environmental incidents or grievances;*
- *environmental monitoring;*
- *consultation undertaken;*
- *progress of reinstatement; and*
- *results of any audits undertaken.*

5.2.2. Monthly environmental and social audit reports;
The Contractor shall submit a consolidated and detailed monthly report to the WRECO.

5.3. Supervision (WRECO)

5.3.1. Corrective Action Requests

A Corrective Action Request (CAR) shall be issued to the Contractor's Environmental Officer instructing the initiation of corrective action. The Contractor's Environmental Officer shall initiate an investigative process to determine root cause, thereby preventing future recurrence, within the timeframe prescribed by the WRECO.
Follow up actions shall be assessed by the WRECO to verify implementation of approved corrective actions, recommendations and their effectiveness in preventing re occurrence.

5.3.2. Non-Conformance Report

[1] Please note that small developments may substitute the weekly report in lieu of a monthly report. The WRECO shall determine reporting frequency.
Preceding the issuing of the Non-Conformance Report (NCR), the Contractor shall be presented with an opportunity to rectify the outstanding issue (via a CAR). Should this issue not be corrected or completed to the satisfaction of the WRECO, the issue shall be escalated to an NCR.

An NCR shall be issued to the Contractor as a final step towards rectifying a failure in complying with a requirement of the EMPr. The WRECO shall issue the NCR to the Contractor in writing.

Should the WRECO assess an incident / issue and find it to be significant (e.g. nonrepairable damage upon the environment), it shall be reported to the authorities and immediately escalated to the level of an NCR. This shall be done in consultation with the City of Cape Town Environmental Management Department

The following information should be recorded in the NCR:
- *details of non-conformance;*
- *any plant or equipment involved;*
- *any chemicals or hazardous substances involved;*
- *work procedures not followed;*
- *any other physical aspects; and*
- *nature of the risk.*

Actions agreed by all parties following consultation shall adequately address the identified non-conformance. This shall take the form of specific control measures and take the hierarchy of controls into account. This shall accompany the NCR for filing purposes.
The agreed timeframe by which the Contractor shall have implemented the actions shall be documented in the NCR.

All NCR's shall be tracked and managed according to the development's quality control protocols.

The WRECO shall verify that the agreed actions have taken place on or soon after the agreed completion date. Where the actions are complete, the WRECO and Contractor's Environmental Officer shall sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

5.4. Audits (WRECO and Environmental Auditor)

In addition to the prescribed monitoring undertaken by the Contractor's Environmental Officer, comprehensive audits shall be undertaken to determine the efficacy of the management measures implemented to manage and mitigate impacts.

5.4.1. Internal Audits
Detailed audit reports shall be drafted by the WRECO indicating system deficiencies, non-conformances and adverse or potentially adverse environmental conditions arising from construction, operational and decommissioning related activities.

The audit reports shall provide verifiable findings on the level of performance compliance; the ability to sufficiently provide for the avoidance, management and mitigation of environmental impacts; and levels of compliance with the EMPr and any other regulatory

requirement. The audit reports shall me made available to the external Environmental Auditor.

5.4.2. External Audits

External audits shall be undertaken by an independent Environmental Auditor, at the timeframes as prescribed by the Competent Authority.

The Contractor's Environmental Officer, WRECO and Project/Site Manager are to provide all required information to the External Auditor who will be carrying out audits as per the Section 30A Directive requirements which stipulates that a first audit report will be completed within six (6) months of the commencement of an emergency measure or intervention (per measure or intervention to be implemented); A second audit report within three (3) months of completion of an emergency measure or intervention (per measure or intervention). The content requirements of the audits are specified in the Section 6.3 of the Section 30 A Directive (attached as Annexure 1).

All environmental audit reports shall be submitted to the City of Cape Town for review prior to their submission to the relevant Competent Authority.

5.5. Evaluation of Performance

5.5.1. Identify Trends
The Contractor's Environmental Officer shall analyse data obtained from monitoring programmes / audits to determine underlying patterns of performance in relation to time. Such outcomes shall aid the Contractor's Environmental Officer in implementing corrective actions, thereby pre-empting future possible environmental degradation or pollution.

5.5.2. Measure Progress
The Contractor's Environmental Officer shall monitor efficacy of mitigation measures implemented; and continually strive to improve the manner in which it protects the environment.

5.6. Review by Senior Management

The Contractor shall undertake periodic reviews by its senior management to evaluate efficacy of on-site environmental management systems in delivering the desired environmental, health, safety and social protection.

These reviews shall be undertaken at intervals dictated by the current life-cycle stage; efficacy of EMPr implementation; level of compliance to internal and external audits and level of risk posed by upcoming activities.

A report containing management review recommendations shall be submitted to the Project Management. The WRECO shall track the implementation of the recommendations.

The WRECO shall reserve the right to issue a Corrective Action Request should the Contractor fail to adequately address issue at hand.

6. Performance Specifications: Environmental Management

The Performance Specifications Table (Section 6) prescribe specific targets which the Contractor shall attain. The Contractor shall be cognisant of both the outcomes and targets when compiling method statements. The Performance Specifications may be used as stand-alone environmental specifications in tender documents, where required.

The mitigation measures proposed within the Environmental Management Tables (Section 7) must be used by the Contractor towards attaining targets prescribed within the Performance Specifications.

The Performance Specification tables detailed within Section 6 of this document will be audited by the WRECO and Environmental Auditor.

Planning

Not applicable to the Contractor appointment

PSEM4 Planning	
Outcomes	Identify and proposing suitable development options for the Emergency Water Resilience project resulting from strategic needs assessment, from where single option is selected.
Responsibilities	Employer Agents' professional team / City of Cape Town
Timeframes	On-going during planning
Performance Indicator	Target
1) Specialist input	a) Include all possible / associated activities within the various environmental permitting processes. b) Assess possible environmental impacts on the terrestrial and marine environment.
2) Identifying and assessing al impacts	a) Include Engineer and construction experienced Environmental Planner to inform the environmental permitting process
3) Scope definition	a) Consider potential associated activities which may require the environmental permitting. b) Consider potential Contractor requirements within environmental permitting process, e.g. site camp locality and possible lay down areas. c) Where applicable, conduct the needed specialist investigations and complete the required environmental permitting requirements to obtain approval from the various competent authorities.
4) Sustainability	a) Planning shall emphasise sustainable development, local procurement and jobs. b) Planning includes site locations owned by the City of Cape Town, and/or already disturbed sites to minimise the environmental and social impact of the projects

Design

Not applicable to the Contractor appointment

PSEM5 Design	
Outcomes	Integrating environmental and sustainable requirements within the design to an extent that environmental protection and sustainable development are assured for the Emergency Water Resilience project.
Responsibilities	Employer Agents' professional team / City of Cape Town
Timeframes	On-going during conceptual and detailed design
Performance Indicator	Target
1) Compliance Review	a) Undertake an environmental compliance review if the environmental permitting process was undertaken by an external third party.
2) Inform Design	a) Ensure EMPr, environmental authorisation and any other approval/permit requirements are obtained and inform the design for the Emergency Water Resilience project.
3) Reviews of designs	a) The Environmental Planner, where applicable, shall review the final designs.
4) Aesthetics	a) Design of the Emergency Water Resilience project shall restrict sky glow, light spill and glare. b) In accordance with the building regulations the proposed temporary plant associated with the temporary containerised desalination projects shall not exceed a maximum element height of approximately 6.5m. c) Where possible and required (as per site-specific project) pipelines will be buried, otherwise is will be stabilised as specified in the engineering specifications.
5) Air quality	a) Design of the Emergency Water Resilience project shall enable compliance with National Ambient Air Quality Standards, City of Cape Town Air Quality Management By-law and National Dust Control Regulation requirements, as amended. b) Emergency generators shall be deployed to run on low sulphur diesel fuel to limit the impact of sulphur emissions to the ambient air quality.
6) Noise control	a) Design of the Emergency Water Resilience project shall enable compliance with Western Cape Noise Control Regulation requirements, as amended. c) Allowable Noise Limits: – The noise limits for an industrial zone is 70dBA daytime and 60dBA night-time (when measured on the boundary). – For residential, it is 50dBA daytime and 40bBA night-time. – Also there is a 50dBA restriction on machinery in a residential area.

PSEM5 Design	

7) Water quality and quantity 8) Water efficiency	a) Design shall enable compliance with all applicable water quality (SANS 241: 2015) and quantity regulatory requirements, as amended. b) All designs to comply with Construction Regulations 10400XB. c) Water abstraction for construction purposes, washing of machinery and vehicles are strictly prohibited.
9) Energy efficiency	a) All designs to comply with Construction Regulations 10400XA. b) Installation of photo-voltaic panels (if required).
10) Waste Management	a) Design of the Emergency Water Resilience project shall reduce waste generation whilst promoting re-use and recycling, where possible.

Pre-construction

Mitigation measures listed within Section 7 (Environmental Management tables) must guide the Contractor towards achieving the below prescribed outcomes.

PSEM6 Pre Construction	
Outcomes	Finalisation of relevant appointments / activities to an extent that development commencement is assured.
Responsibilities	Contractor to draft Method Statements (as detailed in Table 1 of Annexure 4) and implement; WRECO to approve and supervise; and Independent Auditor to audit. City of Cape Town District Environmental & Heritage management department to be requested which Method Statements they wish to review and given the opportunity to do so.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Search and Rescue	The Contractor shall undertake all activities associated with the search and rescue operation and have these completed prior to the commencement of construction related activities.
2) Photographic record	Comprehensive photographic record of site and environs to be taken prior to any on site work.
3) Alignment to engineering requirements	The approved EMPr and any other regulatory requirements shall be aligned with engineering requirements.
4) Budget	The Contractor shall make provision for adequate budget for construction site environmental management requirements.
5) Tender review	The Employers Agent (WRECO) shall ensure an environmental review of all tender submissions is undertaken.
6) Approvals	The Employers Agent (WRECO) shall ensure all approvals have been obtained.
7) Environmental Compliance Monitoring	The City of Cape Town shall appoint a competent and knowledgeable WRECO; and where required, an Environmental Auditor.

8) Contractors Environmental Control Officer	a) The Contractor shall appoint a competent and knowledgeable Contractors Environmental Officer.

Construction

Mitigation measures proffered within Section 7 (Environmental Management tables) will guide the Contractor towards achieving the below prescribed outcomes.

PSEM7 Pre Aesthetics Management	
Outcomes	Preserve aesthetics of the surrounding environment to assure the development does not become a nuisance to local communities; or negatively impacts upon the environment.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Dust levels	a) Dust generation shall not exceed the regulated dust thresholds.
2) Rehabilitation of impacted works areas.	a) All areas impacted upon through construction related activities shall be rehabilitated.
3) Stockpile management	a) Stockpiles are not to be higher than 2m. b) Stockpiles shall be stabilised with no evidence of erosion.
4) Visual impact of works areas on surrounding environment	a) No grievances from stakeholders. b) Maintain good housekeeping practices.
5) Light pollution	a) No light shining into surrounding properties. b) No grievances from stakeholders.
6) Litter	a) Record of daily litter clean up. b) No litter to be found on site. c) No grievances from stakeholders.

PSEM8 Dust Management	
Outcomes	Preserve air quality levels to an extent that public health; safety and environmental protection are assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Monitoring	a) Identify all dust sources. b) Assess effectiveness of dust control measures. c) Provide suitable data to demonstrate compliance with regulatory requirements. d) Ensure all monitoring equipment is calibrated as per manufacturer's specifications. e) Ensure all monitoring is undertaken by suitably qualified and competent individuals. f) Dust fall out monitoring shall be undertaken along the perimeter fence and aligned with prevailing wind directions.
2) PM10 inhalable particulates only monitored upon City of Cape Town instruction.	a) PM10 monitoring shall be in accordance with GNR 1210, National Ambient Air Quality Standards, of 24 December 2009, as amended. b) PM10 shall be monitored at sensitive (rural) receptors when construction related activities occur within 250 m of the receptors. c) PM10 shall also be measured at active construction related areas and at additional sites indicated by the WRECO. d) Monitoring shall be conducted/undertaken as per the regulated frequencies. g) PM10 levels shall not exceed the prescribed levels. h) PM10 monitoring shall be undertaken within work areas aligned with prevailing wind directions.

5) Dust Nuisance Levels	a) Suspended (actual) dust levels shall not exceed 600 mg/m_2/day. b) The Contractor shall respond to all grievances relating to dust and air quality.

6) Dust Fallout only monitored upon City of Cape Town instruction	a) Indicative dust fallout (i.e. suspended dust concentrations that will result in fallout) shall be monitored in terms of the GNR 827, National Dust Control Regulations of 1 November 2013, as amended. b) Actual dust fallout shall be verified through sampling at sites as prescribed by the WRECO.

PSEM9 Earthworks Management	
Outcomes	Maintain earth works practices in a manner that public health; safety and environmental protection are assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Topsoil and subsoil handling and management	a) Soil horizons stockpile separately. b) Stockpiles no higher than 2 m and kept weed free.
2) Water resource management	a) Water resources shall not be negatively impacted upon through sedimentation / contamination
3) Prevention of contamination.	a) Stockpiles shall be kept free of contamination by oils/fuels and other harmful substances.
4) Reinstatement of previous land use practices.	a) No complaints from stakeholder's. b) No erosion.
5) Placement ofstockpiles within specifically demarcated areas.	a) No stockpiles within the 1:20 flood line of a watercourse or within 50m of delineated wetland. b) No stockpiles within specified no-go areas. c) No stockpiles in vegetated areas, unless otherwise approved by the relevant decision-making authorities. d) No stockpile outside of areas indicated in the construction drawings.

5) Soil Disposal	a) No spoil disposed of anywhere other than designated spoil areas or at a registered landfill site as identified by the WRECO. b) Contractor shall attain prescribed waste targets.

PSEM10 Erosion Management	
Outcomes	Preserve soil and vegetation cover to an extent that minimal loss of soil through erosion can be assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Erosion prevention	a) All gradients > than 1:2 (vertical: horizontal) stabilised within one week of their exposure. b) Formalised storm water structures must be designed and implemented along roads susceptible to erosion. c) Slopes > 1:1 must have additional anti-erosion mechanisms (berms, silt traps and fences or geo-textiles). d) No evidence of erosion or damage to erosion control devices. e) No collapse/subsidence of banks at water crossings or steep slopes. f) No significant changes to ground level, drainage patterns or vegetative cover as a result of erosion or sedimentation.
2) Control alien invasive species.	a) Records of monthly alien invasive species clearing. b) The Contractor shall keep the development footprint free of alien invasive species.
3) Existing land use protection.	a) No evidence of disturbance outside of development footprint area.
4) Rehabilitation of impacted areas.	a) The Contractor shall attain rehabilitation targets.

5) Water quality as indicator of levels of soil erosion.	a) The Contractor shall attain prescribed water quality targets.
6) Storm water	a) Monitor and maintain storm water infrastructure and review storm water management initiatives, where applicable.

PSEM11 (Marine and Terrestrial) Fauna and Flora Management	
Outcomes	Preserve the environment to an extent that fauna and flora are protected; and prevention of alien invasive species infestation can be assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Reduction of extent of impacts	a) No evidence of disturbance outside of the approved development footprint.
2) Identification and protection of ecologically sensitive areas.	a) All sensitive marine and terrestrial environments shall be identified and afforded appropriate protection. b) No go areas are clearly demarcated and adhered to.
3) Identification and protection of species.	a) Proof of training of staff for identification and rescue and relocation of known conservation worthy species. b) No unauthorised collection of or disturbance to marine and terrestrial fauna and flora. c) Search and rescue operations shall include consultation with the City of Cape Town's Biodiversity Management Branch.
4) Landowner requirements	a) No grievances from landowners. b) Each indigenous tree, shrub or bulb removed through search and rescue operations shall be replanted in the area from where it came or in an area as advised by the City of Cape Town Biodiversity Management Branch.
5) Wildlife and Livestock management.	a) Access to individual land portions shall be controlled through the appropriate use of gates. b) All livestock injuries or fatalities shall be investigated, recorded and reported to the WRECO and the respective landowner. c) The Contractor shall restrict vehicle speeds within the development footprint to prevent faunal fatalities.
6) Management of alien invasive species.	a) Proof of scheduled removal of alien invasive vegetation. b) Chemical control of invasive species to be undertaken under the auspices of a Department of Agriculture, Forestry and Fisheries (DAFF) authorised Pest Control Officer (PCO). c) No alien invasive vegetation growth within development footprint.

PSEM12 Fire Management	
Outcomes	Prevent and control fires to an extent that public health; safety; property and environmental protection are assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Reduction of extent of impacts	a) Zero (0) fires.
2) Emergency preparedness	a) Proof of annual update and approval of the fire management response plan. b) Proof of management review of fire preparedness and response before onset of fire season. c) Proof of six-monthly fire and emergency drills every six months and effectiveness thereof audited. d) Emergency response plan implemented. e) Safety management plan implemented.
3) Adequate fire protection measures.	a) Proof of Municipal Fire Chief being informed. b) Compliance with SANS 10131. c) Fire-fighting equipment shall be available at all high risk or points of storage of flammable products. d) Proof of examination / inspection of fire extinguishers on a continual basis. e) All activities undertaken shall be managed to mitigate risk of fire. f) Smoking only allowed in designated areas approved by the Contractor's EO.
4) Compliance with regulatory and procedural requirements.	a) Storage of hazardous/flammable materials and substances to comply with national, provincial and local regulatory requirements. b) Proof of reporting of fire incidences to authorities. c) No fires within the development footprint. d) No build-up of flammable material on or adjacent to the development footprint.
5) Adequate fire protection measures in place in rural areas.	a) Fire breaks in place, in consultation with respective landowners, the width of which to be determined by the Fire Protection Association (FPA). b) Proof of membership/registration with the local FPA. c) Presentation of the Fire Danger Index (FDI) for the area.c) The Contractor shall restrict vehicle speeds within the development footprint to prevent faunal fatalities.

PSEM13 Hazardous Substance Management	
Outcomes	Prevent and control fires to an extent that public health; safety; property and environmental protection are assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to

	audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Adequate measures implemented for the containment of hazardous substances.	a) All hazardous substance storage areas shall be equipped with appropriate spill kits and fire-fighting equipment. b) All hazardous substances shall be stored in well ventilated secondary (impermeable) containers / bunds capable of 110% of the volume of the container. A tap-off system shall be installed through which leakages and spills can be removed. c) All staff required to handle and use such hazardous substances shall receive adequate training. d) All necessary approvals with respect to hazardous substances shall be obtained from the appropriate authorities and shall comply with standard fire safety regulations. e) All chemicals shall be stored in specifically designed, lockable storage areas where reactive substances are classed and segregated. Storage shall comply with the manufacturers Material Safety Data Sheet (MSDS) and local and national legislative requirements. f) Hazardous waste and waste fuels and oils shall be stored in appropriate containers that will not corrode or leak. These containers shall be properly marked to indicate contents. g) Waste manifest (proof of safe disposal) should be obtained and kept onsite (shown to the WRECO acting as the
2) Hazardous substance management.	a) All hazardous substances stored on site shall be recorded within a checklist. b) All hazardous substances shall be labelled according to the chemical hazard rating and adequate signage be displayed indicating the appropriate management measures to be implemented in the event of a spill/fire. c) Only specifically trained personnel shall be permitted to use and handle the hazardous substances. Certificates of training shall be provided to the WRECO for final approval. d) Substances used shall be the least environmentally harmful chemical available for the undertaking of specific duties/requirements.
3) Incident management	a) Ensure that the necessary materials and equipment for dealing with oil, fuel and hazardous substance spills, leaks and fires are available on site and up to date at all times. b) The following symbolic safety signs shall ***inter alia*** be depicted: "No Smoking", "No Naked Lights" and "Danger". c) These signs shall conform to the requirements of SANS 1186-1 and are to be prominently displayed in and around the storage area. d) The volume and contents of the tanks shall be displayed using the emergency information system detailed in SANS 10232-1. e) Signage containing clearly displayed emergency contact numbers shall be provided.

4) Fire fighting	a) Suitable fire-fighting equipment shall be stored in close proximity and all personnel be made aware of the dangers of burning chemicals/smoke inhalation.
5) Personnel protection	a) No smoking shall be permitted in the vicinity of the store/s and adequate fire-fighting equipment shall be provided at hazardous substance storage and dispensing areas. b) All staff working with hazardous substances shall wear PPE.
6) Sewage management	a) No environmental contamination due to sewage management.
7) Cement / Concrete management	a) Cement / concrete shall only to be mixed withinWRECO approved localities. b) Waste cement / concrete shall only be disposed of at WRECO approved localities. c) Facilities used to wash plant / equipment used in the mixing / transporting / placement of concrete shall be Employer Agent approved.

PSEM14 Heritage Management	
Outcomes	Preserve heritage resources to an extent that no loss, defacement or damage thereof can be assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Protection of heritage resources.	a) No removal, damaging or alteration to heritage resources, unless proof of consultation with a heritage specialist and approval from HWC is in place. b) All buildings and or structures older than 60 years shall require a permit should they be changed or demolished. c) Maritime archaeology (i.e. shipwrecks) require a permit should they be removed or disturbed.
2) Management of chance finds.	aThe relevant authorised heritage professional (either archaeologist or palaeontologist), as specified by the heritage authority, must oversee and monitor ground clearing and earth moving activities. In addition, all on-site construction personnel should be given a short course on how to recognize archaeological artefacts, fossils and other heritage material. No heritage material may be removed from the site, except by the heritage professional and only if permitted to do so by a heritage authority. When high concentrations of heritage material (fossils, stone artefacts, midden material etc.) are uncovered, construction activities should stop in the locality of the find and the heritage professional called in to assess the find. These finds should immediately be reported to the relevant heritage authority (South African Heritage Resources Agency (021 462 4502) / or

	Heritage Western Cape (021 483 9692), including the West Coast Fossil Park (022 766 1606) when fossils are discovered) must be notified and all works temporarily stopped. Burial remains must not be disturbed or removed until inspected by an archaeologist. Should any activity be required off shore, the SAHRA maritime unit would need to be consulted to ensure no maritime archaeology (i.e. shipwrecks) would be affected. a)Records of chance findings shall be kept. b) Where chance finds are unearthed, proof of work being stopped and proof of consultation with heritage specialist and HWC shall be kept on site. c) The unearthing of graves must immediately be reported to the WRECO, the South African Police Service and HWC. An archaeologist shall be notified and the area shall be cordoned off from all works until the archaeologist has completed a) an investigation and proposed recommendations, in consultation with HWC.

PSEM15 Land Owner Liaison	
Outcomes	Preserve heritage resources to an extent that no loss, defacement or damage thereof can be assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Communication with landowners.	a) Communications register (for grievances) shall be kept at the site office. b) No reports of complaints not being dealt with promptly. c) Minutes of meetings held with local community members and other stakeholders. d) Notify landowners in advance in the event of construction related activities likely to cause disruptions to current land use practices.
2) Safety of the work environment.	a) PPE is available and worn by staff and visitors. b) The site, together with all excavations shall be safe guarded. In addition, barriers and warning signs shall be placed around all excavations. c) Site boundary fence shall display relevant signage. d) Demarcate "no-go" areas and restrict access.
3) Gates.	a) Maintain status of gates (keep "closed" gates closed; and "open" gates open).
4) Landowner database.	b) Maintain a database of landowners contact details. c) New landowners shall be briefed on the construction programme.

5) Provision of skills training.	a) Provide suitable training to all employees to ensure no grievances lodged.
6) Site camp.	a) The site camp shall obtain all relevant approvals prior to establishment.
7) Working hours	to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Notification of sensitive receptors.	a) Sensitive receptors shall be notified of the timing and duration of the construction related activities and the potential noise nuisance it may cause. b) Respond to all noise related grievances received and implement mitigation measures.
2) Noise levels.	a) Noise levels shall be monitored to comply with SANS 10103:2008 and Occupational Health and Safety Act requirements. b) Design of the Emergency Water Resilience project shall enable compliance with Western Cape Noise Control Regulation requirements, as amended. d) Allowable Noise Limits: – The noise limits for an industrial zone is 70dBA daytime and 60dBA night-time (when measured on the boundary). – For residential, it is 50dBA daytime and 40bBA night-time. b) there is a 50dBA restriction on machinery in a residential area.
3) Deviations from normal construction related activity conditions.	a) All construction related works shall be undertaken during normal prescribed / agreed daylight hours. b) All works that deviate from normal construction related conditions shall be reported and actions initiated to mitigate against recurrence of the incident.
4) Vibration	a) Vibration monitoring shall be in compliance with regulatory requirements (BS 7385-2 (ISO 4866) Evaluation and measurement for vibration in buildings – Part 2: guide to damage levels from ground-borne vibration).

PSEM17 Rehabilitation Plan	
Outcomes	Reinstate impacted areas to an extent that agricultural; commercial, recreational and environmental protection are assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Restoration of soil profile at disturbed areas.	a) Where restoration of indigenous vegetation is to take place, topsoil and surface management needs shall be in accordance with a restoration plan as agreed with the City of Cape Town's Biodiversity Management Branch

2) Rehabilitation of steep slopes.	a) Stabilisation of steep slopes shall be a priority, with engineered solutions being investigated to ensure slope stabilisation.
3) Removal of alien invasive vegetation species.	a) Proof of scheduled removal of alien invasive species re-establishing on cleared areas, stockpiles and throughout rehabilitation shall be undertaken
4) Site specific rehabilitation requirements	a) Proof of discussions with landowners about specific rehabilitation requirements. All vegetative matter removed during the search and rescue operation shall be replanted in the area that they were rescued from or in an area determined in consultation with the City of Cape Town Biodiversity Management Branch.
5) Reinstatement of watercourse soils.	a) The final placement of layers of soil on the watercourse bed shall match the pre-disturbance profile. b) Replaced soil shall be compacted and at the same level as adjacent soil. c) Water resistant layers must be determined before disturbance shall be reinstated.
6) Appropriate re vegetation with correct seed mix.	a) The seed mix for use in rehabilitation shall be an approved mix of indigenous species common to the area. The seed mix shall contain pioneer, sub-climax and climax species. Contractor shall inform the WRECO to deviations from this seed mix prior to the purchase of seed. The City of Cape Town Biodiversity Management Branch shall be consulted with regard to seed mixes and restoration methodologies where indigenous vegetation is to be re-established.
7) Timing of rehabilitation actions.	a) Seeding operations shall coincide with rainfall events or as part of a managed watering programme.
8) Vegetated cover of rehabilitated areas shall correlate with the cover of the surrounding natural vegetation.	The below targets only applicable where grass cover is prescribed: a) A 50% grass cover shall be achieved within 1 month of the onset of the next growing season following hydro seeding and 80% cover within 2 months thereafter. Minimum of 60% mature vegetation cover being achieved during the first growth season. Minimum of 80% mature vegetation cover achieved at the end of the maintenance period. Canopy cover shall be used to determine ground cover percentage. b) Grass shall set seed over a minimum of two seasons.

PSEM18 Social Aspect

Outcomes	Preserve good relations with neighbouring communities to an extent that maximum social benefits, and minimum negative impacts are assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Communication with local community and stakeholders.	a) Communications register shall be kept on site. b) No reports of grievances not being dealt with promptly. c) Minutes of meetings held with local community members and other stakeholders.
2) Representative workforce/equitable procurement.	a) Employ a "local first" employment policy. b) Procurement policy targets provided by theWRECO shall be met.
3) Safety of the work environment.	a) Personal Protective Equipment (PPE) is available and worn by staff and visitors.
4) Exit Strategy.	a) Proof of training for skills required in the greater area that can be used after construction related activities have ended. b) Report detailing intentions for materials (for example wood and other building material) or structures no longer required that can be donated to the local community, with the approval of the WRECO.

PSEM19 Soil Management	
Outcomes	Preserve good relations with neighbouring communities to an extent that maximum social benefits, and minimum negative

	impacts are assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Topsoil and subsoil handling and management.	a) Soil horizons (stockpile separately) b) Stockpiles shall be no higher than 2 m and kept weed free. c) Prevent erosion of soil.
2) Prevention of contamination	a) Employ a "local first" employment policy. b) Procurement policy targets provided by theWRECO shall be met.
3) Reinstatement of land use practices.	a) Reinstate land use to former land use practise.
4) Placement of stockpiles within specifically demarcated areas.	a) No stockpiles within the 1:20 flood line or within 50 meters of delineated wetlands. b) No stockpile outside of areas indicated in the construction diagrams.
5) Spoil disposal.	a) No spoil disposed of anywhere other than designated spoil areas or at a registered landfill. Proof of disposal is to be kept on file.
6) Construction programme	a) In the event construction occurs during the rainfall season, measures shall be implemented to minimise disruption of the soil profiles. These shall be removed and impacted areas re-vegetated.

PSEM 20 Sustainable Management 4	
Outcomes	Preserve critical resources to an extent that the optimisation of energy-use; protection and conservation of water can be

	assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Energy efficient construction site office building design 2) Electricity conservation	a) The Contractor shall ensure site offices and associated buildings comply with Construction Regulations 10400XA.
3) Water conservation	a) The Contractor shall ensure all facilities comply with Construction Regulations 10400XB.
4) Dust suppression	a) The Contractor shall implement dust suppression measures using non potable water.

PSEM 21 Traffic Management	
Outcomes	Preserve road traffic levels to an extent that public health; safety and environmental protection are assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Traffic management	a) No accidents or incidents. b) No complaints from the public.
2) Landowners have access to properties.	a) The City of Cape Town to supply all landowners with access to their properties via agreed temporary servitudes, where applicable.
3) Road traffic safety.	a) Road condition shall be retained in an acceptable condition on all routes. b) Appropriate signage provided, where applicable.
4) Prevention of environmental degradation.	a) No new roads constructed outside of the development footprint. b) No new roads constructed without the approval of the WRECO within the development footprint. c) No evidence of disturbance by vehicles outside of the development footprint.

	d) No environmental degradation due to storm-water run-off from access and temporary roads. Runoff from roads must be managed to avoid erosion and pollution problems. Where necessary, silt traps should be installed to minimise silt from entering the storm water or sewerage systems. e) Dust entrainment shall comply with prescribed dust regulations. f) The width of the access and temporary servitude roads shall be kept to a minimum.

PSEM 22 Training Program	
Outcomes	Foster skills transfer, environmental awareness, health and safety awareness and materials and equipment skills.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Provision of effective training.	a) All employees shall receive general construction related work skills training required to enable them to work safely and effectively, including: • Basic Environmental Awareness Training. • Spill and emergency management. • Health and safety. • Emergency drills. • Fire-fighting. • Disaster management. • Heritage resource and grave identification.
2) Training.	a) All staff shall: • be inducted prior to commencing work; • receive regular task based / skills training; • receive weekly environmental toolbox talks; • undergo six monthly refresher (environmental) training; and • be retrained as per corrective action outcome(s). b) Records to be retained indicating attendance and content c) Regular refresher course to be presented to all staff d) Demonstrate effectiveness of training presented e) All incidents to be reported

PSEM 23 Waste Management	
Outcomes	Outcomes Embrace waste hierarchy principles to an extent that waste generation is reduced; reuse and recycling is promoted; all waste streams receive responsible treatment; and safe disposal is assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Proper waste disposal.	a) Proof of waste generated, reused, recycled and disposed of, including disposal certificates, shall be kept on site. b) No contamination of soil, air and water due to inappropriate waste management. c) Disposal of hazardous waste shall be conducted by a licensed contractor / professional service provider. d) Store and handle all hazardous materials and waste in accordance to their respective material safety data sheets. e) Waste to be disposed of at registered landfill site. f) No build-up / accumulation of waste permitted. g) The waste manifest shall be kept on record for auditing purposes.
2) Waste reduction.	a) Reduce disposal of recyclable or reusable materials to landfill sites by 50%. Such recyclable and reusable material shall include: • steel; • aluminium; • paper; • plastic; and

	• oil. b) An approved recycling company shall be appointed to manage the respective collection and recycling and or re use of waste materials.
3) Environmental contamination.	a) All waste streams stored in appropriately marked containers. b) Containers of hazardous waste and waste oils shall be stored in a bunded, weatherproof area. c) No evidence of contamination by waste. d) All spills to be reported and included within reports to be submitted to the WRECO.
4) Good housekeeping.	a) Weather and scavenger proof bins provided at all points where waste is to be generated. b) No evidence of litter. c) Chemical ablution facilities at a ratio of 1:15 shall be placed within 50 m of all work areas. d) Chemical ablution facilities not within 32 m of a watercourse. e) Chemical ablution facilities kept in clean user friendly state. f) Chemical ablution facilities shall be secured.

PSEM 24 Water Management	
Outcomes	Preserve water quality levels and quantity used / discharged to an extent that the integrity of affected water resources is assured.
Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Watercourse water quality. 2) Variables and frequencies to be monitored as per regulated prescribed minimum requirements.	a) Less than 10% change between values measured 300 m upstream and within 50m downstream of where construction related activities are to occur. b) Water quality monitoring during period when contaminated water is being released into a watercourse / environment.
3) Contaminated water monitoring. 4) Variables and frequencies to be monitored as per regulated prescribed minimum requirements.	a) Values for variables measured shall fall below the specific limits indicated in regulated prescribed minimum requirements, before release into the receiving environment.
3) Environmental	a) All waste streams stored in appropriately marked containers.

contamination.	b) Containers of hazardous waste and waste oils shall be stored in a bunded, weatherproof area. c) No evidence of contamination by waste. d) All spills to be reported and included within reports to be submitted to the WRECO.
5) Water management.	a) No storm water flowing through site (unless in a dedicated storm water channel). b) No storm water flowing onto areas of low / poor stabilisation. c) Control erosion on all construction areas. d) Prevent contamination of water resources. e) Obtain necessary regulatory approvals prior to commencement of works. f) Introduction of formalised anti erosion and storm water management works within areas susceptible to erosion. These works shall be properly maintained. g) Construction related activities within, across, under or immediately adjacent to watercourses, wetlands; and areas subject to flooding, are to be programmed to occur during the dry months. h) No handling of hazardous substances without necessary personal protective and spill containment equipment and procedures in place. i) Volumes of both water abstraction and use shall be recorded and reported upon. j) Clean water and dirty water systems shall be managed independently and kept separate. k) No water shall be discharged into the municipal storm water system without prior authorisation and compliance with regulated prescribed minimum requirements. Where necessary, silt traps should be installed to minimise silt from entering the storm water or sewerage systems l) Non potable water shall be used for all construction related activities, unless approved by the WRECO.

Decommissioning

Mitigation measures listed within Section 7 (Environmental Management tables) will guide the Contractor towards achieving the below prescribed outcomes.

PSEM 24 Decommissioning	
Outcomes	Perform decommissioning activities in a manner which is legally compliant; does not impact the health and well-being of the environmental and local community. Site to be restored to condition as agreed with the Employer's Agent (WRECO) and City of Cape Town.

Responsibilities	Contractor to draft Method Statement and implement; WRECO to approve and supervise; and Independent Auditor to audit.
Timeframes	Method statement compiled and approved prior to commencement of activity. Implementation and compliance to be undertaken continuously.
Performance Indicator	Target
1) Environment	a) The Contractor shall prevent adverse environmental and community impacts from decommissioning activities. b) The Contractor shall prevent loss of soil and creation of dust. c) The Contractor shall minimise any degradation of the quality of water leaving the site. d) The Contractor shall minimise the generation of excessive construction waste, including litter. e) Minimise contamination of the environment from dust.
2) Contamination.	a) The Contractor shall minimise the risks to the environment and human health as a result of decommissioning activities. b) The Contractor shall ensure construction workers engaged in earthworks or demolition activities or off-site disposal of waste are aware of potential contamination issues through site inductions, environmental training and at daily toolbox meetings, and undertake these activities in accordance with applicable regulatory requirements. c) The Contractor shall ensure that all earthworks, construction and demolition activities which could intercept or expose contaminants of potential concern are managed to prevent storm water or dust discharge.
3) Noise	a) The Contractor shall use of lowest practicable noise emitting equipment and plant; noise levels will be considered in the selection of all plant and equipment, including the use of bored piles rather than driven piles where appropriate. b) The Contractor shall inspect all equipment to ensure that any noise mitigation (e.g. mufflers) is suitable.
4) Traffic	a) The Contractor shall prevent vehicle accidents and protect life and property. b) The Contractor shall avoid or minimise environmental damage and visual and noise disturbance due to vehicular traffic.
5) Construction Timing and Impacts	a) The Contractor shall provide appropriate mechanisms for the collection, treatment, recycling, reuse and disposal of construction waste and litter. b) The Contractor shall prevent environmental degradation caused by the inappropriate disposal of construction waste and litter. c) The Contractor shall provide for the environmentally responsible disposal of all construction wastes and litter. d) The Contractor shall conserve resources and maximise the recovery of reusable materials. e) The Contractor shall formulate and implement a waste minimisation strategy.
6) Budget	a) The Contractor shall make provision for adequate budget for site environmental management requirements.
7) WRECO	a) The City of Cape Town shall appoint a competent and knowledgeable WRECO; and where required, an Environmental Auditor.

8) Contractors Environmental Officer	a) The Contractor shall appoint a competent and knowledgeable Contractors Environmental Officer.

7. Environmental Management Tables

These tables contain a range of best practice mitigation options to be utilised by the Contractor according to site and operational conditions.

DESCRIPTION	**Pre-construction activities**	
Possible source of potential impact	Clearing of vegetation • Poor housekeeping • Dust • Noise • Fires • Alien vegetation	
Risks/impact	Risk / impact:	Mitigation measures
	1) Search and Rescue	i. The Contractor shall undertake all activities associated with the search and rescue operation and have completed these prior to the commencement of construction related activities.
	2) Alignment to engineering requirements	i. All EMPr, Environmental Authorisation and any other regulatory requirement shall be aligned with engineering requirements.
	3) Budget	i. The Contractor shall make provision for adequate budget for construction site environmental management requirements.
	4) Tender review	i. The Employer's Agent (WRECO) shall undertake an environmental review of all tender submissions.
	5) Approvals	i. The Employer's Agent (WRECO) shall ensure all approvals been obtained.
	6) Environmental Compliance	The City of Cape Town shall appoint a competent and knowledgeable Employer's Agent to fulfil the role of the WRECO and where required, an Environmental Auditor.
	7) Contractors Environmental Officer	i. The Contractor shall appoint a competent and knowledgeable Contractors Environmental Officer

CONSTRUCTION

DESCRIPTION	**Aesthetics Management**	
Possible source of potential impact	Clearing of vegetation • Poor housekeeping • Dust • Stockpile • Waste • Vehicles • Security lighting • Odour • Fires • Poor rehabilitation • Alien vegetation • Noise	
Risks/impact	Risk / impact:	Mitigation measures
	1) Unsightly camps or construction areas.	i. The Contractor shall undertake all activities associated with the search and rescue operation and have completed these prior to the commencement of construction related activities.
	2) Dust generation.	i. All EMPr, Environmental Authorisation and any other regulatory requirement shall be aligned with engineering requirements.
	3) Scarring of landscape	i. The Contractor shall make provision for adequate budget for construction site environmental management requirements.
	4) Insufficient soil stabilisation and rehabilitation resulting in erosion and subsidence.	i. The Employer's Agent (WRECO) shall undertake an environmental review of all tender submissions.
	5) Infestation of alien invasive species because of disturbances.	i. The Employer's Agent (WRECO) shall ensure all approvals been obtained.
	6) Spread of litter	The City of Cape Town shall appoint a competent and knowledgeable Employer's Agent to fulfil the role of the WRECO and where required, an Environmental Auditor.
	7) Light pollution	i. The Contractor shall appoint a competent and knowledgeable Contractors Environmental Officer
	8) Stockpile management	i. Stockpiles must be regularly and neatly maintained. ii. Stockpile heights to be kept to a minimum.
	The Contractor shall develop and implement an aesthetics management method statement.	
Top Tip(s)	• Do not use hay bales for soil stabilisation, as hay contains seed which may result in the spread of agricultural weeds. • Ensure mobile toilets are enclosed within a shade cloth enclosure. This will not only reduce visual impact, but also the temperature within the toilets – thus limiting odours.	

DESCRIPTION	**Dust Management**	
Possible source of potential impact	Vehicular movement on unpaved roads • Material handling, storage and transportation of materials • Wind erosion from stockpiles • Excessive vegetation clearance	
Risks/impact	Risk / impact:	Mitigation measures
	1) Potential loss of agricultural value due to dust settlement on plants.	i. Clearance of indigenous vegetation shall be kept to an absolute minimum. Immediate rehabilitation of disturbed areas.
	2) Dust generation.	i. All EMPr, Environmental Authorisation and any other regulatory requirement shall be aligned with engineering requirements.
	2) Impacts on biological functioning and productivity of vegetation.	i. Monitoring of dust fall out shall be conducted as prescribed in the National Dust Control Regulations.
	3) Potential health and nuisance impacts. 4) Safety risks due to reduced visibility. 5) Delays in construction related activities due to unsafe visual conditions.	i. Stockpile heights shall be reduced where dust entrainment has been noted to be high. ii. Dust suppression (wetting or other best practicable environmental option) shall be used in and around the construction area, along haul roads, at stockpiles, and any additional area indicated by the WRECO. iii. Dust generating materials to be transported shall be covered when transported. iv. All vehicles shall travel at speeds that will not generate dust. v. Strict dust control to limit impacts on sensitive receptors vi. Monitoring of dust shall be conducted as per the regulated frequencies at areas where dust is being generated. Dust mitigation is required to prevent dust levels exceeding 600 mg/m2/day. vii. Monitoring of particulate matter and dust fall as prescribed in the National Dust Control Regulations shall be conducted.
	The Contractor shall develop and implement a dust management method statement. Where required, a dust management plan shall be developed in terms of the National Dust Control Regulations.	
Top Tip(s)	• Dust monitoring method (e.g. dust nuisance vs dust fall-out) to be undertaken using correct monitoring protocols – e.g. do not use dust nuisance monitoring techniques to determine dust fallout levels. • Monitoring stations to be placed within path of dust emission. • Perimeter dust fall monitoring is recommended where off-site impacts need to be assessed. • Alternatives to wetting include chemical dust suppressants, mulching, planting vegetation in windows etc. Chipped material from vegetation clearing operations can be used to bind the soil, thereby reducing dust levels during rehabilitation / reinstatement works. Alien vegetation should not be used as mulch if it is in seed.	

DESCRIPTION	**Earthworks Mangement**	
Possible source of potential impact	• Dust • Clearing of vegetation • Wind erosion from stockpiles • Vehicular movement on unpaved roads	
Risks/impact	Risk / impact:	Mitigation measures

	1) Loss of soil through contamination, wind and water erosion and inadequate stockpile handling.	i. Topsoil shall be stockpiled separately from subsoil with all soils being reinstated in the reverse order to that in which they have been removed in order to initiate rehabilitation. All stockpiles shall be stabilised, not be higher than 2m, and blend in with the surrounding topography. ii. Stockpiles shall be kept weed-free for the duration of construction related activities. iii. Should additional material or backfill be required, only material from an approved source free of alien invasive fauna and flora shall be used. iv. Topsoil only to be handled during removal and reinstatement activities.
	2) Impacts on water resources.	i. All works shall take cognisance of potential impacts upon water resources. ii. Use non-potable water sources for dust suppression or cleaning of surfaces/floors or wash down of vehicles or equipment.
	3) Disruption of natural areas and land use practices.	i. Excavated trenches must be demarcated and fenced off as no-go area when no construction activity is underway. ii. Topsoil removed from all areas impacted upon shall be stockpiled for rehabilitation. iii. Soil horizons (e.g. topsoil, subsoil, bedrock and other layers such as clays etc) to be kept separate during removal, stockpiling and reinstatement. iv. Topsoil removed from agricultural lands shall be collected and stockpiled. All stones and rocks greater than 150 mm diameter shall be removed from the reinstated topsoil in agricultural areas. v. All stockpiles shall be located within designated areas outside the 1:20 year flood line of rivers and streams and not within 50m of delineated wetlands..
	4) Prevention of soil contamination.	i. Refuelling and other activities with the potential to cause pollution shall not be allowed on or adjacent to a stockpile.
	5) Excess material requiring spoiling.	i. Undertake Inventory of topsoil requirements and reserve extra 10% of topsoil for rehabilitation requirements. ii. Spoil shall be used as backfill to rehabilitate areas impacted upon by earthwork activities. iii. Excess spoil material shall be disposed of at the nearest registered landfill site as identified by the WRECO. iv. In the event that the volume of spoil generated for disposal outside of a registered landfill site is greater than the thresholds stipulated within GNR 921, (National Environmental Management: Waste Act (Act 59 of 2008) List of Waste Management Activities that have, or are likely to have a

		detrimental effect on the environment, of 29 November 2013), the City of Cape Town shall be notified that a Waste License will need to be applied for.
	The Contractor shall develop and implement an earthworks management method statement.	
Top Tip(s)	• Ensure suitable locality for topsoil storage is in place prior to the commencement of earthworks. • Cover stockpiles with permeable / breathable fabrics instead of plastic sheets.	

DESCRIPTION	**Earthworks Mangement**	
Possible source of potential impact	• Dust • Clearing of vegetation • Wind erosion from stockpiles • Vehicular movement on unpaved roads	
Risks/impact	Risk / impact:	Mitigation measures
	4) Prevention of soil contamination.	i. Refuelling and other activities with the potential to cause pollution shall not be allowed on or adjacent to a stockpile.
	5) Excess material requiring spoiling.	i. Undertake Inventory of topsoil requirements and reserve extra 10% of topsoil for rehabilitation requirements. ii. Spoil shall be used as backfill to rehabilitate areas impacted upon by earthwork activities. iii. Excess spoil material shall be disposed of at the nearest registered landfill site as identified by the WRECO. iv. In the event that the volume of spoil generated for disposal outside of a registered landfill site is greater than the thresholds stipulated within GNR 921, (National Environmental Management: Waste Act (Act 59 of 2008) List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment, of 29 November 2013), the City of Cape Town shall be

		notified that a Waste License will need to be applied for.
	The Contractor shall develop and implement an earthworks management method statement.	
Top Tip(s)	• Ensure suitable locality for topsoil storage is in place prior to the commencement of earthworks. • Cover stockpiles with permeable / breathable fabrics instead of plastic sheets.	

DESCRIPTION	**Erosion Management**		
Possible source of potential impact	• Dust • Clearing of vegetation • Wind erosion from stockpiles • Vehicular movement on unpaved roads		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Contamination of water resources through increased sediment load. 2) Reduction in soil productivity due to loss of topsoil. 3) Increased soil deposition to adjacent areas. 4) Dust generation.	i. Changes in natural gradients due to construction activities shall be avoided where possible or mitigated by levelling the slope to the original gradient. ii. Access and servitude roads shall be designed to drain efficiently through formalised storm water crossings comprising inter alia an earth berm and causeway. The placement of these shall be assessed per road portion. Runoff from roads must be managed to avoid erosion and pollution problems. Where necessary, silt traps should be installed to minimise silt from entering the storm water or sewerage systems.Storm water shall be directed to areas of high stability with the ability to reduce storm water velocity. iii. Where the above is not possible, exposed slopes steeper than 1:2 (vertical: horizontal) shall be stabilised and drainage directed to engineered structures. iv. Exposed areas shall be stabilised within one week of their exposure. v. Where slopes created are steeper than 1:1, additional anti-erosion mechanisms shall be implemented (such as knocking in stakes, installing gabions, geo textiles or similar). vi. Monthly clearance of alien vegetation re-growth at disturbed areas shall be conducted as per the requirements of the Conservation of Agricultural Resources Act (Act 43 of 1983) and National Environmental Management: Biodiversity Act's (Act 10 of 2004) Alien Invasive Species Regulations, as amended until rehabilitation in the area is initiated. vii. No disturbance of soil shall occur outside the construction footprint boundaries. viii. Suspended solids within water leaving the footprint area shall not contain significantly higher levels	

		of suspended solids (>10%) than water within locally occurring water resources.
	The Contractor shall develop and implement an earthworks management method statement.	
Top Tip(s)	Only clear vegetation where required. • Ensure storm water planning is finalised prior to commencement of earthworks.	

DESCRIPTION	**Fauna and Flora Management (Marine and Terrestrial)**		
Possible source of potential impact	• Site preparation • Civil works (Marine and terrestrial infrastructure) • Dewatering • Vegetation clearance		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Disturbance, degradation and pollution of the environment. 2) Removal of terrestrial vegetation and thus loss of habitat and biodiversity. 3) Disturbance to or removal of agricultural capacity. 4) Removal of marine bottom	i. Reduce construction related activities and vegetation clearance within the development where logistically possible. ii. No construction related activities to impact upon areas outside of the development footprint. iii. A search and rescue operation to collect species for	

	sediment and thetemporary loss of benthic habitat during installation of the intake and discharge pipeline structures for the desalination plants 5) Impact on marine benthic communities as a result of the disposal of excavated sediments 6) Increased turbidity and suspended sediment as a result of excavation and dumping. 7) Potential contamination of the marine environment (water, sediment and ecology) as a result of inappropriate disposal of spoil or surplus rock from construction activities, as well as hydrocarbon spills from marine machinery and equipment. 8) Impact of the exclusion zone establishment around the construction site and along the pipeline; 9) Altered flows around the intake and discharge pipeline structures resulting in hydrodynamic or ecological impacts.	rehabilitation shall be conducted, where feasible, prior to the commencement of construction related activities and these shall be kept alive in a nursery for rehabilitation purposes. iv. Each indigenous tree or shrub removed through search and rescue operations shall be replanted in the area it came from or in an area as advised by the City of Cape Town Biodiversity Management Branch. v. A Marine Ecologist must be appointed to supervise and closely monitor construction activity within the marine environment.
	10) Negative impacts on sensitive environments and rare/threatened/endangered species.	i. All areas where rare and/or endangered species could occur are to be identified and avoided where possible. ii. No unauthorised clearing of vegetation. iii. No introduction of alien invasive vegetation species as a result of construction related activities. iv. Progressive rehabilitation of all disturbed areas to a state similar to the surrounding landscape. v. Rescued specimens are to be stored and cared for in a temporary nursery, and replanted once construction related activities have been completed.

		vi. All disturbed areas shall be rehabilitated with special attention paid to identified sensitive areas. vii. Rescued fauna relocated to approved locality.
	11) Damage and/or death of rescued specimens due to ineffective search and rescue operations.	i. The Contractor shall maintain the nursery to ensure survival of collected species. Individuals that die in the nursery shall be replaced from a commercial source by the Contractor. If the species that die were intended to be placed in biodiversity areas in the City – the Biodiversity Management Branch shall be consulted with regard to the acceptability of utilising commercially obtained replacement plants prior to purchase.
	12) Unauthorised collection of fauna and flora for food, firewood, "muthi" or other uses.	i. No unauthorised collection of fauna and flora.
	13) Incorrect operation of gates thereby allowing free movement of livestock and game.	i. The Contractor shall manage gates in accordance to the requirements of the Fencing Act (Act 31 of 1963), whereby open gates shall be left open and closed gates be kept closed. ii. The Contractor shall inform all landowners in the event of livestock movement into agricultural lands due to incorrect gate usage.
	14) Animals becoming trapped in construction areas and/or falling into excavations due to ineffective exclusion mechanisms (fencing, cattle grids etc.).	i. Open excavations shall be adequately fenced to prevent access by wildlife or livestock. ii. Corridors across any servitude for the passage of animals shall be provided at appropriate sites determined by the Contractor and approved by the WRECO (Employers Agent).
	15) Spread of alien invasive species.	i. Monthly removal of alien invasive vegetation from all impacted areas.

		ii. Herbicide use for the control of invasive species shall be at supplier recommended application rates, and in accordance to the regulatory requirements (Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947)). Herbicides used shall be biodegradable where possible.
	16) Fauna management	i. No harming/killing/trapping/hunting of animals is allowed. ii. No domestic animals are allowed on site. iii. Qualified person(s) to be contacted to remove wildlife and snakes which do not want to move on their own. iv. Areas of vegetation must not be avoided but rather cordoned off and marked as no-go areas. v. City of Cape Biodiversity Branch should be contacted on 021 514 4189 for assistance, where required.
	The Contractor shall develop and implement a fauna and flora method statement. Top Tip(s)	
Top Tip(s)	Undertaking a search and rescue operation where rescued flora is propagated in a nursery may provide a cheaper alternative than procuring commercial nursery bought flora. Furthermore, this approach allows containment of unique endemic genetic variations.	

DESCRIPTION	**Fire Management**		
Possible source of potential impact	• Site preparation • Civil works • Fires • Vegetation clearance		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Loss of fauna and flora and destruction of natural habitat. 2) Loss of grazing lands and crops. 3) Damage or destruction to infrastructure. 4) Injury and/or death of humans and animals.	i. Perimeter boundaries shall have fire breaks in place. ii. Fire extinguishers shall be available at all points of storage of flammable products. iii. The fire extinguishers shall be checked on a monthly basis to ensure they have not been used/exceeded their yearly service intervals. iv. Basic fire-fighting equipment shall be kept and maintained at all construction fronts at all times. Basic fire-fighting equipment shall not be restricted to fire extinguishers, but shall take cognisance of site specific conditions. v. All staff are to undergo basic fire-fighting training. vi. Basic fire-fighting equipment shall be checked prior to the commencement of the winter fire season. vii. The Contractor shall assign the position of Fire Officer to one of its senior staff members who shall be competent and adequately trained to fulfil the position of Fire Officer. viii. The Fire Officer shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedures to be followed. The Fire Officer shall be responsible for contacting emergency services for assistance. ix. Any fires that occur shall be reported to theWRECO immediately and reported in turn to the relevant authority (district / local municipality, the local FPA and the Department of Agriculture, Fisheries and Forestry). x. Provision of formal training to all members of staff, who shall be able to attend to fire fighting in the event of a fire, until emergency services arrive.	

		xi. All other staff shall receive training on fire prevention and fire-fighting and safety in the event of a fire, as a part of the site induction training by Contractor before commencing work. Annual refresher courses shall be presented to all staff. xii. Ensure that the necessary materials and equipment for dealing with oil, fuel and hazardous substance spills and leaks are available on site and up to date at all times. xiii. No open fires shall be permitted on or off-site, except for activities authorised by the WRECO and the FPA. All authorised fires shall occur at designated fire places, which shall be suitably resourced to contain and suppress any potential run away fire. Only gas cookers may be used for cooking purposes in a designated cooking area. xiv. No on-site burning of any waste materials, vegetation, litter or refuse shall be permitted. xv. The disposal of cigarette butts into the surrounding environment shall not be permitted. xvi. Only gas cookers may be used for cooking purposes in a designated cooking area. xvii. Grass and other vegetation in the vicinity of infrastructure shall be cut at regular intervals to reduce fuel load and fire hazards xviii. Annual updating and approval of the fire management response plan before onset of fire season. xix. Conduct management review of fire preparedness and response before onset of fire season. xx. Conduct fire and emergency drills every six months with one coinciding with the onset of the fire season.
	The Contractor shall develop and implement a fire management method statement.	
Top Tip(s)	Consider using haul roads as fire breaks. These shall be agreed upon with neighbouring landowners, the FPA and recorded within agreements and management plans; and updated annually.	

DESCRIPTION	**Hazardous Substance Management**		
Possible source of potential impact	• Fuel dispensing • Reactive chemical storage • Chemical cleaning • Plant maintenance		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Contamination of the receiving environment	i. All hazardous substances shall be kept under lock and key in a bunded impermeable weather and fire proof facility. ii. All staff to be trained in the safe handling and spill management of all substances used on site. iii. Drip trays to be provided and used for all mobile plant, maintenance and refuelling activities. iv. Sufficient number and type of spills kits to be provided at all work fronts. v. The Contractor shall prevent the discharge of any pollutants, such as bentonite, cements, concrete, lime, chemicals and fuels into any water resource.	
	2) Spills	i. Spills to be contained and removed by suitably trained staff. ii. Contaminated material to be disposed of registered hazardous waste landfill facility.	
	3) Incorrect use of herbicide and pesticides.	i. All herbicides and pesticides to be used under the supervision of a Pest Control Officer (PCO), in terms of the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947) and its regulations.	
	4) Threat of fires	i. All reactive hazardous substances to be labelled and stored separately. ii. Suitable fire-fighting equipment shall be stored in close proximity and all personnel be made aware of the dangers of burning chemicals/smoke inhalation.	
	5) Temporary storage	i. No temporary storage of hazardous substances, storing 80m³ or more or 30m³ within 200m from the high-water mark of the sea or within 100m from the edge of a watercourse	
	6) Personal injury	ii. All staff shall be trained in the management of hazardous substances.	

		iii. All staff shall be provided with appropriate Personal Protective Equipment (PPE).
	7) Asbestos management	i. Should any asbestos waste material be discovered on site, rehabilitation of the site should be conducted in consultation with the National Department of Labour and in accordance with the Asbestos Regulations, as amended.
	8) Cement / concrete management	i. Cement shall be stored within weatherproof facilities / covered to prevent environmental contamination. ii. The Contractor shall ensure that concrete is mixed in appropriate structures to prevent the contamination of the surrounding environment. All visible remains are to be removed and disposed of as waste and all surplus material is to be removed. Plastic sheets and the bare ground shall not to be used for mixing purposes. iii. All visible remains of excess concrete shall be physically removed and disposed of on completion of construction. iv. Concrete spoil from foundation pours, shall not be discarded into the surrounding environment. Excess concrete and wash water from the concrete truck's drum shall be disposed of at WRECO's approved locality.6 +
	The Contractor shall develop and implement a fire management method statement.	
Top Tip(s)	Consider using haul roads as fire breaks. These shall be agreed upon with neighbouring landowners, the FPA and recorded within agreements and management plans; and updated annually.	

DESCRIPTION	**Heritage Management**		
Possible source of potential impact	• Asbestos waste • Chance human remains • Demolished buildings • Dust		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Damage to known heritage resources.	i. All heritage resources encountered shall be avoided and protected unless otherwise instructed by the WRECO (in consultation with a heritage specialist). Approval from Heritage Western Cape (HWC) must be attained prior to the removal, damaging or alteration of any heritage resource.	
	2) Damage or destruction of chance finds.	i. Personnel shall be informed of what chance finds may be and what they may look like and instructed to be on the lookout for these items during excavation operations. ii. In the event of a chance find, work at the find shall be stopped. iii. A heritage specialist shall be called in to investigate the find. The heritage specialist shall provide management measures for the protection or removal of the find in consultation with HWC. iv. Work shall only recommence in area of the find once written permission from the HWC, heritage specialist and theWRECO has been obtained.	
	3) Heritage watching brief	i. A heritage specialist shall be appointed to undertake a "watching brief" in the event of finds.	
	4) Heritage Authority details.	i. The Contractor shall ensure the below Competent Authority contact details are kept on file on site. SAHRA: 021 462 4502 HWC: 021 483 9598 CCT: 021 487 2038	
	The Contractor shall develop and implement a heritage management method statement.		
Top Tip(s)	• Ensure an archaeologists contact details are kept on file in the event of a chance find. This may expedite timeframes associated with work cessation at point of chance find. • Undertake site walk through prior to construction related activities commencing to ground truth no graves were omitted during planning and design phases.		

DESCRIPTION	**Land Owner Liaison**		
Possible source of potential impact	• Dust • Water contamination • Noise • Waste		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Animosity of community members affected by construction related activities.	Landowners must be actively engaged and be kept informed of new developments. Effective communication channels shall be established and maintained.	
	2) Incident reporting structures	i. Initiate incident reporting structures. ii. Contractor shall adhere to the following timeframes for dealing with Landowner concerns, unless otherwise approved by the Employer: • Record concern within the Communications Register and verbally notify the Employer – immediate. • Respond to the concern – within 1 day of concern being raised – this includes consulting with the Landowner. • Rectify/mitigate concern – within 3 days of concern being raised. • Respond in writing to landowner on "close out" of concern – within 5 days of concern being raised. • Submit to the Employer a detailed report – within 7 days of concern being raised.	
	3) Construction programmes.	i. Where practical, construction related activities shall be programmed to lessen impacts upon existing land use practices.	
	4) Site creep	i. All development foot prints shall be surveyed and pegged prior to the commencement of construction related activities.	
	5) Land access protocols	i. Basic Environmental Awareness Training to all employees with annual refresher courses. ii. Access to the site by people other than staff or those with construction related business shall be limited.	
	6) Site Camp	i. The Contractor shall require a site office / yard for the duration of the contract period. The	

		Contractor's site office shall be located within the development footprint, or on a site appropriately zoned and/or authorised for such use by the Competent Authority and approved by the Employers' Agent. The Contractor shall select a location that has easy access and which has already been cleared or disturbed by previous human activity (e.g. previous construction camps or stockpile areas). All construction activities, materials, equipment and personnel shall be restricted to within the area specified. The Contractor shall inform the WRECOof the site camp localities prior to the commencement of construction related work.
	The Contractor shall develop and implement a land use management method statement.	
Top Tip(s)	Engage with land owners prior to undertaking construction related activities and ensure all concerns / requirements are agreed upon. This will prevent possible future claims, grievances and animosity towards the development.	

DESCRIPTION	**Noise Management**		
Possible source of potential impact	• Blasting • Machinery and equipment • Demolition • Heavy duty vehicles • Maintenance • Hours of operation		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Hearing loss through exposure to extended and or high noise levels. 2) Disruption of sense of place due to noise nuisance. 3) Noise nuisance to sensitive receptors.	i. Construction site yards, workshops, concrete batching plants and other noisy fixed facilities may not be located in close proximity to sensitive receptors, unless with the approval of theWRECO. In such cases, the Contractor shall notify affected parties prior to the commencement of the noisy activity. ii. Employees shall be provided with adequate PPE. iii. All construction related vehicles, plant and equipment shall be properly maintained to avoid creation of unnecessary additional noise. iv. Where possible, sensitive receptors shall be forewarned before noisy operations commence.	

		v. Maintenance activities are to be contained to reasonable hours during the day. vi. Where possible, noisy operations shall be combined so that they occur concurrently. vii. Strict control of blasting operations (if applicable), if required, with regard to the size and timing of explosions in order to minimise noise. The number of blasts per day shall be limited, blasting shall be undertaken at the same times each day and no blasting shall be allowed at night. Affected parties shall be notified in advance of blasting events.
	4) Vibration	ii. All buildings within WRECO approved radius shall be inspected pre and post blasting to determine structural integrity. ii. Records (containing photographs) of inspections shall be submitted to the WRECO. iii. All blasts shall be monitored to determine blast related vibration. iv. Compliance with regulatory requirements (BS 7385-2 (ISO 4866) Evaluation and measurement for vibration in buildings – Part 2: guide to damage levels from ground-borne vibration).raised. • Submit to the Employer a detailed report – within 7 days of concern being raised.
	The Contractor shall develop and implement a noise management method statement.	
Top Tip(s)	• Engage with affected stakeholders well in advance should excessively noisy operations be anticipated. Provide continued feedback and address associated grievances as timeously as possible. An informed stakeholder is less likely to raise a grievance. • Apply for noise exemptions in terms of the National Building Regulations and Building Standards Act or Western Cape Noise Control Regulations where required e.g for night time work.	

DESCRIPTION	**Rehabilitation Plan**		
Possible source of potential impact	• Dust • Erosion • Excess spoil • Alien invasive plants • Demolished temporary works		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	

	1) Reduction in species diversity after works..	i. Prior to site clearance activities a search and rescue operation for naturally occurring plant species shall be conducted, if feasible for the vegetation type. ii. Individuals removed during search and rescue operations shall be relocated to a nursery and kept alive and replanted in the area from which they were removed or in an area as advised by the City of Cape Town Biodiversity Management Branch. iii. The Contractor shall obtain the necessary permits for the collection, transportation and possession of the collected species. These shall be obtained from the provincial conservation department. i. Disturbed areas shall be reseeded using the approved seed mix. The Biodiversity Management Branch must be consulted with regard to any rehabilitation in biodiversity areas.
	2) Incorrect placement of topsoil and reseeding with the incorrect species resulting in poor vegetation establishment and regeneration of vegetation and visual scarring of the landscape. Dust generation and erosion due to exposed surfaces. 3) Loss of agricultural productivity due to poor vegetation establishment	ii. After construction related activities have ceased, the site shall be cleared of equipment and any other materials emanating from the works. iii. Top and sub soil shall be replaced in the order they were removed. iv. Disturbed areas shall be ripped and / or scarified to a depth of 450 mm. v. Topsoil shall be reinstated at the minimum depths of 150 mm. vi. Topsoil shall be placed such that the disturbed area is at a slightly higher level than the surrounding undisturbed soil to account for soil settlement. vii. All disturbed areas shall be re-vegetated using an approved seed mix. viii. Landowners should be consulted to determine specific rehabilitation requirements

	3) Construction programmes.	i. Where practical, construction related activities shall be programmed to lessen impacts upon existing land use practices.
	4) Reduction in soil productivity due to the mixing of soil horizons during soil stripping, which causes dilution of fertility in topsoil's.	ii. Topsoil stored for longer than 6 months, shall be vegetated with an approved seed mix. ii. In cases like this, the biological viability of topsoil stockpiles shall be tested before placement during rehabilitation; and where necessary amelioration such as microbial supplementation may be required.
	5) Infestation by alien invasive plant species.	i. Monthly removal of alien invasive species re-establishing on cleared areas, stockpiles and throughout rehabilitation shall be undertaken.
	6) Drainage	i. All drainage lines shall be reinstated. ii. All disturbed areas shall be re-profiled to original contours. iii. Soils within drainage lines shall be stabilised to ensure no loss of capacity. iv. Permanent erosion and sediment control measures shall be reinstated.
	7) Loss of watercourse integrity and functioning	i. Anti-erosion measures shall be implemented to stabilise beds and banks of watercourses where these are disturbed. These measures should preferably be temporary in nature so they can be removed at a point where rehabilitation has been deemed to be successful. Permanent structures shall be approved by the WRECO before construction. ii. The soil profile (type and thickness of soil) of rivers and wetlands shall be recorded prior to excavations in these areas. iii. Topsoil and soils removed from watercourses shall be stockpiled separately. iv. Replacement of soil types shall be done so as to match the baseline soil profile as closely as possible. v. Re vegetation: Indigenous species that were originally present in the watercourse shall preferably be replanted in the watercourse

		vi. Careful attention to this detail is required in order to restore the water resistant layers that help *inter alia* wetlands retain water, as well as to restore other wetland functions.
	8) Erosion and wash-outs from disturbances on undulating terrain.	i. Minimal clearance of vegetation shall be permitted and plants shall be re-established as soon as possible. ii. Anti-erosion measures to be implemented as a priority on all areas which feature undulating terrain. iii. Formalised storm-water crossings shall be placed on all roads on undulating terrain. iv. Storm-water shall be directed to an area capable of dissipating the energy of the water.
	The Contractor shall develop and implement a rehabilitation management method statement.	
Top Tip(s)	• All vegetation cleared through site clearance activities should be chipped to provide mulch for soil stabilisation requirements. Such mulch shall be left to compost for six months. • Alien invasive plant parts which are in seed, shall not be composted. • Work mulch into the top layer of soil, where after hydro-seeding can take place.	

DESCRIPTION	**Social Aspect**		
Possible source of potential impact	• Noise • Dust • Soil on public roads at site access • Waste		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Animosity of community members affected by the project.	i. Stakeholders shall be actively engaged and be kept informed regarding construction related progress, requirements and meetings. ii. Ensure effective social and environmental monitoring. iii. The Contractor shall adhere to the following timeframes for dealing with landowner and stakeholder concerns, unless otherwise approved by the WRECO: • Record the concern within the Communications Register and verbally notify the WRECO immediately. • Respond to the concern – within 1 day of the concern being raised – this includes consulting with the stakeholder. • Rectify/mitigate the concern – within 3 days of the concern being raised. • Respond in writing to the stakeholder on "close out" of the concern – within 5 days of the concern being raised. • Submit to the WRECO a detailed report – within 7 days of the concern being raised.	
	2) Cultural conflicts as a result of an influx of diverse population groups.	i. No accommodation at camp sites shall be allowed. ii. During work hours the Contractor shall be vigilant of potentially negative interactions between staff and the surrounding communities. iii. Trespassing on land adjacent to the project area is not allowed. iv. Access by people not involved in the project shall be controlled.	
	3) Marginalisation of Historically disadvantaged individuals (HDI's) due to inequitable	i. Procurement policies specified in the tender documents must be adhered to, including (but not limited to): • Employment of HDIs. • Use of local labour. • Use of local services.	

	employment. Economic impact of project closure.	
	4) Potential increase in environmental degradation as a result of the influx of employees and potential work seekers.	i. Basic Environmental Awareness Training to all employees with six monthly refresher courses. ii. Access to the site by people other than staff or those with project related business shall be limited.
	5) Neglect for worker health and safety, employment conditions. Poor skills development and training.	i. Safety training shall be provided to all staff and visitors. ii. Personal protective equipment (PPE) shall be provided to all staff and visitors. The Contractor shall ensure that the PPE is worn on site at all times. iii. The Contractor shall ensure a safe clean working environment, including (but not limited to): • Sufficient and clean toilet and ablution facilities. • Comfortable eating areas. • Safe transport. iv. Liaise with local emergency and health services on emergency response and preparedness procedures. v. Up-to-date contact list of all emergency services. vi. Co-ordinate emergency evacuation procedures with the local emergency services, and conduct regular emergency drills (as per the requirements of the health and safety plan). vii. Ensure compliance with the Occupational Health and Safety Act and Regulations.
	The Contractor shall develop and implement a social management method statement.	
Top Tip(s)	• The Contractor shall not enter into agreements with stakeholders or undertake work on private property in lieu of favours, payment or any other means where either party may benefit from the activities / permissions of the other party.	

DESCRIPTION	**Soil Management**		
Possible source of potential impact	• Stockpiles • Dust • Water contamination • Excess spoil		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Loss of soil through contamination, wind and water erosion and inadequate stockpile handling.	i. All stockpiles shall be stabilised, not be higher than two meters and blend in with the surrounding topography. ii. Stockpiles shall be kept weed free for the duration of the construction related activities.	
	2) Loss of biological viability of stockpiled topsoil due to poor handling.	i. Topsoil shall only to be handled during removal and reinstatement. ii. Soil horizons (e.g. topsoil, subsoil, bedrock etc.) to be kept separate during removal, stockpiling and reinstatement. iii. All soils shall be reinstated in the reverse order to that in which they have been removed.	
	3) Disruption of natural areas and land use practices.	i. Topsoil removed from riparian, wetland and grassland areas shall be removed and kept in separate stockpiles for rehabilitation. ii. Soil horizons (e.g. topsoil, subsoil, bedrock and other layers such as clays etc.) to be kept separate during removal, stockpiling and reinstatement. iii. Topsoil removed from agricultural lands shall be collected and stockpiled. All stones and rocks greater than 150 mm diameter shall be removed from the reinstated topsoil in agricultural areas. iv. All stockpiles shall be located within designated areas outside the 1:20 year flood line of rivers and streams and not within 50 meters of delineated wetlands. v. Topsoil shall be windrowed along servitudes.	
	4) Prevention of contamination.	i. Refuelling and other activities with the potential to cause pollution shall not be allowed on or adjacent to a stockpile.	
	5) Excess material requiring spoiling.	i. Inventory of topsoil requirements with extra 10% topsoil kept in reserve.	

		ii. Spoil shall be used as backfill to rehabilitate areas impacted upon by construction activities. iii. Excess spoil material shall be disposed of at locations as identified by the WRECO.
	The Contractor shall develop and implement a soil management method statement.	
Top Tip(s)	• Consider the use of excess spoil for the creation of earth berms. This will reduce costs associated with transport and disposal. The berms can be vegetated and will provide a noise and visual barrier. Trees planted may assist in off-setting the developments carbon footprint. • Do not provide landowners with excess spoil where this may be used for the construction of dams, shooting ranges etc. Excess spoil may however be given, with the Employer Agents (WRECO) approval, where this will be used for erosion control or rehabilitation of disused quarries / borrow pits, and in accordance with respective EMPr.	

DESCRIPTION	**Sustainable Management**		
Possible source of potential impact	• Electricity generation • Generator exhaust emissions • Dust • Water contamination • Excess spoil		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Increased costs associated with providing; and availability of electricity to site offices	i. The Contractor shall use appropriate materials and design for construction of buildings that assist in reducing heating/cooling demands. ii. The Contractor's site offices shall take solar altitudes into account and appropriate awnings be fitted above the windows to prevent excessive amounts of sun entering the buildings. iii. The design of buildings shall take the insulating properties of the materials used in their construction into account. Energy efficient building materials shall be used. iv. Trees located in the site camp shall not be removed without the approval of the WRECO.	

		v. The Contractor shall implement measures to conserve energy, which may include solar panels, "energy-saving" bulbs automatic timers on light switches, solar geysers and point of source geysers. vi. The Contractor shall implement energy saving measures to result in a 20% saving in electricity consumption.
	2) Increased costs associated with providing; and availability of water to site offices	i. The Contractor shall ensure all facilities are provided with low water flow systems and that the toilets are fitted with a dual flush toilet and waterless urinal systems. ii. The Contractor shall install "grey-water" systems to allow for the re-use of water. iii. Rain water tanks shall be installed to collect all the runoff from the roofed buildings on site. This water shall be reused for *inter alia* irrigation purposes. iv. The Contractor shall ensure all water pipes remain leak free for the duration of construction related works.
	3) Increase in dust due to non-availability of potable water	i. The Contractor shall implement dust suppression measures using non potable water or other best environmental practicable option.
	The Contractor shall develop and implement a sustainability management method statement.	
Top Tip(s)	• Use water from excavation dewatering operations for dust suppression • Use chipped material from site clearance activities as ground cover (for dust suppression). Alien vegetation that is in seed should not be used for any purpose.	

DESCRIPTION	**Traffic Management**		
Possible source of potential impact	• Noise • Vehicle emissions • Maintenance • Refuelling		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Degradation of existing road conditions due to the use by construction vehicles.	i. Roads shall be maintained in an acceptable condition for the safe travel of the public and project personnel. ii. Access shall only be for activities essential for the continued safe construction activities.	

		Access for the general public shall not be permitted.
	2) Degradation of the surrounding environment.	i. No new roads constructed outside of the development footprint. ii. All vehicles shall remain on designated routes. iii. No soil compaction, erosion and sedimentation to land and water. iv. Minimise disturbances to water resources flora and fauna. v. Manage hydrocarbon spills from vehicles
	3) Dust generation as a result of vehicle entrainment.	i. The Contractor shall ensure dust entrainment does not exceed prescribed dust regulations ii. Manage vehicle speeds on site.
	4) Increase in safety risks due to presence of additional vehicles and equipment on the local road network. 5) Inconvenience and delays caused during road and or lane closures and traffic flow diversions..	i. The travelling public shall have the right of way on public roads. ii. Full closure of existing roads shall not be allowed. iii. Where access to properties needs to be closed, alternative access for the duration of the closure shall be provided. The Contractor shall notify affected parties 48 hours before closure. iv. Flagmen shall be provided at partial road closures and other traffic disruptions to ensure the safety of the public v. Any accidents or incidents shall be recorded and the WRECO notified immediately. Investigation into the causes must be done.
	The Contractor shall develop and implement a traffic management method statement.	
Top Tip(s)	• Undertake a photographic survey of all roads to be impacted upon by construction related activities prior to the commencement of construction. Where private roads are to be used, engage road owner on specific requirements / conditions. This will negate costly disputes over road repair or maintenance.	

DESCRIPTION	**Training Program**		
Possible source of potential impact	• Litter due to poor training • Dust due to poor training • Noise due to poor training • Water contamination due to poor training		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Risks to quality of workmanship. Private property and the health and safety of workers and the surrounding communities due to lack of skills and training. 2) Risk of environmental degradation due to workers being uninformed about the potential impacts of the development.	i. All employees shall receive general construction related work skills training required to enable them to work safely and effectively, including: • Basic Environmental Awareness Training. • Spill and emergency management. • Health and safety. • Emergency drills. • Fire-fighting. • Disaster management. • Heritage resource and grave identification. ii. Specific task-related skills training shall be SAQA accredited. iii. A system of evaluation of the effectiveness of training shall be developed by the Contractor.	
	The Contractor shall develop and implement a training management method statement.		
Top Tip(s)	• Use familiar examples within training programmes. • Speak to the level of the audience.		

DESCRIPTION	**Waste Management**		
Possible source of potential impact	• Clearing • Excavations • Civil works • Maintenance • Temporary facilities • Canteen • First aid		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Reduced capacity at local landfill sites that needs to accept waste generated by the development.	i. Wherever possible, materials shall be reused or recycled to reduce amounts of waste that need to be disposed of at a landfill.	
	2) Spoil material volumes exceeding regulated threshold limits	i. In the event that the volume of spoil generated for disposal outside of a registered landfill site is greater than the thresholds stipulated within GNR 921, (National Environmental Management: Waste Act (Act 59 of 2008) List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment, of 29 November 2013), as amended, the WRECO shall be notified that a Waste License will need to be applied for. ii. No spoiling shall occur until the waste license has been obtained.	
	3) Soil and water resource contamination due to incorrect storage of waste and illegal dumping.areas and land use practices.	i. General waste shall be stored separately from hazardous waste. General waste shall be stored in weather and vermin proof bins or skips or similar containers only. ii. Hazardous waste shall be stored in a bunded weatherproof area. Water from the bund shall be collected and disposed of at an appropriate landfill. iii. General waste that is not reused or recycled can only be disposed of at a registered landfill. Hazardous waste shall be disposed of at a hazardous waste landfill. iv. Overburden/spoil shall be disposed of at a registered landfill or at spoil areas authorised by the Competent Authority and approved by the WRECO.	

		v. Record shall be kept of all waste generated and what proportions are being reused or recycled. Records of waste disposed at landfills or spoil areas shall also be recorded. Disposal certificates / receipts shall be obtained from landfill sites to document waste delivered to the landfill. vi. No septic tanks (French drains) shall be used. All sewage shall be removed to the municipal waste water treatment works; and proof of each disposal shall be retained and submitted to theWRECO.
	4) Nuisances (litter, odours and aesthetics).due to poor housekeeping..	i. The development foot print shall be kept clean and waste removed to the waste storage facility daily. ii. Daily litter patrols shall be conducted at the site camp and within the construction footprint. iii. Vermin and weather proof bins shall be provided.
	The Contractor shall develop and implement a waste management method statement.	
Top Tip(s)	• Cut up a long spill sock into 20 – 30 cm lengths and place these into each drip tray. This will absorb spilt hydro carbons and prevent over-topping in the event of inclement weather. Many spill socks are designed to absorb anything between 7 – 25 times their weight. Furthermore, many can be wrung out and re-used. The use thereof does however not absolve the Contractor in preventing spills and subsequent environmental contamination. • Assign a dedicated (and approved) area where empty cement bags can be soaked and allowed to dry. This alters the chemical nature of the cement with the resultant inert cement bags being suitable for disposal at registered (general waste) landfill site(s).	

DESCRIPTION	**Water Management**	
Possible source of potential impact	• Site office • Civil works • Stockpiles	• Site preparation • Civil works

	• Excavations and dewatering • Hydro carbon spills • Access and haul roads • Waste water • Water use		• Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Destabilisation of watercourse channel and loss of habitat due to alteration of the bed or banks of the watercourse. These actions could result in changes to watercourse functioning.	i. Watercourse crossings shall be formalised in order to protect the beds and banks of watercourses. ii. Evaluation of watercourse soils shall be done before construction related activities commence to verify wetness zones and soil profiles in order to reinstate original conditions during rehabilitation. iii. Stabilisation mechanisms and anti-erosion measures required as and where required. iv. Protection of fauna and flora. v. Rehabilitation as per prescribed measures. vi. During construction, all topsoil and subsoil stockpiles shall be stored outside of wetland and riparian zones. A minimum distance of 100 m shall separate the stockpiles with the start of the wetland and riparian zone. vii. Construction related activities may require regulatory approvals to be obtained prior to the commencement of works within water courses.	
	2) Pollution or loss of water due to construction related activities interfacing with ground water (ingress of ground water into trenches, thereby requiring dewatering) and unmanaged runoff of surface water through	i. Water impacted upon by construction related activities shall not be released directly into the environment. ii. Water shall only be released into the surrounding environment with the approval of the WRECO and once it meets the regulated prescribed minimum requirements. iii. A storm water management plan shall be developed to prevent erosion and the contamination of water; and deal with storm water release into the environment. iv. Runoff from roads must be managed to avoid erosion and pollution problems. Where necessary, silt traps should be installed to minimise silt from entering the storm water or sewerage systems	

	unstabilised areas.	v. Storm water shall be directed towards stabilised areas which can dissipate the energy of the water flow. No ponding shall be permitted. vi. Prevention of water contaminated through storm water attenuation works discharging into any storm water drain or watercourse. vii. No handling of hazardous substances within close proximity to water resources and storm water drains.
	3) Decreased watercourse / wetland water quality and increased water quantity used.	i. Water quality upstream and downstream of where construction related activities are to occur, shall be monitored in terms of the variables and frequencies prescribed in the regulated minimum requirements, before, during and after construction related works. ii. Waste water shall be reused wherever possible. Water to be reused shall be tested for water quality (in terms of the variables and limits in regulated prescribed minimum requirements) and treated where necessary before reuse. iii. All construction related activities shall be excluded from watercourses, wetlands, riparian ecosystems and all sensitive areas, unless authorised so and approved by the WRECO. iv. During all works, no activity such as ablution, disturbance of natural habitat, storing of equipment or waste disposal may be permitted within any wetland, riparian zone. v. Implementation of anti-erosion and storm water works in areas susceptible to erosion.
	4) Non-conformance with regulatory requirements	i. Water use license may be required for watercourse crossings by service roads. Water use licenses shall be required for the discharge of the effluent if it is discharged to a water resource.
	The Contractor shall develop and implement a water management method statement.	
Top Tip(s)	• Straw bales (and not hay bales) may be used for bank stabilisation and sediment settlement. • Geotextile material should be placed parallel to the watercourse bank. The first row should be placed adjacent to the	

	bank, with subsequent rows overlapping. Vertical placement results in erosion runnels.

Operation

DESCRIPTION	**Aesthetics Management**		
Possible source of potential impact	• Poor housekeeping • Waste • Vehicles • Security lighting • Odour • Fires • Noise		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Unsightly operational camp	vi. Equipment and material to be neatly stored. vii. All site offices are to be matt toned single storey buildings that emit no glare. viii. Waste generated by the operation of the plant or facility should be removed regularly to registered landfill	
	2) Spread of litter	iii. Conduct daily litter patrols at all areas impacted through operational related activities. iv. Provide for waste collection and containment facilities within the Operators camp.	
	3) Light pollution	iii. Lighting must face down, not into surrounding environment, to provide adequate lighting for Health and Safety requirements. iv. Lights should not be mounted higher than 3m off ground level.	
	4) Stockpile management	iii. Stockpiles must be regularly and neatly maintained. iv. Stockpile heights to be kept to a minimum.	

	The Plant Operator shall develop and implement an aesthetics management method statement.
Top Tip(s)	• Ensure on-site mobile toilets are enclosed within a shade cloth enclosure. This will not only reduce visual impact, but also the temperature within the toilets – thus limiting odours.

DESCRIPTION	**Effluent Discharge**		
Possible source of potential impact	• Plant or Facility operation		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Disturbance, degradation and pollution of the terrestrial and marine environment.	i. No operational related activities permitted outside of the development footprint (and authorised discharge zones in terms of the desalination plants).	
	2) Impact of elevated salinities on marine environment in the effluent plume footprint generated by the desalination plant; 3) Impact of the discharged	ii. Effluent quality monitoring must be completed as specif	

	effluent generated by the desalination plant potentially having a higher temperature than the receiving environment; 4) Impact of the co-discharge of co-pollutants in the brine effluent generated by the desalination plant 5) Impact of altered dissolved oxygen concentrations in the brine plume generated by the desalination plant.	

Decommissioning

DESCRIPTION	**Effluent Discharge**		
Possible source of potential impact	• Dust • Noise • Asbestos • Rubble stockpiles • Excavations and dewatering • Hydro carbon spills • Access and haul roads • Rupturing underground tanks • Waste water • Water use		• Site preparation • Civil works • Dewatering • Vegetation clearance
Risks/impact	Risk / impact:	Mitigation measures	
	1) Environment	a) The Contractor shall prevent adverse environmental and community impacts from construction. b) The Contractor shall prevent loss of soil and creation of dust. c) The Contractor shall minimise any degradation of the quality of water leaving the site.	

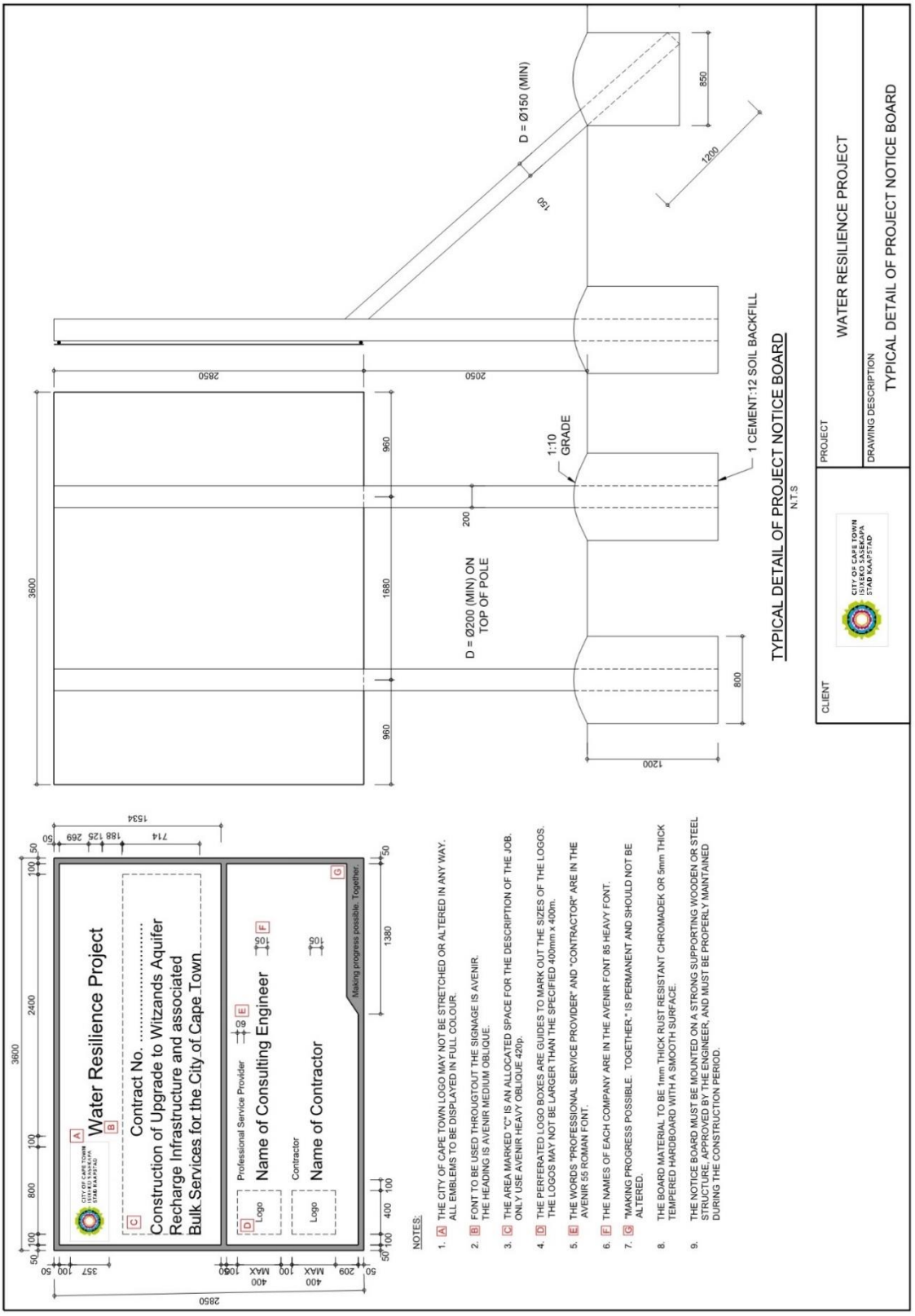
		d) The Contractor shall minimise the generation of excessive construction waste, including litter. e) Minimise contamination of the environment from dust.
	2) Contamination	a) The Contractor shall minimise the risks to the environment and human health as a result of decommissioning activities. b) The Contractor shall ensure construction workers engaged in earthworks or demolition activities or off-site disposal of waste are aware of potential contamination issues through site inductions, environmental training and at daily toolbox meetings, and undertake these activities in accordance with applicable regulatory requirements. c) The Contractor shall ensure that all earthworks, construction and demolition activities which could intercept or expose contaminants of potential concern are managed to prevent storm water or dust discharge.
	3) Noise	a) The Contractor shall use of lowest practicable noise emitting equipment and plant; noise levels will be considered in the selection of all plant and equipment, including the use of bored piles rather than driven piles where appropriate. b) The Contractor shall inspection all equipment to ensure that any noise mitigation (e.g. mufflers) is suitable.
	4) Traffic	a) The Contractor shall prevent vehicle accidents and protect life and property. b) The Contractor shall avoid or minimise environmental damage and visual and noise disturbance due to vehicular traffic.
	5) Construction Timing and Impacts	f) The Contractor shall provide appropriate mechanisms for the collection, treatment, recycling reuse and disposal of construction waste and litter. g) The Contractor shall prevent environmental degradation caused by the inappropriate disposal of construction waste and litter.

		h) The Contractor shall provide for the environmentally responsible disposal of all construction wastes and litter. i) The Contractor shall conserve resources and maximise the recovery of reusable materials. j) The Contractor shall formulate and implement a waste minimisation strategy.
	1) Budget	a) The Contractor shall make provision for adequate budget for site environmental management requirements.
	2) WRECO	a) The City of Cape Town shall appoint a competent and knowledgeable WRECO; and where required, an Environmental Auditor.
	3) Contractors Environmental Officer	a) The Contractor shall appoint a competent and knowledgeable Contractors Environmental Officer

Annexures

ANNEX 8 CITY OF CAPE TOWN

TYPICAL DETAIL OF THE PROJECT NOTICE BOARD



ANNEX 9 CITY OF CAPE TOWN

SCHEDULE 22A : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dti's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(1) prescribes that in the case of designated sectors, where in the award of bids where local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 The designated **Steel Products and Components for Construction Sector: Steel Value-added Products: Wire Products** is applicable to items tendered for as detailed in Annexure C and all products tendered for these items must comply with the requirements in respect of the local production and content legislation.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] * 100$$

Where

x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by NEDBANK Bank at close of business on the date of advertisement of the bid as required in paragraph 4.1 below.

NOTE: The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6 A bid will be disqualified/declared non-responsive if this Declaration Certificate and Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation.

2 Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;

2.2 **"bid price"** price offered by the supplier, excluding value added tax (VAT);

2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

SCHEDULE 22A : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry (dti) in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual) as per Returnable Schedule 1.

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Steel Products and Components for Construction Sector: Steel Value-added Products: Wire Products	**100%**

4. Does any portion of the services, works or goods offered for Items as detailed in Annexure C have any imported content?
(***Tick applicable box***)

YES		NO	✓

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.2 of the above General Conditions must be the rate(s) published by Nedbank Bank at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	N/A
Yen	
Other	

NB: Suppliers must submit proof of the NEDBANK Bank rate(s) of exchange used.

5. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the CCT provide directives in this regard.

SCHEDULE 22A : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. 979/2021/22

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity): City of Cape Town

NB

1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.
2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare,
of ..... (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
  (i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 2,660,986.-
Imported content (x), as calculated in terms of SATS 1286:2011	R 0.00
Stipulated minimum threshold for local content (paragraph 3 above)	100%
Local content %, as calculated in terms of SATS 1286:2011	100%

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

[redacted]

DATE: 15/11/2021
DATE: 15/11/2021
DATE: 15/11/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of upgrade to Witzands Aquifer recharge infrastructure and associated bulk services for the City of Cape Town: Phase 1 – Upgrading of Basins 6 & 9
(C3)	Designated product(s)	Steel Products and Components for Construction Sector: Steel Value-added products: Wire Products – Gabions, Reno Mattresses and Fencing
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	US Dollar [ ] EU [ ] GBP [ ]
(C7)	Specified local content %	100

Note: VAT to be excluded from all calculations

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1D, 1E, 1F & 1L	Refer to the drawings for the gabion specification for the following wire cage sizes:										
D2.1.1	2m x 1m x 0.5m = 4 m³		* See attached in file.								
D2.1.2	4m x 1m x 0.5m = 32 m³										
D2.1.3	2m x 1m x 1m = 4 m³										
D2.1.4	3m x 1m x 1m = 6 m³										
E2.1.1	1m x 1m x 0.5m = 1 m³										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E2.1.2	1m x 1m x 1m = 4 m³										
E2.1.3	2m x 1m x 1m = 4 m³										
F2.1.1	1m x 1m x 1m = 2 m³										
F2.1.2	3m x 1m x 1m = 12 m³										
L2.3.1	3m x 1m x 1m = 12 m³										
Basin 9 Schedules 2D, 2E, 2F	Refer to the drawings for the gabion specification for the following wire cage sizes:	* See attached in file.									
D2.1.1	2m x 1m x 0.5m = 4 m³										
D2.1.2	4m x 1m x 0.5m = 48 m³										
E2.1.1	1m x 1m x 0.5m = 1 m³										
E2.1.2	1m x 1m x 1m = 2 m³										
E2.1.3	2m x 1m x 1m = 4 m³										
E2.1.4	3m x 1m x 1m = 6 m³										
F2.1.1	1m x 1m x 1m = 2 m³										
F2.1.2	4m x 1m x 1m = 24 m³										
Basin 6 Schedules 1D, 1F, 1L, 1M, 1P	Refer to the drawings for the Reno mattress specification for the following wire cage sizes:										
D2.2.1	2m x 1m x 0.3m = 2.4 m³										
D2.2.2	6m x 2m x 0.3m = 144.0 m³										
F2.2.1	6m x 2m x 0.3m = 39.6 m³										
L2.4.1	3m x 1m x 0.3m = 10.8 m³										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
L2.4.2	6m x 2m x 0.3m = 21.6 m³										
M2.3.1	6m x 2m x 0.3m = 7.2 m³										
Basin 9 Schedules 2D, 2E, 2F, 2K	Refer to the drawings for the Reno mattress specification for the following wire cage sizes:										
D2.2.1	2m x 1m x 0.3m = 7.2 m³										
D2.2.2	6m x 2m x 0.3m = 219.6 m³										
E2.2.1	3m x 1m x 0.3m = 0.9 m³										
F2.2.1	2m x 1m x 0.3m = 6.6 m³										
F2.2.2	6m x 2m x 0.3m = 79.2 m³										
Basin 6 Schedule 1P	Security fencing	* See attached in file.									
P2.4	Pre-fabricated gate No = 1										
P2.5	Galvanized steel - 6 stack razor coil fence = 760m										
Basin 9 Schedule 2K	Security fencing										
K2.4	Pre-fabricated gate No = 2										
K2.5	Galvanized steel - 6 stack razor coil fence = 540m										
Basin 6 Schedule 1P	Security cages for protection of sluice gates & monitoring equipment										
P2.6.1	5500 x 4500 x 3000mm: No = 1										
P2.6.2	5000 x 4500 x 3000mm: No = 1										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
P2.6.3	3500 x 2500 x 2000mm: No = 1										
P2.6.4	4250 x 2500 x 3000mm: No = 1										
Basin 9 Schedule 2K	Security cages for protection of sluice gates & monitoring equipment	* See attached in file.									
K2.6.1	5500 x 4500 x 2500mm: No = 1										
K2.6.2	5500 x 4500 x 3000mm: No = 1										
K2.6.3	2500 x 2450 x 2500mm: No = 1										

(C20) Total tender value	R
(C21) Total Exempt imported content	R
(C22) Total Tender value net of exempt imported content	R
(C23) Total Imported content	R
(C24) Total local content	R
(C25) Average local content % of tender	

[redacted]

Date: 15/11/2021

CITY OF CAPE TOWN

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

SCHEDULE 22B : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dti's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

2. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(1) prescribes that in the case of designated sectors, where in the award of bids where local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 The designated **Steel Products and Components for Construction Sector: Steel Value-added Products: Reinforcing Bars** is applicable to items tendered for as detailed in Annexure C and all products tendered for these items must comply with the requirements in respect of the local production and content legislation.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] *100$$

Where

x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by NEDBANK Bank at close of business on the date of advertisement of the bid as required in paragraph 4.1 below.

NOTE: The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6 A bid will be disqualified/declared non-responsive if this Declaration Certificate and Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation.

2 Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;

2.2 **"bid price"** price offered by the supplier, excluding value added tax (VAT);

2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

SCHEDULE 22B : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry (dti) in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual) as per Returnable Schedule 1.

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Steel Products and Components for Construction Sector: Steel Value-added Products: Reinforcing Bars	**100%**

6. Does any portion of the services, works or goods offered for items as detailed in Annexure C have any imported content?
(Tick applicable box)

YES		NO	✓

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.2 of the above General Conditions must be the rate(s) published by Nedbank Bank at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	N/A
Yen	
Other	

NB: Suppliers must submit proof of the NEDBANK Bank rate(s) of exchange used.

7. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the CCT provide directives in this regard.

SCHEDULE 22B : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. 97Q/2021/22

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity): City of Cape Town

NB

3 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

4 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, ... [redacted] (full names),
do hereby declare, in ... of ... (name of bidder entity), the following:

(f) The facts contained herein are within my own personal knowledge.

(g) I have satisfied myself that:

(ii) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;

(h) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 35,748 -
Imported content (x), as calculated in terms of SATS 1286:2011	R 0.00
Stipulated minimum threshold for local content (paragraph 3 above)	100%
Local content %, as calculated in terms of SATS 1286:2011	100%

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(i) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(j) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPFA), 2000 (Act No. 5 of 2000).

[redacted]

DATE: 15/11/2021

DATE: 15/11/2021

DATE: 15/11/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of upgrade to Witzands Aquifer recharge infrastructure and associated bulk services for the City of Cape Town: Phase 1 – Upgrading of Basins 6 & 9
(C3)	Designated product(s)	Steel Products and Components for Construction Sector: Steel Value-added Products: Reinforcing Bars – Steel Reinforcement
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	US Dollar EU GBP
(C7)	Specified local content %	100

Note: VAT to be excluded from all calculations

Tender item no's	List of items	Calculation of local content: Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender summary: Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1D, 1E, 1F, 1G, 1I & 1L	Reinforcing steel bars										
D3.13 & D3.14	High Tensile Steel Bars = 169.32 t		* See attached in file.								
D3.13 & D3.14	Mild Steel Bars = 42.33 t										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E3.9	High Tensile Steel Bars = 2.78 t										
E3.10	Mild Steel Bars = 0.7 t										
F3.6	High Tensile Steel Bars = 1.11 t										
F3.7	High tensile welded mesh = 2.3 t										
G2.4 & G2.5	High Tensile Steel Bars = 13.63 t										
G2.6 &G2.7	Mild Steel Bars = 3.41 t										
I3.10 & I3.11	High Tensile Steel Bars = 0.69 t										
I3.12 & I3.13	Mild Steel Bars = 0.17 t										
L4.12 & L4.13	High Tensile Steel Bars = 1.87 t										
L4.14 & L4.15	Mild Steel Bars = 0.47 t										
L4.32 & L4.33	High Tensile Steel Bars = 8.06 t										
L4.34 & L4.35	Mild Steel Bars = 2.02 t										
Basin 9 Schedules 2D, 2E, 2F, 2G, 2I	Reinforcing steel bars										
D3.10 & D3.11	High Tensile Steel Bars = 207.14 t										
D3.12 & D3.13	Mild Steel Bars = 51.79 t										
E3.6	High Tensile Steel Bars = 1.65 t										

* See attached in file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E3.7	Mild Steel Bars = 0.41 t		* See attached in file								
F3.3	High tensile welded mesh = 1.7 t										
G2.4 & G2.5	High Tensile Steel Bars = 13.63 t										
G2.6 & G2.7	Mild Steel Bars = 3.41 t										
I3.10 & I3.11	High Tensile Steel Bars = 1.8 t										
I3.12 & I3.13	Mild Steel Bars = 0.45 t										

(C20) Total tender value	R
(C21) Total Exempt imported content	R
(C22) *Total* Tender value net of exempt imported content	R
(C23) Total Imported content	R
(C24) Total local content	R
(C25) Average local content % of tender	

Sign
22B

[redacted]

Date: 15/11/2021

SCHEDULE 22C : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dti's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

3. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(1) prescribes that in the case of designated sectors, where in the award of bids where local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 *The designated* ***Steel Products and Components for Construction Sector: Steel Value-added Products: Fabricated Structural Steel*** is applicable to items tendered for as detailed in Annexure C and all products tendered for these items must comply with the requirements in respect of the local production and content legislation.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] * 100$$

Where

x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of *x must be converted to Rand (ZAR) by using the exchange rate published* by NEDBANK Bank at close of business on the date of advertisement of the bid as required in paragraph 4.1 below.

NOTE: The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6 A bid will be disqualified/declared non-responsive if this Declaration Certificate and Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation.

2 Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;

2.2 **"bid price"** price offered by the supplier, excluding value added tax (VAT);

2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

SCHEDULE 22C : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry (dti) in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual) as per Returnable Schedule 1.

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Steel Products and Components for Construction Sector: Steel Value-added Products: Fabricated Structural Steel	**100%**

8. Does any portion of the services, works or goods offered for items as detailed in Annexure C have any imported content?
(Tick applicable box)

YES		NO	✓

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.2 of the above General Conditions must be the rate(s) published by Nedbank Bank at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	N/A
Yen	
Other	

NB: Suppliers must submit proof of the NEDBANK Bank rate(s) of exchange used.

9. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the CCT provide directives in this regard.

SCHEDULE 22C : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. 979 / 2021 /22

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity): City of Cape Town

NB

5 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

6 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in
of [redacted] (name of bidder entity), the following:

(k) The facts contained herein are within my own personal knowledge.

(l) I have satisfied myself that:

(iii) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;

(m) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 673,971 -
Imported content (x), as calculated in terms of SATS 1286:2011	R 0.00
Stipulated minimum threshold for local content (paragraph 3 above)	100%
Local content %, as calculated in terms of SATS 1286:2011	100%

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(n) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(o) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

[redacted]

DATE: 15/11/2021

DATE: 15/11/2021

DATE: 15/11/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of upgrade to Witzands Aquifer recharge infrastructure and associated bulk services for the City of Cape Town: Phase 1 – Upgrading of Basins 6 & 9
(C3)	Designated product(s)	Steel Products and Components for Construction Sector: Steel Value-added Products: Pre-fabricated structural stainless steel sluice gates
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	US Dollar ; EU ; GBP
(C7)	Specified local content %	100

Note: VAT to be excluded from all calculations

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedule 1P	Refer to the drawings for the sluice gate specification for the following sizes:			* See attached in file.							
P2.3.1	Basin 6 Inflow: 1500 x 1500 mm No = 1										
P2.3.2	Basin 6 Outflow: 1200 x 1200 mm No = 1										
P2.3.3	Basin 6 Diversion: 1200 x 1200 mm No = 1										
P2.3.4	Basin 6 Donkergat Outflow: 600 x 600 mm No = 1										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	*(C9)*	*(C10)*	*(C11)*	*(C12)*	*(C13)*	*(C14)*	*(C15)*	*(C16)*	*(C17)*	*(C18)*	*(C19)*
P2.3.5	Basin 6 Domestic Bypass: 400 x 400 mm No = 1										
Basin 9 Schedule 2K	Refer to the drawings for the sluice gate specification for the following sizes:			*See attached in file.							
K2.3.1	Basin 9 Inflow: 1350 x 350 mm No = 1										
K2.3.2	Basin 9 Outflow: 825 x 825 mm No = 1										
K2.3.3	Basin 9 Diversion: 625 x 825 mm No = 1										

(C20) Total tender value	R
(C21) Total Exempt imported content	R
(C22) Total Tender value net of exempt imported content	R
(C23) Total Imported content	R
(C24) Total local content	R
(C25) Average local content % of tender	

Signa
22C [redacted]

Date: 15/11/2021

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CITY OF CAPE TOWN

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

SCHEDULE 22D : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dti's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

4. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(1) prescribes that in the case of designated sectors, where in the award of bids where local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 The designated **Valve Products and Actuators Sector** is applicable to items tendered for as detailed in Annexure C and all products tendered for these items must comply with the requirements in respect of the local production and content legislation.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] *100$$

Where

x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by NEDBANK Bank at close of business on the date of advertisement of the bid as required in paragraph 4.1 below.

NOTE: The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6 A bid will be disqualified/declared non-responsive if this Declaration Certificate and Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation.

2 Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;

2.2 **"bid price"** price offered by the supplier, excluding value added tax (VAT);

2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

SCHEDULE 22D : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry (dti) in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual) as per Returnable Schedule 1.

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Valve Products and Actuators Sector	**70%**

10. Does any portion of the services, works or goods offered for items as detailed in Annexure C have any imported content?
(Tick applicable box)

YES	✓	NO	

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.2 of the above General Conditions must be the rate(s) published by Nedbank Bank at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	14.74
Pound Sterling	
Euro	
Yen	
Other	

NB: Suppliers must submit proof of the NEDBANK Bank rate(s) of exchange used.

11. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the CCT provide directives in this regard.

SCHEDULE 22D : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. 97Q/2021/22

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity): City of Cape Town

NB

7 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

8 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in my capacity as [redacted]
of [redacted] (name of bidder entity), the following:

(p) The facts contained herein are within my own personal knowledge.

(q) I have satisfied myself that:

(iv) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;

(r) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 148,500 -
Imported content (x), as calculated in terms of SATS 1286:2011	R 44,550 -
Stipulated minimum threshold for local content (paragraph 3 above)	70%
Local content %, as calculated in terms of SATS 1286:2011	70%

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(s) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(t) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

[redacted]

DATE: 15/11/2021

DATE: 15/11/2021

DATE: 15/11/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of upgrade to Witzands Aquifer recharge infrastructure and associated bulk services for the City of Cape Town: Phase 1 – Upgrading of Basins 6 & 9
(C3)	Designated product(s)	Valves Products and Actuators Sector
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	US Dollar [ ] EU [ ] GBP [ ]
(C7)	Specified local content %	70

Note: VAT to be excluded from all calculations

Calculation of local content								Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedule 1P	Gate valve with hand wheel for clockwise opening			*See							
P3.1.1	350mm Flanged Wedge Gate Valve (PN 16) No = 2			in							
				file.							
				attached							

Calculation of local content								Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
				*See attached in file.							

(C20) Total tender value	R	
(C21) Total Exempt imported content		R
(C22) Total Tender value net of exempt imported content		R
(C23) Total Imported content		R
(C24) Total local content		R
(C25) Average local content % of tender		

Signatu
22D

[redacted]

Date: 15/11/2021

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SCHEDULE 22E : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)]. Documents listed herein are downloadable from the dti's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

5. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(1) prescribes that in the case of designated sectors, where in the award of bids where local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 The designated **Steel Products and Components for Construction Sector: Steel Value-added Products: Step Irons** is applicable to items tendered for as detailed in Annexure C and all products tendered for these items must comply with the requirements in respect of the local production and content legislation.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] * 100$$

Where

x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by NEDBANK Bank at close of business on the date of advertisement of the bid as required in paragraph 4.1 below.

NOTE: The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6 A bid will be disqualified/declared non-responsive if this Declaration Certificate and Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation.

2 Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;
2.2 **"bid price"** price offered by the supplier, excluding value added tax (VAT);
2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry (dti) in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual) as per Returnable Schedule 1.

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Steel Products and Components for Construction Sector:	
Steel Value-added Products: Step Irons	**100%**

12. Does any portion of the services, works or goods offered for items as detailed in Annexure C have any imported content?
(*Tick applicable box*)

YES		NO	✓

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.2 of the above General Conditions must be the rate(s) published by Nedbank Bank at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	N/A
Yen	
Other	

NB: Suppliers must submit proof of the NEDBANK Bank rate(s) of exchange used.

13. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the CCT provide directives in this regard.

SCHEDULE 22E : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. 97Q/2021/22

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity): City of Cape Town

NB

9 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

10 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare,
of ..... (name of bidder entity), the following:

(u) The facts contained herein are within my own personal knowledge.

(v) I have satisfied myself that:

(v) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;

(w) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R35,748
Imported content (x), as calculated in terms of SATS 1286:2011	R 0.00
Stipulated minimum threshold for local content (paragraph 3 above)	100%
Local content %, as calculated in terms of SATS 1286:2011	100%

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(x) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(y) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

[redacted]

DATE: 15/11/2021

DATE: 15/11/2021

DATE: 15/11/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of upgrade to Witzands Aquifer recharge infrastructure and associated bulk services for the City of Cape Town: Phase 1 – Upgrading of Basins 6 & 9
(C3)	Designated product(s)	Steel Products and Components for Construction Sector: Steel Value-added products: Step Irons
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	US Dollar [ ] EU [ ] GBP [ ]
(C7)	Specified local content %	100

Note: VAT to be excluded from all calculations

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1D, 1E, 1G, 1I, 1J, 1K, 1L, 1M, 1N	Refer to the drawings of the concrete structure and brick manhole details for installation of step irons in concrete walls (CW) and brick walls (BW)				* See in file. attached						
D3.31	Step irons in CW No = 12										
D5.2.1	Step irons in BW No = 4										
E3.17	Step irons in CW No = 7										

Tender item no's	List of items		Calculation of local content						Tender summary			
			Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)		(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
G2.17	Step irons in CW	No = 5										
I3.2.1	Step irons in BW	No = 1										
I3.2.2	Step irons in BW	No = 1										
I3.2.3	Step irons in BW	No = 5										
I3.2.4	Step irons in BW	No = 3										
I3.2.5	Step irons in BW	No = 3										
I3.2.6	Step irons in BW	No = 4										
I3.21	Step irons in CW	No = 4										
J3.2.1	Step irons in BW	No = 4										
J3.2.2	Step irons in BW	No = 5										
K3.2.1	Step irons in BW	No = 5										
K3.2.2	Step irons in BW	No = 5										
K3.2.3	Step irons in BW	No = 6										
K3.2.4	Step irons in BW	No = 3										
K3.2.5	Step irons in BW	No = 4										
K3.2.6	Step irons in BW	No = 2										
K3.2.7	Step irons in BW	No = 1										
K3.2.8	Step irons in BW	No = 2										
K3.2.9	Step irons in BW	No = 2										

* See attached file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
L4.3.1	Step irons in BW No = 6										
L4.3.2	Step irons in BW No = 4										
L4.3.3	Step irons in BW No = 1										
L4.3.4	Step irons in BW No = 1										
L4.3.5	Step irons in BW No = 7										
L4.23	Step irons in CW No = 9										
M4.2.1	Step irons in BW No = 4										
M4.2.2	Step irons in BW No = 4										
Basin 9 Schedules 2D, 2E, 2G, 2H, 2I, 2J	Refer to the drawings of the concrete structure and brick manhole details for installation of step irons in concrete walls (CW) and brick walls (BW)										
D3.28	Step irons in CW No = 12										
D5.2.1	Step irons in BW No = 4										
E3.14	Step irons in CW No = 5										
G2.17	Step irons in CW No = 3										
H3.2.1	Step irons in BW No = 2										
H3.2.2	Step irons in BW No = 7										
H3.2.3	Step irons in BW No = 2										

* See attached in file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
H3.2.4	Step irons in BW No = 3										
H3.2.5	Step irons in BW No = 7										
H3.2.6	Step irons in BW No = 9										
H3.2.7	Step irons in BW No = 2			*							
I3.21	Step irons in CW No = 5										
J3.2.1	Step irons in BW No = 4										
J3.2.2	Step irons in BW No = 5										
J3.2.3	Step irons in BW No = 6										
J3.2.4	Step irons in BW No = 7										
J3.2.5	Step irons in BW No = 9										

* See attached in file.

Calculation of local content							
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)

Tender summary			
Antici-pated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C16)	(C17)	(C18)	(C19)

(C20) Total tender value	R	
(C21) Total Exempt imported content	R	
(C22) *Total* Tender value net of exempt imported content	R	
(C23) Total Imported content		R
(C24) Total local content		R
(C25) Average local content % of tender		

[redacted]

Date: 15/11/2021

CITY OF CAPE TOWN

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

SCHEDULE 22F : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2). The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dti's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

6. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(1) prescribes that in the case of designated sectors, where in the award of bids where local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 The designated **Plastic Pipes Sector: High density polyethylene (HDPE) pipes** is applicable to items tendered for as detailed in Annexure C and all products tendered for these items must comply with the requirements in respect of the local production and content legislation.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] *100$$

Where; x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by NEDBANK Bank at close of business on the date of advertisement of the bid as required in paragraph 4.1 below.

NOTE: The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6 A bid will be disqualified/declared non-responsive if this Declaration Certificate and Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation.

2 Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;

2.2 **"bid price"** price offered by the supplier, excluding value added tax (VAT);

2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry (dti) in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual) as per Returnable Schedule 1.

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Plastic Pipes Sector: High density polyethylene (HDPE) pipes	**100%**

14. Does any portion of the services, works or goods offered for items as detailed in Annexure C have any imported content?
(Tick applicable box)

YES		NO	✓

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.2 of the above General Conditions must be the rate(s) published by Nedbank Bank at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	N/A
Euro	
Yen	
Other	

NB: Suppliers must submit proof of the NEDBANK Bank rate(s) of exchange used.

15. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the CCT provide directives in this regard.

SCHEDULE 22F : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. 97Q/2021/22

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity): City of Cape Town

NB

11 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

12 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in my [redacted]
of [redacted] me of bidder entity), the following:

(z) The facts contained herein are within my own personal knowledge.

(aa) I have satisfied myself that:

(vi) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;

(bb) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

* See attached in extra file = 100%.

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(cc) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(dd) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

[redacted]

DATE: 15/11/2021

DATE: 15/11/2021

DATE: 15/11/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of upgrade to Witzands Aquifer recharge infrastructure and associated bulk services for the City of Cape Town: Phase 1 – Upgrading of Basins 6 & 9
(C3)	Designated product(s)	Plastic Pipes Sector : High density polyethylene (HDPE) pipes
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	US Dollar ; EU ; GBP
(C7)	Specified local content %	100

Note: VAT to be excluded from all calculations

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1I, 1L	HDPE double layer pipes with smooth bore and corrugated externally										
I3.1.1	Class SN8 400 mm inside diameter: Length = 420 m										
L4.2.1	Class SN8 400 mm inside diameter: Length = 55 m										

*See attached in file.

Tender item no's	List of items	Calculation of local content: Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender summary: Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedule 10	Slotted polyethylene drainage pipes complete with couplings with at least 8 kN/m2 ring stiffness			* See attached in file.							
O2.11.1	350 mm inside diameter: Length = 560 m										
Basin 9 Schedule 2J	HDPE double layer pipes with smooth bore and corrugated externally										
J3.1.1	Class SN8 300 mm inside diameter: Length = 25 m										
J3.1.2	Class SN8 400 mm inside diameter: Length = 115 m										

(C20) Total tender value	R
(C21) Total Exempt imported content	R
(C22) *Total* Tender value net of exempt imported content	R
(C23) Total Imported content	R
(C24) Total local content	R
(C25) Average local content % of tender	

Signa
22F

[redacted]

Date: 15/11/2021

CITY OF CAPE TOWN

CONTRACT NO 97Q/2021/22

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

SCHEDULE 22G : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2). The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)]. Documents listed herein are downloadable from the dti's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

7. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(1) prescribes that in the case of designated sectors, where in the award of bids where local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 The designated **Textile, Clothing, Leather and Footwear Sector: Non-woven continuous filament needle-punched polyester geotextile** is applicable to items tendered for as detailed in Annexure C and all products tendered for these items must comply with the requirements in respect of the local production and content legislation.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] * 100$$

Where; x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by NEDBANK Bank at close of business on the date of advertisement of the bid as required in paragraph 4.1 below.

NOTE: The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6 A bid will be disqualified/declared non-responsive if this Declaration Certificate and Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation.

2 Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;
2.2 **"bid price"** price offered by the supplier, excluding value added tax (VAT);
2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

SCHEDULE 22G : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry (dti) in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual) as per Returnable Schedule 1.

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Textile, Clothing, Leather and Footwear Sector:	
Non-woven continuous filament needle-punched polyester geotextile	**100%**

16. Does any portion of the services, works or goods offered for Items as detailed in Annexure C have any imported content?
(Tick applicable box)

YES		NO	✓

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.2 of the above General Conditions must be the rate(s) published by Nedbank Bank at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	N/A
Yen	
Other	

NB: Suppliers must submit proof of the NEDBANK Bank rate(s) of exchange used.

17. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the CCT provide directives in this regard.

SCHEDULE 22G : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. 97Q/2021/22

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity): City of Cape Town

NB

13 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

14 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedtl.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in my capacity as [redacted]
of [redacted] (name of bidder entity), the following:

(ee) The facts contained herein are within my own personal knowledge.

(ff) I have satisfied myself that:

(vii) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;

(gg) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 531, 842 -
Imported content (x), as calculated in terms of SATS 1286:2011	R 0.00
Stipulated minimum threshold for local content (paragraph 3 above)	100%.
Local content %, as calculated in terms of SATS 1286:2011	100%.

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(hh) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(ii) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated u[redacted]FA), 2000 (Act No. 5 of 2000).

[redacted]

DATE: 15/11/2021

DATE: 15/11/2021

DATE: 15/11/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of upgrade to Witzands Aquifer recharge infrastructure and associated bulk services for the City of Cape Town: Phase 1 – Upgrading of Basins 6 & 9
(C3)	Designated product(s)	Textile, Clothing, Leather and Footwear Sector: Non-woven continuous filament needle-punched polyester geotextile
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	US Dollar [ ] EU [ ] GBP [ ]
(C7)	Specified local content %	100

Note: VAT to be excluded from all calculations

Calculation of local content							
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)
Basin 6 Schedules 1C, 1D, 1E, 1F, 1L, 1M, 1O	Non-woven continuous filament needle-punched polyester geotextile			* See attached in file.			
C3.1.1	Coito Grade 1 (Kaytech Grade A10 or equivalent) A = 1850 m²						

Tender summary			
Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C16)	(C17)	(C18)	(C19)

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
D2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 610 m²										
D5.3	Colto Grade 2 (Kaytech Grade A4 or equivalent) A = 470 m²										
E2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 16 m²										
F2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 160 m²										
L2.5.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 160 m²										
M2.4.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 30 m²										
O2.14	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 6000 m²										
Basin 9 Schedules 2C, 2D, 2E, 2F	Non-woven continuous filament needle-punched polyester geotextile										
C3.1.1	Colto Grade 1 (Kaytech Grade A10 or equivalent) A = 1700 m²										

* See attached in file.

Tender item no's	List of items	Calculation of local content: Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender summary: Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
D2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 900 m²			* See attached in file.							
D5.3	Colto Grade 2 (Kaytech Grade A4 or equivalent) A = 640 m²										
E2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 30 m²										
F2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 340 m²										

(C20) Total tender value	R
(C21) Total Exempt imported content	R
(C22) Total Tender value net of exempt imported content	R
(C23) Total Imported content	R
(C24) Total local content	R
(C25) Average local content % of tender	

Signat
22G

[redacted]

Date: 15/11/2021

CITY OF CAPE TOWN

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

CONTRACT NO. 97Q/2021/22

SCHEDULE 22H : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dti's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(1) prescribes that in the case of designated sectors, where in the award of bids where local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 The designated **Cement Sector** is applicable to items tendered for as detailed in Annexure C and all products tendered for these items must comply with the requirements in respect of the local production and content legislation.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] * 100$$

Where
- x is the imported content in Rand
- y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by NEDBANK Bank at close of business on the date of advertisement of the bid as required in paragraph 4.1 below.

NOTE: The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6 A bid will be disqualified/declared non-responsive if this Declaration Certificate and Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation.

2 Definitions

2.1 **"bid"** includes written price quotations, advertised competitive bids or proposals;

2.2 **"bid price"** price offered by the supplier, excluding value added tax (VAT);

2.3 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;

SCHEDULE 22H : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2.4 **"designated sector"** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry (dti) in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 **"duly sign"** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual) as per Returnable Schedule 1.

2.6 **"imported content"** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 **"local content"** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 **"stipulated minimum threshold"** means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:

Description of services, works or goods	Stipulated minimum threshold
Cement	**100%**

4. Does any portion of the services, works or goods offered for Items as detailed in Annexure C have any imported content?
(Tick applicable box)

YES		NO	✓

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.2 of the above General Conditions must be the rate(s) published by Nedbank Bank at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
Other	

N/A

NB: Suppliers must submit proof of the NEDBANK Bank rate(s) of exchange used.

5. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the CCT provide directives in this regard.

CITY OF CAPE TOWN

CONSTRUCTION OF UPGRADE TO WITZANDS AQUIFER RECHARGE INFRASTRUCTURE AND ASSOCIATED BULK SERVICES FOR THE CITY OF CAPE TOWN: PHASE 1 – UPGRADING OF BASINS 6 & 9

CONTRACT NO. 97Q/2021/22

SCHEDULE 22H : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. 97Q/2021/22

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity): City of Cape Town

NB

1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.
2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in [redacted]
of [redacted] (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
  (i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 9,086,267 -
Imported content (x), as calculated in terms of SATS 1286:2011	R 0.00
Stipulated minimum threshold for local content (paragraph 3 above)	100%
Local content %, as calculated in terms of SATS 1286:2011	100%

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

[redacted]

DATE: 15/11/2021
DATE: 15/11/2021
DATE: 15/11/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22				
(C2)	Tender description:	Construction of upgrade to Witzands Aquifer recharge infrastructure and associated bulk services for the City of Cape Town: Phase 1 – Upgrading of Basins 6 & 9				
(C3)	Designated product(s)	Cement Sector Products				
(C4)	Tender Authority:	City of Cape Town				
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd				
(C6)	Tender Exchange Rate:	US Dollar		EU		GBP
(C7)	Specified local content %	100				

Note: VAT to be excluded from all calculations

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedule 1C, 1D, 1E, 1F, 1G, 1H, 1J, 1J, 1K, 1L, 1M, 1N											
C2.5.3	Stabilised Sand / Cement embankment core Total Volume = 2800 m³				* See attached in File						
C2.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) Total volume = 10 m³										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	*(C9)*	*(C10)*	*(C11)*	*(C12)*	*(C13)*	*(C14)*	*(C15)*	*(C16)*	*(C17)*	*(C18)*	*(C19)*
C5.1	Stabilizing Agent = 500 t										
C2.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction Total Volume = 10 m³		* See attached in file.								
D3.17	BLINDING LAYER IN GRADE 20/19 CONCRETE 100 mm										
D3.17.1	Horizontal Total Volume = 10 m³										
D3.18	NO-FINES CONCRETE STRENGTH: NF19 FOR FILLING OF DRAINAGE PIPES										
D3.18.1	For filling of 50mm diameter pipes in division wall between the silt and litter trap. Total Volume = 1 m³										
D3.19	STRENGTH CONCRETE 25/19										
D3.19.1	Mass concrete for pipe supports Total Volume = 3 m³										
D3.19.2	Mass concrete where instructed by the engineer Total Volume = 12 m³										
D3.19.3	Mass concrete for underneath RC retaining wall footings Total Volume = 4 m³										
D3.20	STRENGTH CONCRETE 25/10										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
D3.20.1	Benching in domestic effluent boxes Total Volume = 8 m³										
D3.21	STRENGTH CONCRETE 35/19										
D3.21.1	Floor slab and toe of contamination pond, litter and grit trap (Excluding Access ramps) Total Volume = 950 m³										
D3.21.2	300 x 850mm DP RC thickening along two edges of contamination pond overflow weir Total Volume = 6.5 m³										
D3.21.3	300 x 1000mm DP RC shear key Total Volume = 22 m³										
D3.21.4	Two perimeter RC walls of contamination pond sloping from 250mm to 300mm thick Total Volume= 55 m³										
D3.21.5	250mm thick RC low overflow weir in contamination pond Total Volume = 9 m³										
D3.21.6	Contamination pond access walkway's 500 x 500mm RC columns Total Volume = 8 m³										
D3.21.7	Contamination pond access walkway's 250mm thick RC wall in between RC columns										

*See attached in file

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
	Total Volume= 20 m³										
D3.21.8	Contamination pond access walkway's 250mm thick RC floor slab Total Volume = 19 m³										
D3.21.10	New domestic effluent pipe box 250mm RC support walls Total Volume= 1.5 m³										
D3.21.11	New domestic effluent pipe box 200mm RC floor slab Total Volume = 1.5 m³										
D3.21.12	New domestic effluent pipe box 250mm RC walls Total Volume = 7.2 m³										
D3.21.13	300mm DP RC retaining wall footings Total Volume = 15										
D3.21.14	DP RC retaining walls sloping 300mm to 250mm Total Volume = 23 m³										
D3.21.15	Contamination Pond Access Walkway Ramp's 250mm thick RC floor slab Total Volume = 4 m³										
D3.21.16	Contamination Pond Access Walkway Ramp's RC walls 250mm thick Total Volume = 3.5 m³										
D3.21.17	300mm DP RC retaining wall footings Total Volume= 15 m³										

* See added in file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
D3.21.18	Contamination Pond Access Walkway Ramp's 150 x 150mm DP RC corbel Total Volume = 0.5 m³										
D3.21.19	Contamination pond access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume =35 m³										
D3.21.20	Contamination pond access ramp RC walls sloping from 300mm to 250mm Total Volume = 20 m³										
D3.21.21	Litter trap access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume = 35 m³										
D3.21.22	Slit trap access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume = 40 m³										
D3.21.23	Litter trap access ramp RC walls and perimeter walls sloping from 300mm to 250mm Total Volume = 33 m³										
D3.21.24	Litter trap RC wall sloping from 300mm to 250mm Total Volume = 15 m³										
D3.21.25	Litter trap 250mm thick RC cantilever wall for fixing one side of litter grids Total Volume = 12 m³										

* See attached in file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
D3.21.26	250mm thick RC division wall between litter trap and silt trap cantilever wall for fixing one side of litter grids Total Volume =10 m³										
D3.21.27	250mm thick RC walls for silt trap, monitoring manhole and inlet manhole Total Volume = 17 m³										
D3.21.28	300mm thick RC floor slab for monitoring manhole, inlet manhole and false floor Total Volume = 6 m³										
F1.2	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction: Total Volume = 2 m³										
F3.8	STRENGTH CONCRETE 25/19										
F3.8.1	Mass concrete where instructed by the engineer Total Volume = 2 m³										
F3.8.2	Concrete coping over stabilized sand/cement core for overflow spillway Total Volume = 115 m³										
F3.8.3	Concrete wingwalls on the overflow spillway Total Volume = 23 m³										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
F3.8.4	Mass concrete collar walls on the overflow spillway Total Volume = 5 m³										
F3.8.5	Concrete fill between brick walls of wingwall extension Total Volume = 1 m³										
F3.8.6	Concrete foundation below brick wall of wingwall extension Total Volume = 3 m³										
F.5.1	Stabilizing Agent Total Weight = 95 t										
G1.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction Total Volume = 2 m³										
G2.8	STRENGTH CONCRETE 25/19										
G2.8.1	Mass concrete where instructed by the engineer Total Volume = 10 m³										
G2.9	STRENGTH CONCRETE 35/19										
G2.9.1	Floor slab of evaporation pond Total Volume = 22 m³										
G2.9.2	Floor slab of evaporation pond sump Total Volume = 8 m³										
G2.9.3	Floor slab of evaporation pond (including DP RC thickening)										

See attached in file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
	Total Volume = 24 m³										
G2.9.4	Perimeter walls of evaporation pond (excluding access ramp and sump walls) Total Volume = 58 m³										
G2.9.5	Perimeter walls of evaporation pond sump Total Volume = 20 m³										
G2.9.6	Perimeter wall of evaporation pond access ramp Total Volume = 10 m³										
G3.2.1	150mm layer C4 (G5 material stabilized with 3% Portland Cement per maximum dry density of the G5 material) compacted to 95% Modified AASHTO density below evaporation pond Total Volume = 60 m³										
G3.4.1	STABILISING AGENT Portland Cement Total Weight = 3.4 t										
H2.8.2	300mm x 300mm Class 30/20 in situ concrete edge beam at the intersection of the Basin 6 and Sand Mine access roads Total Length = 24 m										
I1.10	Backfilling of culverts with soil cement Total Volume = 1 m³										
I3.14	STRENGTH CONCRETE 25/19										

See attached file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
I3.14.1	Mass concrete where instructed by the engineer Total Volume = 2 m³										
I3.15	STRENGTH CONCRETE 25/10										
I3.15.1	Benching in manhole Total Volume = 2 m³										
I3.16	STRENGTH CONCRETE 35/19										
I3.16.1	Floor slab Total Volume = 2 m³										
I3.16.2	Walls Total Volume = 3.75 m³										
J1.10	Backfilling of culverts with soil cement Total Volume = 1 m³										
K1.10	Backfilling of culverts with soil cement Total Volume = 1 m³										
L1.10	Backfilling of culverts with soil cement Total Volume = 5 m³										
L4.16	STRENGTH CONCRETE 25/19										
L4.16.1	Mass concrete where instructed by the engineer Total Volume = 2 m³										
L4.17	STRENGTH CONCRETE 25/10										
L4.17.1	Benching in manhole Total Volume = 3.2 m³										
L4.18	STRENGTH CONCRETE 35/19										

* See attached file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
L4.18.1	Floor slab Total Volume = 6 m³										
L4.18.2	Walls Total Volume = 13.5 m³										
L4.36	STRENGTH CONCRETE 25/19										
L4.36.1	Mass concrete where instructed by the engineer Total Volume = 6 m³										
L4.37	STRENGTH CONCRETE 35/19										
L4.37.1	Floor slab an key Total Volume = 51 m³										
L4.37.2	Walls and baffle blocks Total Volume = 33 m³										
M1.10	Backfilling of culverts with soil cement Total Volume = 5 m³										
N1.10	Backfilling of culverts with soil cement Total Volume = 5 m³										
	Basin 9 Schedules, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1N										
C2.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) Total Volume =10 m³										
D1.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod										

See attached item 9.1.9

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
	AASTHO in layers not exceeding 150mm before compaction Total Volume =20 m³										
D3.14	BLINDING LAYER IN GRADE 20/19 CONCRETE 100 mm										
D3.14.1	Horizontal Total Volume =10 m³										
D3.15	NO-FINES CONCRETE STRENGTH: NF19 FOR FILLING OF DRAINAGE PIPES										
D3.15.1	For filling of 50mm diameter pipes in division wall between the silt and litter trap Total Volume =0.3 m³										
D3.16	STRENGTH CONCRETE 25/19										
D3.16.1	Mass concrete for pipe supports Total Volume =2 m³			#See attached in							
D3.16.2	Mass concrete where instructed by the engineer Total Volume =10 m³										
D3.16.3	Mass concrete for underneath RC retaining wall footings Total Volume =3 m³							#/0			
D3.17	STRENGTH CONCRETE 25/10										
D3.17.1	Benching Total Volume =3 m³										
D3.18	STRENGTH CONCRETE 35/19										

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
D3.18.1	Floor slab and toe of contamination pond, litter and grit trap (Excluding Access ramps) Total Volume =1150 m³										
D3.18.2	3 x 300 x 1000mm DP RC shear key Total Volume =45 m³										
D3.18.3	Perimeter RC walls of contamination pond sloping from 250mm to 400mm thick Total Volume =59 m³										
D3.18.4	250mm thick RC front overflow weir walls on contamination pond's perimeter Total Volume =23 m³										
D3.18.5	250mm thick RC low overflow weir in contamination pond Total Volume =11 m³										
D3.18.6	Contamination pond access walkway's 500 x 500mm RC columns Total Volume =13 m³										
D3.18.7	Contamination pond access walkway's 250mm thick RC wall in between RC columns Total Volume =33 m³										
D3.18.8	Contamination pond access walkway's 250mm thick RC floor slab Total Volume =33 m³										

N/A See attached in file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
D3.18.9	Contamination pond access walkway's 250mm thick RC wall Total Volume =25 m³										
D3.18.10	450mm DP RC retaining wall footings Total Volume =60 m³										
D3.18.11	DP RC retaining walls sloping 400mm to 250mm Total Volume =60 m³										
D3.18.12	Contamination Pond Access Walkway Ramp's 250mm thick RC floor slab Total Volume =7.5 m³										
D3.18.13	Contamination Pond Access Walkway Ramp's RC walls 250mm thick Total Volume =4.5 m³										
D3.18.14	Contamination Pond Access Walkway Ramp's 150 x 150mm DP RC corbel Total Volume =1 m³										
D3.18.15	Contamination pond and silt trap access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume =92 m³										
D3.18.16	Contamination pond and silt trap access ramp RC walls sloping from 300mm to 250mm Total Volume =47 m³										

See attached in file.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
D3.18.17	Litter trap access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume =46 m³										
D3.18.18	Litter trap access ramp RC walls sloping from 400mm to 250mm Total Volume =32 m³										
D3.18.19	Division wall between the contamination pond and silt/litter trap Total Volume =46 m³										
D3.18.20	Litter trap 250mm thick RC cantilever wall for fixing one side of litter grids Total Volume =11 m³										
D3.18.21	250mm thick RC division wall between litter trap and silt trap Total Volume =10 m³										
D3.18.22	250mm thick RC walls for monitoring manhole and inlet manhole Total Volume =11 m³										
D3.18.23	300mm thick RC floor slab for monitoring manhole, inlet manhole and false floor Total Volume =3 m³										
D5.1	Backfilling of culverts with soil cement Total Volume =10 m³										
E1.2	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the										

* See attached

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
	Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction Total Volume =1 m³										
E3.8	STRENGTH CONCRETE 25/19										
E.3.8.1	Mass concrete where instructed by the engineer Total Volume =5 m³										
E.3.9	STRENGTH CONCRETE 35/19										
E.3.9.1	Floor slab of outlet structure Total Volume =5.5 m³										
E.3.9.2	Outlet structure key Total Volume =0.5 m³										
E.3.9.3	Outlet structure walls Total Volume =9 m³										
E.3.9.4	Precast concrete slabs (1700mm x 675mm) Total Volume =1.5 m³										
F1.2	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction Total Volume =2 m³										
F3.4	STRENGTH CONCRETE 35/19										
F3.4.1	Mass concrete where instructed by the engineer										

See attached.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
	Total Volume =2 m³										
F3.4.2	Overflow spillway Total Volume =39 m³										
F3.4.3	Ramps onto overflow spillway Total Volume =9 m³										
F3.4.4	Cut-off walls Total Volume =10.5 m³										
F3.4.5	Concrete walls Total Volume =6.5 m³										
G1.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction Total Volume =2 m³										
G2.8	STRENGTH CONCRETE 25/19										
G2.8.1	Mass concrete where instructed by the engineer Total Volume =10 m³										
G2.9	STRENGTH CONCRETE 35/19										
G2.9.1	Floor slab of evaporation pond Total Volume =22 m³										
G2.9.2	Floor slab of evaporation pond sump Total Volume =1 m³										
G2.9.3	Floor slab of evaporation pond (including DP RC thickening) Total Volume =24 m³										

& See attached

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
G2.9.4	Perimeter walls of evaporation pond (excluding access ramp and sump walls) Total Volume =58 m³										
G2.9.5	Perimeter walls of evaporation pond sump Total Volume =2 m³										
G2.9.6	Perimeter wall of evaporation pond access ramp Total Volume =10 m³										
G3.2.1	150mm layer C4 (G5 material stabilized with 3% Portland Cement per maximum dry density of the G5 material) compacted to 95% Modified AASHTO density below evaporation pond Total Volume =58 m³										
G3.4.1	STABALIZING AGENT Portland Cement Total Weight = 3.4 t										
H1.10	Backfilling of culverts with soil cement Total Volume =5 m³										
I1.9	Backfilling of culverts with soil cement Total Volume =5 m³										
I3.14	STRENGTH CONCRETE 25/19										
I3.14.1	Mass concrete where instructed by the engineer Total Volume =2 m³										

See attached.

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Anticipated Annual Tender Qty (m)	Total tender value	Total exempted imported content	Total Imported content
(C8)	*(C9)*	*(C10)*	*(C11)*	*(C12)*	*(C13)*	*(C14)*	*(C15)*	*(C16)*	*(C17)*	*(C18)*	*(C19)*
I3.15	STRENGTH CONCRETE 25/10										
I3.15.1	Benching in manhole Total Volume =8 m³										
I3.16	STRENGTH CONCRETE 35/19										
I3.16.1	Floor slab Total Volume =6 m³		*See								
I3.16.2	Walls Total Volume =11 m³										
J1.10	Backfilling of culverts with soil cement Total Volume = 5 m³			attached							

(C20) Total tender value	R
(C21) Total Exempt imported content	R
(C22) Total Tender value net of exempt imported content	R
(C23) Total Imported content	R
(C24) Total local content	R
(C25) Average local content % of tender	

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[redacted]

Date: 15/11/2021

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Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	S7Q/2021/22
(C2)	Tender description:	Construction of Upgrade to Witzands Aquifer Recharge Infrastructure & Associated Bulk Services for the City Of Cape Town: Phase 1-Upgrading of Basin 6 & 9
(C3)	Designated product(s)	Steel Products & Components for Construction: Steel Value-added products; Wire Products - Gabions, reno mattresses & Fencing
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	USD EU NA GBP NA
(C7)	Specified local content %	100%

Note: VAT to be excluded from all calculations

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1D, 1E, 1F & 1L	Refer to the drawings for the gabion specification for the following wire. cage sizes:										
D2.1.1	2m x 1m x 0.5m = 4 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	4.00	R 8,153	R 0	R 0
D2.1.2	4m x 1m x 0.5m = 32 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	32.00	R 65,223	R 0	R 0
D2.1.3	2m x 1m x 1m = 4 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	4.00	R 8,153	R 0	R 0
D2.1.4	3m x 1m x 1m = 6 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	6.00	R 12,229	R 0	R 0
E2.1.1	1m x 1m x 0.5m = 1 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	1.00	R 2,038	R 0	R 0
E2.1.2	1m x 1m x 1m = 4 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	4.00	R 8,153	R 0	R 0
E2.1.3	2m x 1m x 1m = 4 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	4.00	R 8,153	R 0	R 0
F2.1.1	1m x 1m x 1m = 2 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	2.00	R 4,076	R 0	R 0
F2.1.2	3m x 1m x 1m = 12 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	12.00	R 24,459	R 0	R 0
L2.3.1	3m x 1m x 1m = 12 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	12.00	R 24,459	R 0	R 0
Basin 9 Schedules 2D, 2E, 2F	Refer to the drawings for the gabion specifcation for the following wire cage sizes:										
D2.1.1	2m x 1m x 0.5m = 4 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	4.00	R 8,153	R 0	R 0
D2.1.2	4m x 1m x 0.5m = 48 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	48.00	R 97,834	R 0	R 0
E2.1.1	1m x 1m x 0.5m = 1 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	1.00	R 2,038	R 0	R 0
E2.1.2	1m x 1m x 1m = 2 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	2.00	R 4,076	R 0	R 0
E2.1.3	2m x 1m x 1m = 4 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	4.00	R 8,153	R 0	R 0
E2.1.4	3m x 1m x 1m = 6 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	6.00	R 12,229	R 0	R 0
F2.1.1	1m x 1m x 1m = 2 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	2.00	R 4,076	R 0	R 0
F2.1.2	4m x 1m x 1m = 24 m3	R 2,038.21	R 0.00	R 2,038.21	R 0.00	R 2,038.21	100%	24.00	R 48,917	R 0	R 0
Basin 6 Schedules 1D, 1F, 1L, 1M, 1P	Refer to the drawings for the Reno mattress specifcation for the fllowng wire cage sizes:										
D2.2.1	2m x 1m x 0.3m = 2.4 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	2.40	R 5,552	R 0	R 0
D2.2.2	6m x 2m x 0.3m = 144.0 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	144.00	R 333,130	R 0	R 0
F2.2.1	6m x 2m x 0.3m = 39.6 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	39.60	R 91,611	R 0	R 0
L2.4.1	3m x 1m x 0.3m = 10.8 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	10.80	R 24,985	R 0	R 0
L2.4.2	6m x 2m x 0.3m = 21.6 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	21.60	R 49,969	R 0	R 0
M2.3.1	6m x 2m x 0.3m = 7.2 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	7.20	R 16,656	R 0	R 0
Basin 9 Schedules 2D,	Refer to the drawings for the Reno mattress specification for the following wire										

D2.2.1	2m x 1m x 0.3m = 7.2 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	7.20	R 16,656	R 0	R 0
D2.2.2	6m x 2m x 0.3m = 219.6 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	219.60	R 508,023	R 0	R 0
E2.2.1	3m x 1m x 0.3m = 0.9 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	0.90	R 2,082	R 0	R 0
F2.2.1	2m x 1m x 0.3m = 6.6 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	6.60	R 15,268	R 0	R 0
F2.2.2	6m x 2m x 0.3m = 79.2 m3	R 2,313.40	R 0.00	R 2,313.40	R 0.00	R 2,313.40	100%	79.20	R 183,221	R 0	R 0
Basin 6 Schedules 1P	**Security fencing**										
P2.4	Pre-fabricated gate No = 1	R 29,700.00	R 0.00	R 29,700.00	R 0.00	R 29,700.00	100%	1.00	R 29,700	R 0	R 0
P2.5	Galvanized steel - 6 stack razor coil fence = 760 m	R 367.20	R 0.00	R 367.20	R 0.00	R 367.20	100%	760.00	R 279,072	R 0	R 0
Basin 9 Schedules 2K	**Security fencing**										
K2.4	Pre-fabricated gate No = 2	R 29,700.00	R 0.00	R 29,700.00	R 0.00	R 29,700.00	100%	2.00	R 59,400	R 0	R 0
K2.5	Galvanized steel - 6 stack razor coil fence = 540 m	R 367.20	R 0.00	R 367.20	R 0.00	R 367.20	100%	540.00	R 198,288	R 0	R 0
Basin 6 Schedules 1P	**Security cages for protection of sluice gates & monitoring equipment**										
P2.6.1	5500 x 4500 x 3000mm: No =1	R 92,880.00	R 0.00	R 92,880.00	R 0.00	R 92,880.00	100%	1.00	R 92,880	R 0	R 0
P2.6.2	5000 x 4500 x 3000mm: No = 1	R 72,360.00	R 0.00	R 72,360.00	R 0.00	R 72,360.00	100%	1.00	R 72,360	R 0	R 0
P2.6.3	3500 x 2500 x 2000mm: No = 1	R 75,600.00	R 0.00	R 75,600.00	R 0.00	R 75,600.00	100%	1.00	R 75,600	R 0	R 0
P2.6.4	4250 x 2500 x 3000mm: No =1	R 10,800.00	R 0.00	R 10,800.00	R 0.00	R 10,800.00	100%	1.00	R 10,800	R 0	R 0
Basin 9 Schedules 2K	**Security cages for protection of sluice gates & monitoring equipment**										
K2.6.1	5500 x 4500 x 2500mm: No =1	R 92,880.00	R 0.00	R 92,880.00	R 0.00	R 92,880.00	100%	1.00	R 92,880	R 0	R 0
K2.6.2	5500 x 4 500 x 3000mm: No = 1	R 92,880.00	R 0.00	R 92,880.00	R 0.00	R 92,880.00	100%	1.00	R 92,880	R 0	R 0
K2.6.3	2500 x 2450 x 2500mm: No = 1	R 59,400.00	R 0.00	R 59,400.00	R 0.00	R 59,400.00	100%	1.00	R 59,400	R 0	R 0

(C20) Total tender value	R 2,660,986	
(C21) Total Exempt imported content		R 0
(C22) Total Tender value net of exempt imported content		R 2,660,986
(C23) Total Imported content		R 0
(C24) Total local content		R 2,660,986
(C25) Average local content % of tender		100.00%

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Date: 02/12/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of Upgrade to Witzands Aquifer Recharge Infrastructure & Associated Bulk Services for the City Of Cape Town: Phase 1-Upgrading of Basin 6 & 9
(C3)	Designated product(s)	Steel Products & Components for Construction: Steel Value-added products: Reinforcing Bars - Steel Reinforcement
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	USD EU NA GBP NA
(C7)	Specified local content %	100%

Note: VAT to be excluded from all calculations

Calculation of local content							Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1D, 1E, 1F & 1L	Reinforcing steel bars										
D3.13 & D3.14	High Tensile Steel Bars = 169.32 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	169.32	R 2,794,186	R 0	R 0
D3.13 & D3.14	Mild Steel Bars = 42.33 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	42.33	R 698,547	R 0	R 0
E3.9	High Tensile Steel Bars = 2.78 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	2.78	R 45,877	R 0	R 0
E3.10	Mild Steel Bars = 0.7 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	0.70	R 11,552	R 0	R 0
F3.6	High Tensile Steel Bars = 1.11 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	1.11	R 18,318	R 0	R 0
F3.7	High tensile welded mesh = 2.3 t	R 22,221.33	R 0.00	R 22,221.33	R 0.00	R 22,221.33	100%	2.30	R 51,109	R 0	R 0
G2.4 & G2.5	High Tensile Steel Bars = 13.63 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	13.63	R 224,928	R 0	R 0
G2.6 & G2.7	Mild Steel Bars = 3.41 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	3.41	R 56,273	R 0	R 0
I3.10 & I3.11	High Tensile Steel Bars = 0.69 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	0.69	R 11,387	R 0	R 0
I3.12 & I3.13	Mild Steel Bars = 0.17 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	0.17	R 2,805	R 0	R 0
L4.12 & L4.13	High Tensile Steel Bars = 1.87 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	1.87	R 30,859	R 0	R 0
L4.14 & L4.15	Mild Steel Bars = 0.47 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	0.47	R 7,756	R 0	R 0
L4.32 & L4.33	High Tensile Steel Bars = 8.06 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	8.06	R 133,009	R 0	R 0
L4.34 & L4.35	Mild Steel Bars = 2.02 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	2.02	R 33,335	R 0	R 0
Basin 9 Schedules 2D, 2E, 2F, 2G, 2I	Reinforcing steel bars										
D3.10 & D3.11	High Tensile Steel Bars = 207.14 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	207.14	R 3,418,307	R 0	R 0
D3.12 & D3.13	Mild Steel Bars = 51.79 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	51.79	R 854,659	R 0	R 0
E3.6	High Tensile Steel Bars = 1.65 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	1.65	R 27,229	R 0	R 0
E3.7	Mild Steel Bars = 0.41 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	0.41	R 6,766	R 0	R 0
F3.3	High tensile welded mesh = 1.7 t	R 22,221.33	R 0.00	R 22,221.33	R 0.00	R 22,221.33	100%	1.70	R 37,776	R 0	R 0
G2.4 & G2.5	High Tensile Steel Bars = 13.63 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	13.63	R 224,928	R 0	R 0
G2.6 & G2.7	Mild Steel Bars = 3.41 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	3.41	R 56,273	R 0	R 0
I3.10 & I3.11	High Tensile Steel Bars = 1.8 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	1.80	R 29,704	R 0	R 0
I3.12 & I3.13	Mild Steel Bars = 0.45 t	R 16,502.40	R 0.00	R 16,502.40	R 0.00	R 16,502.40	100%	0.45	R 7,426	R 0	R 0

(C20)	Total tender value	R 8,783,010
(C21)	Total Exempt imported content	R 0
(C22)	Total Tender value net of exempt imported content	R 8,783,010
(C23)	Total Imported content	R 0
(C24)	Total local content	R 8,783,010
(C25)	Average local content % of tender	100.00%

Signature of tenderer from A [redacted]

Date: 02/12/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of Upgrade to Witzands Aquifer Recharge Infrastructure & Associated Bulk Services for the City Of Cape Town: Phase 1-Upgrading of Basin 6 & 9
(C3)	Designated product(s)	Steel Products & Components for Construction Sector: Steel Value added products: Step irons
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	USD [ ] EU NA GBP NA
(C7)	Specified local content %	100%

Note: VAT to be excluded from all calculations

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1D, 1E, 1G, 1I, 1J, 1K, 1L, 1M, 1N	Refer to the drawings of the concrete structure and brick manhole details for installation of step irons in concrete walls (CW) and brick walls (BW)										
D3.31	Step irons in CW No = 12	R 648.00	R 0.00	R 648.00	R 0.00	R 648.00	100%	12	R 7,776	R 0	R 0
D5.2.1	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0
E3.17	Step irons in CW No = 7	R 378.00	R 0.00	R 378.00	R 0.00	R 378.00	100%	7	R 2,646	R 0	R 0
G2.17	Step irons in BW No = 5	R 270.00	R 0.00	R 270.00	R 0.00	R 270.00	100%	5	R 1,350	R 0	R 0
I3.2.1	Step irons in BW No = 1	R 54.00	R 0.00	R 54.00	R 0.00	R 54.00	100%	1	R 54	R 0	R 0
I3.2.2	Step irons in BW No = 1	R 54.00	R 0.00	R 54.00	R 0.00	R 54.00	100%	1	R 54	R 0	R 0
I3.2.3	Step irons in BW No = 5	R 270.00	R 0.00	R 270.00	R 0.00	R 270.00	100%	1	R 270	R 0	R 0
I3.2.4	Step irons in BW No = 3	R 162.00	R 0.00	R 162.00	R 0.00	R 162.00	100%	1	R 162	R 0	R 0
I3.2.5	Step irons in BW No = 3	R 162.00	R 0.00	R 162.00	R 0.00	R 162.00	100%	1	R 162	R 0	R 0
I3.2.6	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0
I3.21	Step irons in CW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	4	R 864	R 0	R 0
J3.2.1	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0
J3.2.2	Step irons in BW No = 5	R 270.00	R 0.00	R 270.00	R 0.00	R 270.00	100%	1	R 270	R 0	R 0
K3.2.1	Step irons in BW No = 5	R 270.00	R 0.00	R 270.00	R 0.00	R 270.00	100%	1	R 270	R 0	R 0
K3.2.2	Step irons in BW No = 5	R 270.00	R 0.00	R 270.00	R 0.00	R 270.00	100%	1	R 270	R 0	R 0
K3.2.3	Step irons in BW No = 6	R 324.00	R 0.00	R 324.00	R 0.00	R 324.00	100%	1	R 324	R 0	R 0
K3.2.4	Step bons in BW No = 3	R 162.00	R 0.00	R 162.00	R 0.00	R 162.00	100%	1	R 162	R 0	R 0
K3.2.5	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0
K3.2.6	Step irons in BW No = 2	R 108.00	R 0.00	R 108.00	R 0.00	R 108.00	100%	1	R 108	R 0	R 0
K3.2.7	Step irons in BW No = 1	R 54.00	R 0.00	R 54.00	R 0.00	R 54.00	100%	1	R 54	R 0	R 0
K3.2.8	Step irons in BW No = 2	R 108.00	R 0.00	R 108.00	R 0.00	R 108.00	100%	1	R 108	R 0	R 0
K3.2.9	Step irons in BW No = 2	R 108.00	R 0.00	R 108.00	R 0.00	R 108.00	100%	1	R 108	R 0	R 0
L4.3.1	Step irons in BW No = 6	R 324.00	R 0.00	R 324.00	R 0.00	R 324.00	100%	1	R 324	R 0	R 0
L4.3.2	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0
L4.3.3	Step irons in BW No = 1	R 54.00	R 0.00	R 54.00	R 0.00	R 54.00	100%	1	R 54	R 0	R 0
L4.3.4	Step irons in BW No = 1	R 54.00	R 0.00	R 54.00	R 0.00	R 54.00	100%	1	R 54	R 0	R 0
L4.3.5	Step irons in BW No = 7	R 378.00	R 0.00	R 378.00	R 0.00	R 378.00	100%	1	R 378	R 0	R 0
L4.23	Step irons in CW No = 9	R 486.00	R 0.00	R 486.00	R 0.00	R 486.00	100%	9	R 4,374	R 0	R 0
M4.2.1	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0
M4.2.2	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0

Basin 9 Schedules 2D, 2E, 2G, 2H, 2I, 2J	Refer to the drawings of the concrete structure and brick manhole details for installation of step irons in concrete walls (CW) and brick walls (BW)										
D3.28	Step irons in CW No = 12	R 648.00	R 0.00	R 648.00	R 0.00	R 648.00	100%	12	R 7,776	R 0	R 0
D5.2.1	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0
E3.14	Step irons in CW No = 5	R 270.00	R 0.00	R 270.00	R 0.00	R 270.00	100%	5	R 1,350	R 0	R 0
G2.17	Step irons in CW No = 3	R 162.00	R 0.00	R 162.00	R 0.00	R 162.00	100%	3	R 486	R 0	R 0
H3.2.1	Step irons in BW No = 2	R 108.00	R 0.00	R 108.00	R 0.00	R 108.00	100%	1	R 108	R 0	R 0
H3.2.2	Step irons in BW No = 7	R 378.00	R 0.00	R 378.00	R 0.00	R 378.00	100%	1	R 378	R 0	R 0
H3.2.3	Step irons in BW No = 2	R 108.00	R 0.00	R 108.00	R 0.00	R 108.00	100%	1	R 108	R 0	R 0
H3.2.4	Step irons in BW No = 3	R 162.00	R 0.00	R 162.00	R 0.00	R 162.00	100%	1	R 162	R 0	R 0
H3.2.5	Step irons in BW No = 7	R 378.00	R 0.00	R 378.00	R 0.00	R 378.00	100%	1	R 378	R 0	R 0
H3.2.6	Step irons in BW No = 9	R 486.00	R 0.00	R 486.00	R 0.00	R 486.00	100%	1	R 486	R 0	R 0
H3.2.7	Step irons in BW No = 2	R 108.00	R 0.00	R 108.00	R 0.00	R 108.00	100%	1	R 108	R 0	R 0
I3.2.1	Step irons in CW No = 5	R 162.00	R 0.00	R 162.00	R 0.00	R 162.00	100%	5	R 810	R 0	R 0
J3.2.1	Step irons in BW No = 4	R 216.00	R 0.00	R 216.00	R 0.00	R 216.00	100%	1	R 216	R 0	R 0
J3.2.2	Step irons in BW No = 5	R 270.00	R 0.00	R 270.00	R 0.00	R 270.00	100%	1	R 270	R 0	R 0
J3.2.3	Step irons in BW No = 6	R 324.00	R 0.00	R 324.00	R 0.00	R 324.00	100%	1	R 324	R 0	R 0
J3.2.4	Step irons in BW No = 7	R 378.00	R 0.00	R 378.00	R 0.00	R 378.00	100%	1	R 378	R 0	R 0
J3.2.5	Step irons in BW No = 9	R 486.00	R 0.00	R 486.00	R 0.00	R 486.00	100%	1	R 486	R 0	R 0

(C20) Total tender value	R 35,748
(C21) Total Exempt imported content	R 0
(C22) Total Tender value net of exempt imported content	R 35,748
(C23) Total imported content	R 0
(C24) Total local content	R 35,748
(C25) Average local content % of tender	100.00%

Signature of tenderer from Ar [redacted]

Date. [redacted]2/12/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of Upgrade to Witzands Aquifer Recharge Infrastructure & Associated Bulk Services for the City Of Cape Town: Phase 1-Upgrading of Basin 6 & 9
(C3)	Designated product(s)	Steel Products & Components for Construction: Steel Value-added products: Pre-fabricated structural stainless steel sluice gates
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	USD EU NA GBP NA
(C7)	Specified local content %	100%

Note: VAT to be excluded from all calculations

Calculation of local content								Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1P	Refer to the drawings for the sluice gate specification for the following sizes:										
P2.3.1	Basin 6 Inflow: 1500 x 1500 mm No = 1	R 113,426.96	R 0.00	R 113,426.96	R 0.00	R 113,426.96	100%	1	R 113,427	R 0	R 0
P2.3.2	Basin 6 Outfow: 1200 x 1200 mm No = 1	R 97,455.05	R 0.00	R 97,455.05	R 0.00	R 97,455.05	100%	1	R 97,455	R 0	R 0
P2.3.3	Basin 6 Diversion: 1200 x 1200 mm No = 1	R 97,455.05	R 0.00	R 97,455.05	R 0.00	R 97,455.05	100%	1	R 97,455	R 0	R 0
P2.3.4	Basin 6 Donkergat Outfow: 600 x 600 mm No = 1	R 57,980.97	R 0.00	R 57,980.97	R 0.00	R 57,980.97	100%	1	R 57,981	R 0	R 0
P2.3.5	Basic 6 Domestic Bypass: 400 x 400 mm No = 1	R 53,638.85	R 0.00	R 53,638.85	R 0.00	R 53,638.85	100%	1	R 53,639	R 0	R 0
Basin 9 Schedules 2K	Refer to the drawings for the sluice gate specification for the following sizes:										
K2.3.1	Basin 9 Inflow: 1350 x 350 mm No = 1	R 108,394.33	R 0.00	R 108,394.33	R 0.00	R 108,394.33	100%	1	R 108,394	R 0	R 0
K2.3.2	Basin 9 Outfow: 825 x 825 mm No = 1	R 72,809.80	R 0.00	R 72,809.80	R 0.00	R 72,809.80	100%	1	R 72,810	R 0	R 0
K2.3.3	Basin 9 Diversion: 825 x 825 mm No = 1	R 72,809.80	R 0.00	R 72,809.80	R 0.00	R 72,809.80	100%	1	R 72,810	R 0	R 0

(C20) Total tender value	R 673,971	
(C21) Total Exempt imported content		R 0
(C22) Total Tender value net of exempt imported content		R 673,971
(C23) Total Imported content		R 0
(C24) Total local content		R 673,971
(C25) Average local content % of tender		100.00%

Signature of tenderer from Anne [redacted]

Date: 01/12/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of Upgrade to Witzands Aquifer Recharge Infrastructure & Associated Bulk Services for the City Of Cape Town: Phase 1-Upgrading of Basin 6 & 9
(C3)	Designated product(s)	Valves Products & Actuators Sector
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	USD R 14.74 EU NA GBP NA
(C7)	Specified local content %	70%

Note: VAT to be excluded from all calculations

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1P	Gate valve with hand wheel for clockwise opening										
P3.1.1	350mm Flanged Wedge Gate Valve (PN 16) No = 2	R 74,250.00	R 0.00	R 74,250.00	R 22,275.00	R 51,975.00	70%	2	R 148,500	R 0	R 44,550

(C20) Total tender value	R 148,500
(C21) Total Exempt imported content	R 0
(C22) Total Tender value net of exempt imported content	R 148,500
(C23) Total Imported content	R 44,550
(C24) Total local content	R 103,950
(C25) Average local content % of tender	70.00%

Signature of tenderer fro[redacted]

Date: [redacted]12/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of Upgrade to Witzands Aquifer Recharge Infrastructure & Associated Bulk Services for the City Of Cape Town: Phase 1-Upgrading of Basin 6 & 9
(C3)	Designated product(s)	Plastic Pipes Sector: High density polythylen (HDPE) pipes
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	USD ; EU NA ; GBP NA
(C7)	Specified local content %	100%

Note: VAT to be excluded from all calculations

Tender item no's	List of items	Calculation of local content: Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender summary: Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1I, 1L	HDPE double layer pipes with smooth bore and corrugated externally										
I3.1.1	Class SN8 400 mm inside diameter Length = 420 m	R 772.54	R 0.00	R 772.54	R 0.00	R 772.54	100%	420	R 324,467	R 0	R 0
I4.2.1	Class SN8 400 mm inside diameter Length = 55 m	R 772.54	R 0.00	R 772.54	R 0.00	R 772.54	100%	55	R 42,490	R 0	R 0
Basin 6 Schedules 1O	Slotted polyethylene drainage pipes complete with couplings with at least8 IcN/m2 ring stifness										
O2.11.1	350 mm inside diameter: Length = 560m	R 951.67	R 0.00	R 951.67	R 0.00	R 951.67	100%	560	R 532,935	R 0	R 0
Basin 9 Schedules 2J	HDPE double layer pipes with smoot bore and corrugated exterally										
J3.1.1	Class SN8 300 mm inside diameter Length = 25 m	R 548.33	R 0.00	R 548.33	R 0.00	R 548.33	100%	25	R 13,708	R 0	R 0
J3.1.2	Class SN8 400 mm inside diameter Length = 115 m	R 734.56	R 0.00	R 734.56	R 0.00	R 734.56	100%	115	R 84,474	R 0	R 0

(C20) Total tender value	R 998,074
(C21) Total Exempt imported content	R 0
(C22) Total Tender value net of exempt imported content	R 998,074
(C23) Total Imported content	R 0
(C24) Total local content	R 998,074
(C25) Average local content % of tender	100.00%

Signature of tenderer from Au [redacted]

Date: 02/12/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of Upgrade to Witzands Aquifer Recharge Infrastructure & Associated Bulk Services for the City Of Cape Town: Phase 1-Upgrading of Basin 6 & 9
(C3)	Designated product(s)	Textile, Clothing, Leather & Footwear Sector: Non-woven continuous filament needle-punched polyester geotextile
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	USD EU NA GBP NA
(C7)	Specified local content %	100%

Note: VAT to be excluded from all calculations

Tender item no's	List of items	Calculation of local content: Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender summary: Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Basin 6 Schedules 1C, 1D, 1E, 1F, 1L, 1M, 1O	Non-woven continuous filament needle-punched polyester geotextile.										
C3.1.1	Colto Grade 1 (Kaytech Grade A10 or equivalent) A = 1850 m2	R 56.94	R 0.00	R 56.94	R 0.00	R 56.94	100%	1,850	R 105,339	R 0	R 0
D2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 610 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	610	R 15,098	R 0	R 0
D5.3	Colto Grade 2 (Kaytech Grade A4 or equivalent) A = 470 m2	R 327.27	R 0.00	R 327.27	R 0.00	R 327.27	100%	470	R 153,817	R 0	R 0
E2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 16 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	16	R 396	R 0	R 0
F2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 160 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	160	R 3,960	R 0	R 0
L2.5.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 160 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	160	R 3,960	R 0	R 0
M2.4.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 30 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	30	R 743	R 0	R 0
O2.14	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 6000 m2	R 17.98	R 0.00	R 17.98	R 0.00	R 17.98	100%	6,000	R 107,880	R 0	R 0
Basin 9 Schedules 2C, 2D, 2E, 2F	Non-woven continuous filament needle-punched polyester geotextile.										
C3.1.1	Colto Grade 1 (Kaytech Grade A10 or equivalent) A = 1700 m2	R 54.94	R 0.00	R 54.94	R 0.00	R 54.94	100%	1,700	R 93,398	R 0	R 0
D2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 900 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	900	R 22,275	R 0	R 0
D5.3	Colto Grade 2 (Kaytech Grade A6 or equivalent) A = 640 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	640	R 15,840	R 0	R 0
E2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 30 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	30	R 743	R 0	R 0
F2.3.1	Colto Grade 1 (Kaytech Grade A6 or equivalent) A = 340 m2	R 24.75	R 0.00	R 24.75	R 0.00	R 24.75	100%	340	R 8,415	R 0	R 0

(C20)	Total tender value	R 531,862
(C21)	Total Exempt imported content	R 0
(C22) Total	Tender value net of exempt imported content	R 531,862
(C23)	Total Imported content	R 0
(C24)	Total local content	R 531,862
(C25)	Average local content % of tender	100.00%

Signature of tenderer from Annex B

Date: 02/12/2021

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	97Q/2021/22
(C2)	Tender description:	Construction of Upgrade to Witzands Aquifer Recharge Infrastructure & Associated Bulk Services for the City Of Cape Town: Phase 1-Upgrading of Basin 6 & 9
(C3)	Designated product(s)	Cement Sector Products
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name:	Ruwacon (Pty) Ltd
(C6)	Tender Exchange Rate:	USD EU NA GBP NA
(C7)	Specified local content %	100%

Note: VAT to be excluded from all calculations

Tender item no's	List of items	Calculation of local content: Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender summary: Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
	Basin 6 Schedule 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1N										
C2.5.3	Stabilised Sand / Cement embankment core Total Volume = 2800 m³	R 83.00	R 0.00	R 83.00	R 0.00	R 83.00	100%	2,800	R 232,400	R 0	R 0
C2.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) Total volume = 10 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	10	R 2,844	R 0	R 0
C5.1	Stabilizing Agent = 500 t	R 1,839.79	R 0.00	R 1,839.79	R 0.00	R 1,839.79	100%	500	R 919,895	R 0	R 0
C2.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% Mod AASTHO in layers not exceeding 150mm before compaction Total Volume = 10 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	10	R 2,844	R 0	R 0
D3.17	BLINDING LAYER IN GRADE 20/19 CONCRETE 100 mm										
D3.17.1	i) Horizontal	R 1,659.00	R 0.00	R 1,659.00	R 0.00	R 1,659.00	100%		R 0	R 0	R 0
D3.18	NO-FINES CONCRETE STRENGTH: NF19 FOR FILLING OF DRAINAGE PIPES										
D3.18.1	For filling of 50mm diameter pipes in division wall between the silt and litter trap. Total Volume = 1 m³	R 1,659.00	R 0.00	R 1,659.00	R 0.00	R 1,659.00	100%	1	R 1,659	R 0	R 0
D3.19	STRENGTH CONCRETE 25/19										
D3.19.1	Mass concrete for pipe supports Total Volume = 3 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	3	R 5,215	R 0	R 0
D3.19.2	Mass concrete where instructed by the engineer Total Volume = 12 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	12	R 20,861	R 0	R 0
D3.19.3	Mass concrete for underneath RC retaining wall footings Total Volume = 4 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	4	R 6,954	R 0	R 0
D3.20	STRENGTH CONCRETE 25/10										

D3.20.1	Benching in domestic effluent boxes Total Volume = 8 m³	R 1,7	R 0.00	R 1,738.38	R 0.00	R 1,738.38		8	R 13,907	R 0	R 0
D3.21	**STRENGTH CONCRETE 35/19**										
D3.21.1	Floor slab and toe of contamination pond, litter and grit trap (Excluding Access ramps) Total Volume = 950 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	950	R 1,865,895	R 0	R 0
D3.21.2	300 x 850mm DP RC thickening along two edges of contamination pond overflow weir Total Volume = 6.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	6.5	R 12,767	R 0	R 0
D3.21.3	300 x 1000mm DP RC shear key Total Volume = 22 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	22	R 43,210	R 0	R 0
D3.21.4	Two perimeter RC walls of contamination pond sloping from 250mm to 300mm thick Total Volume= 55 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	55	R 108,026	R 0	R 0
D3.21.5	250mm thick RC low overflow weir in contamination pond Total Volume = 9 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	9	R 17,677	R 0	R 0
D3.21.6	Contamination pond access walkway's 500 x 500mm RC columns Total Volume = 8 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	8	R 15,713	R 0	R 0
D3.21.7	Contamination pond access walkway's 250mm thick RC wall in between RC columns Total Volume= 20 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	20	R 39,282	R 0	R 0
D3.21.8	Contamination pond access walkway's 250mm thick RC floor slab Total Volume = 19 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	19	R 37,318	R 0	R 0
D3.21.10	New domestic effluent pipe box250mm RC support walls Total Volume= 1.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	1.5	R 2,946	R 0	R 0
D3.21.11	New domestic effluent pipe box200mm RC floor slab Total Volume = 1.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	1.5	R 2,946	R 0	R 0
D3.21.12	New domestic effluent pipe box250mm RC walls Total Volume = 7.2 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	7.2	R 14,142	R 0	R 0
D3.21.13	300mm DP RC retaining wall footings Total Volume = 15	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	15	R 29,462	R 0	R 0
D3.21.14	DP RC retaining walls sloping 300mm to 250mm Total Volume = 23 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	23	R 45,174	R 0	R 0
D3.21.15	Contamination Pond Access Walkway Ramp's 250mm thick RC floor slab Total Volume = 4 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	4	R 7,856	R 0	R 0
D3.21.16	Contamination Pond Access Walkway Ramp's RC walls 250mm thick Total Volume = 3.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	3.5	R 6,874	R 0	R 0
D3.21.17	300mm DP RC retaining wall footings Total Volume = 15 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	15	R 29,462	R 0	R 0
D3.21.18	Contamination Pond Access Walkway Ramp's 150 x 150mm DP RC corbel Total Volume = 0.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	0.5	R 982	R 0	R 0
D3.21.19	Contamination pond access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume =35 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	35	R 68,744	R 0	R 0
D3.21.20	Contamination pond access ramp RC walls sloping from 300mm to 250mm Total Volume = 20 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	20	R 39,282	R 0	R 0
D3.21.21	Litter trap access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume = 35 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	35	R 68,744	R 0	R 0

D3.21.22	Silt trap access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume = 40 m³	R 1,9	R 0.00	R 1,964.10	R 0.00	R 1,964.10		40	R 78,564	R 0	R 0
D3.21.23	Litter trap access ramp RC walls and perimeter walls sloping from 300mm to 250mm Total Volume = 33 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	33	R 64,815	R 0	R 0
D3.21.24	Litter trap RC wall sloping from 300mm to 250mm Total Volume = 15 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	15	R 29,462	R 0	R 0
D3.21.25	Litter trap 250mm thick RC cantilever wall for fixing one side of litter grids Total Volume = 12 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	12	R 23,569	R 0	R 0
D3.21.26	250mm thick RC division wall between litter trap and silt trap cantilever wall for fixing one side of litter grids Total Volume =10 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	10	R 19,641	R 0	R 0
D3.21.27	250mm thick RC walls for silt trap, monitoring manhole and inlet manhole Total Volume = 17 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	17	R 33,390	R 0	R 0
D3.21.28	300mm thick RC floor slab for monitoring manhole, inlet manhole and false floor Total Volume = 6 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	6	R 11,785	R 0	R 0
F1.2	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% MOD AASTHO in layers not exceeding 150mm before compaction: Total Volume = 2 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	2	R 569	R 0	R 0
F3.8	**STRENGTH CONCRETE 25/19**				R 0.00						
F3.8.1	Mass concrete where instructed by the engineer Total Volume = 2 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	2	R 3,477	R 0	R 0
F3.8.2	Concrete coping over stabilized sand/cement core for overflow spillway Total Volume = 115 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	115	R 199,914	R 0	R 0
F3.8.3	Concrete wingwalls on the overflow spillway Total Volume = 23 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	23	R 39,983	R 0	R 0
F3.8.4	Mass concrete collar walls on the overflow spillway Total Volume = 5 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	5	R 8,692	R 0	R 0
F3.8.5	Concrete fill between brick walls of wingwall extension Total Volume = 1 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	1	R 1,738	R 0	R 0
F3.8.6	Concrete foundation below brick wall of wingwall extension Total Volume = 3 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	3	R 5,215	R 0	R 0
F.5.1	Stabilizing Agent Total Weight = 95 t	R 1,839.79	R 0.00	R 1,839.79	R 0.00	R 1,839.79	100%	95	R 174,780	R 0	R 0
G1.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% MOD AASTHO in layers not exceeding 150mm before compaction: Total Volume = 2 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	2	R 569	R 0	R 0
G2.8	**STRENGTH CONCRETE 25/19**				R 0.00						
G2.8.1	Mass concrete where instructed by the engineer Total Volume = 10 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	10	R 17,384	R 0	R 0
G2.9	**STRENGTH CONCRETE 35/19**				R 0.00						
G2.9.1	Floor slab of evaporation pond Total Volume = 22 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	22	R 43,210	R 0	R 0
G2.9.2	Floor slab of evaporation pond sump Total Volume = 8 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	8	R 15,713	R 0	R 0

G2.9.3	Floor slab of evaporation pond (including DP RC thickening) Total Volume = 24 m³	R 1,9[illegible]	R 0.00	R 1,964.10	R 0.00	R 1,964.10	[illegible]%	24	R 47,138	R 0	R 0
G2.9.4	Perimeter walls of evaporation pond (excluding access ramp and sump walls) Total Volume = 58 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	58	R 113,918	R 0	R 0
G2.9.5	Perimeter walls of evaporation pond sump Total Volume = 20 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	20	R 39,282	R 0	R 0
G2.9.6	Perimeter wall of evaporation pond access ramp Total Volume = 10 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	10	R 19,641	R 0	R 0
G3.2.1	150mm layer C4 (G5 material stabilized with 3% Portland Cement per maximum dry density of the G5 material) compacted to 95% Modiefied AASHTO density below evaporation pond Total Volume = 60 m³	R 452.90	R 0.00	R 452.90	R 0.00	R 452.90	100%	60	R 27,174	R 0	R 0
G3.4.1	STABILISING AGENT Portland Cement Total Weight = 3.4 t	R 1,839.79	R 0.00	R 1,839.79	R 0.00	R 1,839.79	100%	3.4	R 6,255	R 0	R 0
H2.8.2	300mm x 300mm Class 30/20 in situ concrete edge beam at the intersection of the Basin 6 and Sand Mine access roads Total Length = 24 m	R 238.06	R 0.00	R 238.06	R 0.00	R 238.06	100%	24	R 5,713	R 0	R 0
I1.10	Backfilling of culverts with soil cement Total Volume = 1 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	1	R 231	R 0	R 0
I3.14	**STRENGTH CONCRETE 25/19**				R 0.00						
I3.14.1	Mass concrete where instructed by the engineer Total Volume = 2 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	2	R 3,477	R 0	R 0
I3.15	**STRENGTH CONCRETE 25/10**				R 0.00						
I3.15.1	Benching in manhole Total Volume = 2 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	2	R 3,477	R 0	R 0
I3.16	**STRENGTH CONCRETE 35/19**				R 0.00						
I3.16.1	Floor slab Total Volume = 2 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	2	R 3,928	R 0	R 0
I3.16.2	Walls Total Volume = 3.75 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	3.75	R 7,365	R 0	R 0
J1.10	Backfilling of culverts with soil cement Total Volume = 1 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	1	R 231	R 0	R 0
K1.10	Backfilling of culverts with soil cement Total Volume = 1 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	1	R 231	R 0	R 0
L1.10	Backfilling of culverts with soil cement Total Volume = 5 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	5	R 1,155	R 0	R 0
L4.16	**STRENGTH CONCRETE 25/19**				R 0.00						
L4.16.1	Mass concrete where instructed by the engineer Total Volume = 2 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	2	R 3,477	R 0	R 0
L4.17	**STRENGTH CONCRETE 25/10**				R 0.00						
L4.17.1	Benching in manhole Total Volume = 3.2 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	3.2	R 5,563	R 0	R 0
L4.18	**STRENGTH CONCRETE 35/19**				R 0.00						
L4.18.1	Floor slab Total Volume = 6 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	6	R 11,785	R 0	R 0
L4.18.2	Walls Total Volume = 13.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	13.5	R 26,515	R 0	R 0
L4.36	**STRENGTH CONCRETE 25/19**				R 0.00						
L4.36.1	Mass concrete where instructed by the engineer Total Volume = 6 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	6	R 10,430	R 0	R 0
L4.37	**STRENGTH CONCRETE 35/19**				R 0.00						
L4.37.1	Floor slab an key Total Volume = 51 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	51	R 100,169	R 0	R 0
L4.37.2	Walls and baffle blocks Total Volume = 33 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	33	R 64,815	R 0	R 0
M1.10	Backfilling of culverts with soil cement Total Volume = 5 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	5	R 1,155	R 0	R 0

N1.10	Backfilling of culverts with soil cement Total Volume = 5 m³	R 2	R 0.00	R 230.93	R 0.00	R 230.93	%	5	R 1,155	R 0	R 0
	Basin 9 Schedule 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1N				R 0.00						
C2.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) Total Volume = 10 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	10	R 2,844	R 0	R 0
D1.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% MOD AASTHO in layers not exceeding 150mm before compaction: Total Volume = 20 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	20	R 5,689	R 0	R 0
D3.14	**BLINDING LAYER IN GRADE 20/19 CONCRETE 100 mm**				R 0.00						
D3.14.1	Horizontal Total Volume =10 m³	R 1,659.00	R 0.00	R 1,659.00	R 0.00	R 1,659.00	100%	10	R 16,590	R 0	R 0
D3.15	**NO-FINES CONCRETE STRENGTH: NF19 FOR FILLING OF DRAINAGE PIPES**				R 0.00						
D3.15.1	For filling of 50mm diameterpipes in division wall between the silt and litter trap Total Volume =0.3 m³	R 1,659.00	R 0.00	R 1,659.00	R 0.00	R 1,659.00	100%	0.3	R 498	R 0	R 0
D3.16	**STRENGTH CONCRETE 25/19**				R 0.00						
D3.16.1	Mass concrete for pipe supports Total Volume =2 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	2	R 3,477	R 0	R 0
D3.16.2	Mass concrete where instructed by the engineer Total Volume =10 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	10	R 17,384	R 0	R 0
D3.16.3	Mass concrete for underneath RC retaining wall footings Total Volume =3 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	3	R 5,215	R 0	R 0
D3.17	**STRENGTH CONCRETE 25/10**										
D3.17.1	Benching Total Volume =3 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	3	R 5,215	R 0	R 0
D3.18	**STRENGTH CONCRETE 35/19**										
D3.18.1	Floor contamination pond, litter and grit trap (Excluding Access ramps) Total Volume =1150 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	1,150	R 2,258,715	R 0	R 0
D3.18.2	3 x 300 x 1000mm DP RC shear key Total Volume =45 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	45	R 88,385	R 0	R 0
D3.18.3	Perimeter RC walls of contamination pond sloping from 250mm to 400mm thick Total Volume =59 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	59	R 115,882	R 0	R 0
D3.18.4	250mm thick RC front overflow weir walls on contamination pond's perimeter Total Volume =23 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	23	R 45,174	R 0	R 0
D3.18.5	250mm thick RC low overflow weir in contamination pond Total Volume =11 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	11	R 21,605	R 0	R 0
D3.18.6	Contamination pond access walkway's 500 x 500mm RC columns Total Volume =13 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	13	R 25,533	R 0	R 0
D3.18.7	Contamination pond access walkway's 250mm thick RC wall in between RC columns Total Volume =33 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	33	R 64,815	R 0	R 0
D3.18.8	Contamination pond access walkway's 250mm thick RC floor slab Total Volume =33 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	33	R 64,815	R 0	R 0

D3.18.9	Contamination pond access walkway's 250mm thick RC wall Total Volume =25 m³	R 1,9	R 0.00	R 1,964.10	R 0.00	R 1,964.10	%	25	R 49,103	R 0	R 0
D3.18.10	450mm DP RC retaining wall footings Total Volume =60 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	60	R 117,846	R 0	R 0
D3.18.11	DP RC retaining walls sloping 400mm to 250mm Total Volume =60 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	60	R 117,846	R 0	R 0
D3.18.12	Contamination Pond Access Walkway Ramp's 250mm thick RC floor slab Total Volume =7.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	7.5	R 14,731	R 0	R 0
D3.18.13	Contamination pond Access Walkway Ramp's RC walls 250mm thick Total Volume =4.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	4.5	R 8,838	R 0	R 0
D3.18.14	Contamination Pond Access Walkway Ramp's 150 x 150mm DP RC corbel Total Volume =1 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	1	R 1,964	R 0	R 0
D3.18.15	Contamination pond and silt trap access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume =92 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	92	R 180,697	R 0	R 0
D3.18.16	Contamination pond and silt trap access ramp RC walls sloping from 300mm to 250mm Total Volume =47 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	47	R 92,313	R 0	R 0
D3.18.17	Litter trap access ramp 300mm thick RC floor slab (including DP RC thickening) Total Volume =46 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	46	R 90,349	R 0	R 0
D3.18.18	Litter trap access ramp RC walls sloping from 400mm to 250mm Total Volume =32 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	32	R 62,851	R 0	R 0
D3.18.19	Division wall between the contamination pond and silt/litter trap Total Volume =46 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	46	R 90,349	R 0	R 0
D3.18.20	Litter trap 250mm thick RC cantilever wall for fixing one side of litter grids Total Volume =11 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	11	R 21,605	R 0	R 0
D3.18.21	250mm thick RC division wall between litter trap and silt trap Total Volume =10 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	10	R 19,641	R 0	R 0
D3.18.22	250mm thick RC walls for monitoring manhole and inlet manhole Total Volume =11 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	11	R 21,605	R 0	R 0
D3.18.23	300mm thick RC floor slab for monitoring manhole, inlet manhole and false floor Total Volume =3 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	3	R 5,892	R 0	R 0
D5.1	Backfilling of culverts with soil cement Total Volume =10 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	10	R 2,309	R 0	R 0
E1.2	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% MOD AASTHO in layers not exceeding 150mm Before Compaction Total Volume = 1 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	1	R 284	R 0	R 0
E3.8	**STRENGTH CONCRETE 25/19**										
E.3.8.1	Mass concrete where instructed by the engineer Total Volume =5 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	5	R 8,692	R 0	R 0
E.3.9	**STRENGTH CONCRETE 35/19**										

E.3.9.1	Floor slab of outlet structure Total Volume =5.5 m³	R 1,9	R 0.00	R 1,964.10	R 0.00	R 1,964.10	%	5.5	R 10,803	R 0	R 0
E.3.9.2	Outlet structure key Total Volume =0.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	0.5	R 982	R 0	R 0
E.3.9.3	Outlet structure walls Total Volume =9 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	9	R 17,677	R 0	R 0
E.3.9.4	Precast concrete slabs (1700mm x 675mm) Total Volume =1.5 m³	R 2,946.14	R 0.00	R 2,946.14	R 0.00	R 2,946.14	100%	1.5	R 4,419	R 0	R 0
F1.2	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% MOD AASTHO in layers not exceeding 150mm before compaction: Total Volume = 2 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	2	R 569	R 0	R 0
F3.4	STRENGTH CONCRETE 35/19										
F3.4.1	Mass concrete where instructed by the engineer Total Volume =2 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	2	R 3,928	R 0	R 0
F3.4.2	Overflow spillway Total Volume =39 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	39	R 76,600	R 0	R 0
F3.4.3	Ramps onto overflow spillway Total Volume =9 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	9	R 17,677	R 0	R 0
F3.4.4	Cut-off walls Total Volume =10.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	10.5	R 20,623	R 0	R 0
F3.4.5	Concrete walls Total Volume =6.5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	6.5	R 12,767	R 0	R 0
G1.6	Extra-over 8.3.2(a) for soil cement backfilling where specifically required by the Employer's agent (5% cement) compacted to 94% MOD AASTHO in layers not exceeding 150mm before compaction: Total Volume = 2 m³	R 284.44	R 0.00	R 284.44	R 0.00	R 284.44	100%	2	R 569	R 0	R 0
G2.8	STRENGTH CONCRETE 25/19										
G2.8.1	Mass concrete where instructed by the engineer Total Volume =10 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	10	R 17,384	R 0	R 0
G2.9	STRENGTH CONCRETE 35/19										
G2.9.1	Floor slab of evaporation pond Total Volume =22 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	22	R 43,210	R 0	R 0
G2.9.2	Floor slab of evaporation pond sump Total Volume =1 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	1	R 1,964	R 0	R 0
G2.9.3	Floor slab of evaporation pond (including DP RC thickening) Total Volume =24 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	24	R 47,138	R 0	R 0
G2.9.4	Perimeter walls of evaporation pond (excluding access ramp and sump walls) Total Volume =58 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	58	R 113,918	R 0	R 0
G2.9.5	Perimeter walls of evaporation pond sump Total Volume =2 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	2	R 3,928	R 0	R 0
G2.9.6	Perimeter wall of evaporation pond access ramp Total Volume =10 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	10	R 19,641	R 0	R 0
G3.2.1	150mm layer C4 (G5 material stabilized with 3% Portland Cement per maximum dry density of the G5 material) compacted to 95% Modified AASHTO density below evaporation pond Total Volume =56 m³	R 452.90	R 0.00	R 452.90	R 0.00	R 452.90	100%	56	R 25,362	R 0	R 0
G3.4.1	STABALIZING AGENT Portland Cement Total Weight = 3.4 t	R 1,839.79	R 0.00	R 1,839.79	R 0.00	R 1,839.79	100%	3.4	R 6,255	R 0	R 0
H1.10	Backfilling of culverts with soil cement Total Volume =5 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	5	R 1,155	R 0	R 0

I1.9	Backfilling of culverts with soil cement Total Volume =5 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	5	R 1,155	R 0	R 0
I3.14	**STRENGTH CONCRETE 25/19**										
I3.14.1	Mass concrete where instructed by the engineer Total Volume =2 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	2	R 3,477	R 0	R 0
I3.15	**STRENGTH CONCRETE 25/10**										
I3.15.1	Benching in manhole Total Volume =8 m³	R 1,738.38	R 0.00	R 1,738.38	R 0.00	R 1,738.38	100%	8	R 13,907	R 0	R 0
I3.16	**STRENGTH CONCRETE 35/19**										
I3.16.1	Floor slab Total Volume =5 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	5	R 9,821	R 0	R 0
I3.16.2	Walls Total Volume =11 m³	R 1,964.10	R 0.00	R 1,964.10	R 0.00	R 1,964.10	100%	11	R 21,605	R 0	R 0
J1.10	Backfilling of culverts with soil cement Total Volume = 5 m³	R 230.93	R 0.00	R 230.93	R 0.00	R 230.93	100%	5	R 1,155	R 0	R 0

(C20) **Total tender value**	**R 9,086,267**	
(C21) **Total Exempt imported content**	**R 0**	
(C22) Total **Tender value net of exempt imported content**	**R 9,086,267**	
(C23) **Total Imported content**		**R 0**
(C24) **Total local content**		**R 9,086,267**
(C25) **Average local content % of tender**		**100.00%**

Signature of tenderer from Annex

[redacted]

Date:

PART C4: SITE INFORMATION

CONTENTS

1. GENERAL

The sites for the Works are located in the south western portion of the Atlantis industrial Area.

Basin 6 is situated to the south of Neil Hare road between the Atlantis Sand Mine and the Wesfleur Waste Water Treatment Works (WWTW).

Basin 9 is situated to the west of Gideon Basson Street and Atlantis Foundaries and to the north of Neil Hare Road.

The exact positions of the sites of the Works are indicated on the Locality Plan included in Annex 6. The City of Cape Town Property Department has reserved all the properties required for the construction and maintenance of this project.

The Scope of Works are described in Part C3 of this document and includes the Description of the Works under C3.1, namely:

- The Employers objectives;
- An overview of the Works;
- The extent of the Works;
- The location of the Works; and
- Temporary Works.

The existing and proposed services involved in this project for Basins 6 and 9 are indicated on drawings C00686–ZF–DSS–0006–001 and C00686–ZF–DSS–0009–001 respectively.

2. WORKS PROJECTS

The construction site is located in an area where the water table is relatively high and close to the natural ground level. Although the water table varies between the wet and dry seasons, excavations can be expected to be rather wet and continuous pumping from excavations may be required. This aspect will have to be taken into account in the planning of the works.

Crime and vandalism have been observed in the vicinity of the proposed Works and the Contractor shall be aware thereof in the protection of the works and his plant.

The diversion of stormwater flows, especially in the rainy winter months and the diversion of the domestic effluent from the Wesfleur WWTW are aspects to take note of.

Several Eskom transmission and distribution overhead lines exist in the vicinity and the Contractor’s attention is drawn to ensure that sufficient clearance under overhead lines are maintained.